THE USE OF PLAY OBSERVATION MEASURES TO IDENTIFY KINDERGARTEN CHILDREN AT RISK FOR FUTURE LEARNING DISABILITIES

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Education
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Abstract

The aim of this study was to determine whether a link existed between kindergarten children's play behaviours and future at-risk status for learning disabilities. Using two play observation measures, the free play behaviours of 50 kindergarten children from eight schools were observed for 50 minutes in kindergarten classrooms. The sample consisted of 23 boys and 27 girls from middle class districts, who ranged in age from 56 to 70 months. Parents filled out a family profile and play questionnaire, and the Peabody Picture Vocabulary Test-Revised was administered to each child. The kindergarten teachers of these children and later, their grade one teachers completed surveys and nominated at-risk children from their classrooms. Additional data were collected from the children's kindergarten and grade one report cards. A 20-point at-risk index was devised, which included several assessment and outcome factors. Children were judged to be at risk on the basis of a cutoff score on the at-risk index, excluding other dimensions of difference (e.g., a standard score of 84 and above on the PPVT-R, and no serious academic intervention, emotional difficulties, cultural differences, and medical conditions). Using these criteria, 10 of the 50 kindergarten children were deemed to be at risk for future learning disabilities. The findings revealed that the at-risk children spent more time engaged in unoccupied behaviour, onlooker behaviour, solitary play, and solitary constructive play, but spent less time engaged in cooperative constructive play. The at-risk children demonstrated difficulties communicating orally with their peers and engaged in repetitive play. The at-risk children did not demonstrate deficits in their symbolic play, nor in their ability to enter play groups, but had difficulty remaining in them. The at-risk children engaged in more negative play behaviour combinations and fewer positive play behaviour combinations. Controlling for age and gender, those children who wandered, moved frequently to centres, and displayed inappropriate peer interactions received higher scores on the at-risk index. As early identification and remediation of young children with learning disabilities can enhance a child's opportunity for academic success, this list of possible at-risk indicators may assist teachers in recognizing earlier children's learning problems.
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Chapter 1

INTRODUCTION

1.1 Aim and Overview

The aim of this study is to determine whether specific play patterns in kindergarten children predict the emergence of students’ learning difficulties by the end of the grade one school year. This aim is related to the potential use of play as an assessment device. To set the stage for the study, the problems associated with the lack of an appropriate assessment device for the identification of future learning problems in young children will be discussed in the following sections. Definitions of the terms “play” and “learning disabilities” will be discussed. A review of the research literature will be presented, with particular consideration of current and traditional play observation categories and scales, play patterns in children with various handicapping conditions, and the use of play as a tool for remediation. A series of hypotheses related to social play and cognitive play activities in educationally at-risk kindergarten children will be proposed, followed by an overview of the study design. The results will be presented and then discussed in terms of their academic and practical significance.

1.1.1 Background on Play and Learning Disabilities

The term “learning disabilities” first appeared in the research literature on exceptional children almost forty years ago (Kirk & Bateman, 1962). Before the general acceptance of the learning disabilities label, other terms were used commonly to refer to this type of exceptionality. Examples of these terms included minimal brain damage or injury, dyslexia, perceptual handicap, psychoneurological learning disorders, and minimal cerebral or brain dysfunction (Hammill, Leigh, McNutt, & Larsen, 1981; Uyeda, 1972). Since that time, the learning
disabilities domain has expanded rapidly. This is evidenced by the vast amount of research that has been conducted on the topic of learning disabilities, as well as the creation of various organizations devoted to the compilation and dissemination of information on learning disabilities (e.g., Learning Disabilities Association of America, Learning Disabilities Association of Canada, National Joint Committee on Learning Disabilities, etc.).

To date, much of the research in this field has focused on exceptionalities within the school age population, and only a limited number of research studies have concentrated on learning disabilities in young children. The lack of studies on play patterns in preschool or kindergarten children at risk for learning disabilities is readily apparent. Various researchers and organizations have noted the paucity of research studies in this area and the subsequent lack of concrete statistics on the incidence of learning disabilities in young children (Kirk, 1987; Lowenthal, 1998; McCarthy, 1989; National Joint Committee on Learning Disabilities, 1985, 1986; Wiener & Siegel, 1992).

In one of their position papers, the National Joint Committee on Learning Disabilities (February 22, 1986) reinforced the importance of early identification of young children who display at-risk indicators of future learning problems. These warning signs include “atypical patterns of development in cognition, communication, motor abilities, and/or social and personal behaviors that adversely affect later academic learning” (page 158). Given the controversial nature of the preschool learning disability concept, it is not surprising that few services are provided for learning disabled preschool children in Canada (Wiener & Siegel, 1992).

The subject of children’s play has also attracted widespread interest among researchers, often due to the assumption that overt play behaviours or lack of certain play behaviours are an indication of a child’s underlying cognitive, communicative, and social abilities (Clune, Paolella, & Foley, 1979; Creasey, Jarvis, & Berk, 1998; Fewell & Rich, 1987; Garvey, 1977; Malone & Stoneman, 1990; Piaget, 1962; Quinn & Rubin, 1984; Rubin & Maioni, 1975; Vygotsky, 1967).
In particular, pretend play appears to be a particular focus of inquiry in recent years (Christie, 1991a; Christie & Johnsen, 1987; Elder & Pederson, 1978; Gillis & Hardacre, 1993; Hill & McCune Nicholich, 1981; McCune Nicholich & Fenson, 1984; Rowe, 1998; Rubin, 1977; Rubin, Fein, & Vandenberg, 1983). Pretend play has also been termed symbolic play, imaginative play, make-believe play, representational play, sociodramatic play, fantasy play, thematic play, and dramatic play (Garvey, 1977; Mogford, 1977). It is believed by some researchers to be one of the most complex types of play behaviour in which young children engage (Garvey, 1977). Furthermore, other researchers believe that poor symbolic play in young children is a sign of at-risk status (Poivevant & Spruill, 1993; Sigman & Sena, 1993).

1.1.2 Relation Between Play and Intelligence

Despite the prevailing assumption that play is associated positively with children’s intelligence levels, few researchers have studied the link between intelligence and play levels among samples of normally developing young children. Most studies have dealt with samples of preschool or kindergarten children with a variety of handicapping conditions. As Dunn and Herwig (1992) reported, “Few studies have examined the entire social-cognitive play spectrum in relation to cognitive functioning.” (p. 25). However, as many researchers believe that children with handicapping conditions may also have a learning disability (Hammill, 1990; Hammill et al., 1981; Lewis, Boucher, & Astell, 1992; Mauk & Mauk, 1992; Polatajko, Law, Miller, Schaffer, & Macnab, 1991), studies dealing with play and intelligence in children with handicapping conditions will also be reviewed.

The fundamental difficulty in studying the possible correlation between play and cognitive ability in young children is the lack of reliability and validity measures for play assessment instruments (Quinn & Rubin, 1984; Rigby, Elliott, Oster, & Pollock, 1993; Rubin, Fein, & Vandenberg, 1983). This problem is compounded by the lack of predictive validity in

In one of the more widely cited studies, Clune, Paolella, and Foley (1979) studied the play behaviours of 100 normally developing kindergarten and grade one children (50 boys/50 girls) for 20 minutes. The authors reported a correlation of .29 between the Stanford-Binet and a 7-point scale of play quality, which ranged from simple toy manipulation to elaborated pretend play sequences using a combination of play materials. Correlations between the play scores and Wechsler Preschool and Primary Scale of Intelligence (WPPSI) verbal IQ ranged from .30 to .50, while correlations between the play scores and WPPSI performance IQ ranged from .31 to .48.

Over a period of eight months, Parten (1932) observed 42 normally developing preschool children during play and found significant correlations between various types of social participation and intelligence. The children ranged in age from approximately 2 to 5 years, with intelligence quotients ranging from 81 to 145. Specifically, Parten reported correlations between intelligence and solitary play (-.20), parallel play (.69), cooperative play (.38), and associative and cooperative play (.33). However, the actual measure used in her study to assess the preschool children's level of intelligence was not reported.

Dunn and Herwig (1992) observed the play behaviours of 34 preschool children in a full-day preschool program for 24 minutes. The authors used the Parten/Smilansky play classification combined by Rubin et al. (1976) to record the children's play. Measures of convergent and divergent thinking were also administered to the children (i.e., Stanford-Binet Intelligence Scale, Torrence's Thinking Creatively in Action and Movement Test). The results indicated that intelligence was related negatively with solitary play ($r = -.45, p < .01$). None of the cognitive play behaviours were related to intelligence. With intelligence controlled for, a correlation of -
.35 was also found between onlooker behaviour and total originality, one of the divergent thinking scores on the Thinking Creatively in Action and Movement Test.

Although the Peabody Picture Vocabulary Test (PPVT) is not a general intelligence test, Riguet, Taylor, Benaroya, and Klein (1981) found significant correlations between PPVT scores and play levels in three groups of children. Stereotypic behaviour, frequency of play, and off-task behaviour were recorded using a play scale developed by the first author. The play levels in the scale were ranked from one to five, and consisted of motor (1), transitional (2), symbolic (3), animation or nonanimated symbolic sequence (4), and animated sequence (5). The selection of the play scale classifications were based on findings in the research literature, including the work of Nicholich (1977). A total of eight minutes of free play and four minutes of structured play was observed for each child. The authors reported correlations of .57, .59, and .74 between PPVT mental age and play levels in autistic, Down's syndrome, and nonhandicapped samples of children respectively. The children's ages ranged from 2.9 to 10 years, but were matched on verbal mental age.

Jeffree and McConkey (1976) compared various measures of imaginative play to developmental age in normal and developmentally delayed children, using the Griffiths Mental Developmental Scale. The normally developing children ranged in age from 18 to 41 months, while the developmentally delayed children ranged in age from 57 to 103 months. In each of the three 15-minute play sessions, the children's imaginative play was videotaped under three conditions: play with realistic toys, play with a cloth doll and junk materials, and play with junk materials only. Four factors were measured: (a) number of imaginative behaviours, (b) number of complex imaginative behaviours, (c) duration engaged in imaginative play, and (d) number of various imaginative verbs used. The authors found correlations ranging from .34 to .70 between the imaginative play measures and the normal children's developmental age. Correlations
between the play measures and the delayed children's developmental age ranged from .37 to .66. Furthermore, the authors found that play levels increased along with developmental age.

Power and Radcliffe (1989) reported a correlation of .25 between the Symbolic Play Test (Lowe & Costello, 1976) and the Stanford-Binet in preschool children with speech and language impairments and developmental delays. A correlation of .30 between the Symbolic Play Test and the Bayley Mental Scale was found in the sample of handicapped preschoolers. The Symbolic Play Test consists of four sets of miniature play items that young children ranging from 12 to 36 months are invited to manipulate. The authors of the test established various play levels relating to observations of children's sensorimotor play, self-pretend acts, symbolic doll play sequences, etc. As one of the few standardized play instruments available, the Symbolic Play Test also provides a mental age equivalent.

Other authors, such as Cunningham, Glenn, Wilkinson, and Sloper (1985), also used the Symbolic Play Test in their research. Seventy-three children with Down's syndrome between the ages of 19 and 90 months were administered two of the three following tests: the Bayley Scales of Infant Development, the Stanford-Binet, and the Reynell Developmental Language Scales. Controlling for chronological age, the authors reported correlations between symbolic play level and mental age ranging from .40 to .75.

In a sample of 30 children with Down's syndrome ranging in age from 20 to 53 months, Hill and McCune Nicholich (1981) found a correlation of .44 between chronological age and symbolic play level. The authors used a play scale first developed by Nicholich (1977) to observe the children's free play for more than 20 minutes. The five play classifications used to measure the children's play level included functional acts, simple self-pretend acts, other-pretend acts, combined symbolic actions, and planned symbolic play. Using the Bayley Mental Scale, a correlation of .66 was found between mental age and symbolic play level, controlling for chronological age.
Finally, Motti, Cicchetti, and Sroufe (1983) studied the play behaviours of 31 children (15 girls/16 boys) with Down’s syndrome for 30 minutes. The children ranged in age from 3 to 5 years. One of the symbolic play scales used in this study was developed by Nicolich (1977) and Hill and McCune (1981). The original play instrument which consisted of five levels was modified slightly to include a sixth level consisting of sensorimotor play only. The authors found that Down’s syndrome children with higher developmental quotients obtained higher scores for symbolic play than children with lower developmental quotients.

As noted in the preceding discussion, a number of researchers have explored the relation between play levels and intelligence in children. However, as Quinn and Rubin (1984) have lamented, many studies on the play of children with handicapping conditions are flawed. Variables such as the effect of novel play environment and materials, small samples of children, IQ, different ways of measuring play, socioeconomic status, etc., have not been controlled, thereby calling into question the validity of the results. However, these limitations do not negate the central finding in the studies reviewed in this section which indicate a relation between play ability and intelligence.

Although the correlations reported in the foregoing discussion between play and intelligence ranged from low to high levels, clear examples were provided where the children’s play levels corresponded with their developmental levels (e.g., Jeffree & McConkey, 1976; Motti et al., 1983). Therefore, the higher the child’s developmental quotient, the higher the level of play observed in the child. The link between play and mental age was evident even in the studies which dealt with toddlers (e.g., Cunningham et al., 1983; Jeffree & McConkey, 1976). This may mean that even for young children, play can be used to gauge a child’s developmental level. In some cases, the play scores varied according to the child’s disability (e.g., Riguet et al., 1981), indicating that play devices can possibly detect differences in children’s ability.
In the same manner, the aim of this study is to explore whether specific play behaviours can differentiate between ability in at-risk and not at-risk kindergarten children. As play appears to be related to cognitive functioning in even very young children, it is hypothesized that specific play patterns may predict future learning difficulties in kindergarten children. Since one can assume that a child's cognitive functioning and processing abilities are related to future learning disabilities, one can also expect a positive link between play abilities and children's at-risk status for future learning disabilities.

1.1.3 Relation Between Play and Literacy

Vygotsky (1967) and Piaget (1962) developed theories in which children's symbolic play was related to their representational competence. Based on the assumption that both symbolic play and literacy require similar skills, researchers have attempted to explore in recent years the link between these two areas (Eckler & Weininger, 1989; Pellegrini, 1980, 1985; Pellegrini & Galda, 1982, 1991; Rowe, 1998; Silvern, Taylor, Williamson, Surbeck, & Kelley, 1986; Walker, 1999). Chang & Yawkey (1998) have highlighted the importance of the teacher's role and the use of classroom materials in fostering the relationship between play and literacy. However, as Pellegrini and Galda (1991) claimed, "there is a paucity of longitudinal data addressing the relationship between symbolic play and emergent literacy" (p. 49).

Nelson and Gruendel (1979) recorded preschool children's conversational "scripts" of daily routines (e.g., eating, playing) during free play sessions. These researchers believed that through scripts, or representations of knowledge, a child is able to organize his or her pretend play experiences. The organization of a child's symbolic play sequences has been viewed as a precursor to literate behaviour (Eckler & Weininger, 1989; Pellegrini, 1985). Indeed, the order of events enacted during pretend play has been compared to the unfolding of a story (Wolf & Grollman, 1982).
Walker (1999) observed the dramatic play of six children between the ages of four and five years in a Head Start class for a period of two months. The children in this qualitative study incorporated elements found in stories into their play, such as the topic, setting, characters, and outcomes. Actions comparable to story mapping and revision were also evident in the young children’s dramatic play.

Rowe (1998) observed the dramatic play and book-related activities of 16 preschool children at school and of her two-year old son at home over a nine month period. In her qualitative study, Rowe found that there was a direct link between the books to which the children had been exposed and the content of dramatic play in which the preschoolers engaged. She found that the children would often act out favourite parts of stories that they had been read. The story lines would be reenacted several times during play time or over a number of days. As well, the children would repeat similar story lines or create their own interpretations of the story while engaged in pretend play.

Other positive links between play training and literate behaviours in young children have been noted in the research literature. Saltz and Johnson (1974) studied 80 preschool children from low income backgrounds who were assigned to one of four conditions: thematic-fantasy play training, dimensionality training, thematic-fantasy play and dimensionality training, and a control condition. To control for intelligence, various subtests of the WPPSI were administered. The children’s play was observed in each of the four classrooms for 400 minutes. Those children in the thematic-fantasy play training condition engaged in more dramatic play, scored higher on an interpersonal perception assessment, recalled more story sequences, and retold stories better than the control group. Their utterances were longer, contained more connector words, and included more inferences in comparison to the control group. However, Pellegrini (1985) noted that the thematic-fantasy play training condition was confounded by adult intervention in the
children's play in both this study and in their later study (Saltz, Dixon, & Johnson, 1977), thereby calling into question the results.

Pellegrini and Galda (1982) studied the story retelling abilities of 108 children in kindergarten through grade two. The children were assigned randomly to one of three conditions for three 30-minute sessions: thematic-fantasy play, discussion, and drawing. The children who received thematic-fantasy play training demonstrated better story comprehension than children in the discussion and drawing groups, particularly at the kindergarten and grade one level. Again, Pellegrini (1985) later noted two confounding variables in his study: the retelling measures used and adult intervention in the play training condition. Therefore, any results of this study need to be interpreted with caution.

Silvern, Taylor, Williamson, Surbeck, and Kelley (1986) explored the issue of adult intervention in thematic-fantasy play training in their study of 505 children from kindergarten to grade three. In their first experiment, the children were divided into either a play training group or a control group. Story recall pretests and posttests were conducted. Following the treatment sessions, the findings revealed that the children in the thematic-fantasy play training condition had significantly better story recall than those children in the control condition. However, the degree to which the adults had intervened could not be established. Therefore, in their second experiment, the effect of adult intervention in the play training condition was addressed. The same researchers studied 340 children from kindergarten to grade three. This time, three conditions were provided: facilitative play condition, directive play condition, and control condition. In all three conditions, the stories were discussed with the children, and both familiar and unfamiliar stories were used. Once again, children in both the facilitative and directive play condition had better story recall than those children in the discussion only condition. As no significant differences between the two play conditions emerged, the authors concluded that the results were due to the effects of play and not due to adult intervention.
Finally, Pellegrini (1980) conducted one of the few studies relating play and academic achievement. In his study, the play behaviours of 65 kindergarten children were observed for 100 minutes, using the four stages of play development devised by Smilansky (1968). To assess the kindergarten children's achievement level, reading and language components of the Metropolitan Readiness Test (MRT) were administered, in addition to a writing fluency measure. The results indicated that play was correlated positively with language ($r = .42, p < .001$), reading ($r = .75, p < .001$), and writing ($r = .50, p < .001$). However, as Christie (1991b) noted, Pellegrini did not control for intelligence in his study. With so few studies on children's play and academic achievement, this is one area in which more research needs to be conducted in the future.

1.4 Disadvantages of Standardized Testing With Young Children

Standardized tests that purport to assess cognitive abilities in very young children often do not yield valid or reliable results, especially when assessments are administered to participants under 2 years of age (Pellegrini, 1998; Ramey, Campbell, & Wasik, 1982). Intelligence quotient variables in young children are unstable and subject to change (Crnic & Lamberty, 1994; Spitz, 1986), as a child's intellectual capabilities develop in an irregular manner (Lerner, 1989; Lerner, Mardell-Czudnowski, & Goldenberg, 1987; Lowenthal, 1998; Neisworth & Bagnato, 1992; Odom, Jenkins, Speltz, & DeKlyen, 1982). With the lack of satisfactory theories of intelligence (Neisworth & Bagnato, 1992) and school readiness (Crnic & Lamberty, 1994) in the early childhood domain, widespread controversy has been created. Furthermore, there is only a modest link between the cognitive abilities that can be assessed in young children, and those cognitive abilities that are required in older children to perform more advanced academic tasks such as reading, writing, etc. (Shepard & Smith, 1986). In addition, the psychometric properties of standardized intelligence tests, school readiness measures, and teacher rating scales are called into question (Hoge, 1983; Satz & Fletcher, 1988). As a result, the consistent failure of early
intelligence tests and school readiness instruments to predict a child’s future academic performance is noted in the research literature (Crnic & Lamberty, 1994; Ferinden, Jacobson, & Linden, 1970; Haring et al., 1992; Majsterek & Lord, 1991; Neisworth & Bagnato, 1992).

There are other problems in testing young children as well. Many parents distrust any type of standardized testing that potentially can label their young child. They worry that the negative effects of labelling may follow their child throughout his or her entire academic career. The fear of mislabelling a child is undeniable as well. Shepard and Smith (1986) reported that school readiness screening tools misidentify 50% of the children placed in special programs. “Given the widely acknowledged fallibility of the LD label” (Shepard & Smith, 1986, p. 80), most parents’ fears are legitimate. Within this framework, educators are somewhat hesitant to use standardized tests with very young learners, and often view the results with considerable caution. Moreover, various assessment batteries are not sensitive to or do not adequately evaluate the problems or difficulties that teachers observe and report (Hoge, 1983). As many standardized test items rely heavily on a child’s ability to express language or to display comprehension skills, weaknesses in these skills may negatively affect a child’s scores in other cognitive areas of the test (Linder, 1990). With its many limitations, the use of standardized tests to guide decisions regarding the placement of young children in various educational settings is somewhat questionable (Pellegrini, 1998). Ultimately, Keogh (1972) finds it ironic that the school psychologist, the person who has the least contact with the at-risk child, has the most influence in terms of the child’s future placement in a special education program.

1.1.5 Advantages of Play Assessment With Young Children

Observation of the play behaviours of kindergarten children within a naturalistic setting provides a rich source of information for professionals. According to Levy and Gottlieb (1984), “Play situations offer an ideal natural setting for assessing learning disabled children’s social
integration." (p. 44). The interest in play among young children appears to be universal. In fact, most studies report that children from different cultures progress through similar developmental stages of play (Sigman & Sena, 1993). Play assessment remains relatively free from cultural bias, contrasted with some traditional psychometric measures (Majsterek, 1983). Within this context, children do not need to be forced into play situations (Caplan & Caplan, 1973; Fewell & Rich, 1987).

From my experience as a primary teacher, I believe that classroom observation can be a powerful and useful student assessment tool. Careful examination of individual strengths, weaknesses, interests, approaches, and interactions can provide valuable insight into a child’s developmental level. According to Piaget (1929), any research dealing with children’s cognitive abilities should first begin with observation.

Not surprisingly, numerous researchers claim that classroom teachers provide the most accurate predictions of future student academic success or failure, in comparison to scores obtained on standardized achievement tests (Algonzine & Ysseldyke, 1986; Cowgill, Friedland, & Shapiro, 1973; Ferinden, Jacobson, & Linden, 1970; Keogh & Smith, 1970). In a similar manner, the use of teacher rating scales (Gresham, Reschly, & Carey, 1987; Hoge, 1983; Keogh & Smith, 1970) and kindergarten teachers’ anecdotal reports (Cowgill, Friedland, & Shapiro, 1973) to identify at-risk students has been shown to have significant predictive value. Since the classroom teacher has the most contact with the individual child in a learning environment, it is hardly surprising that many researchers assume that teachers play the primary role in the early identification of children’s learning problems (Ferinden, Jacobson, & Linden, 1970; Hoge, 1983; Keogh, Tchir, & Windeguth-Behn, 1974; Schaer & Crump, 1976). With the information that is gathered through play observation, teachers may be able to provide students with appropriate intervention strategies and educational objectives to enhance future student academic performance (Fewell & Rich, 1987; Majsterek, 1983).
Fewell and Rich (1987) contended that play assessments are easy to administer to young children within the classroom setting. Without specific time limits for test items, the overall test situation is more relaxed, spontaneous, and unobtrusive in nature (Fewell & Rich, 1987; Quinn & Rubin, 1984). As a result, a more accurate picture of a child’s range of capabilities can be obtained (Fewell & Kaminski, 1988; Linder, 1990). Through the use of play observation measures, children can be evaluated numerous times without their awareness of the test condition or the concern that boredom with the play materials will ensue (Schaefer, Gitlin, & Sandgrund, 1991).

Furthermore, psychometric tools often cannot be administered to children with hearing and visual impairments, speech and language delays, autism, inattentiveness, hyperactive behaviour, and social disorders (Clune et al., 1979; Fewell & Kaminski, 1988; Kalverboer, 1977; Mauk & Mauk, 1992; Neisworth & Bagnato, 1992; Quinn & Rubin, 1984; Rubin et al., 1983; Schaefer et al., 1991; Tilton & Ottinger, 1964; Weiner & Weiner, 1974). The use of play assessment can overcome these challenges relatively easily. A variety of adaptive equipment can be introduced to facilitate play in disabled children – for example, games or books with various textured surfaces for children with visual impairments; adaptive handles on toys for children with physical handicaps; switches and controls manoeuvred by the head, hand, or eyebrow, etc. (Lerner, Mardell-Czudnowski, & Goldenberg, 1987; Linder, 1990).

The advantages of naturalistic observation of children are documented widely in the research literature. Within a familiar and comfortable setting, children are not subjected to artificial testing procedures, such as an unknown test examiner, which can produce anxiety, nervousness or inhibition in young participants (Fewell & Rich, 1987; Linder, 1990; Schaefer et al., 1991). Children have been noted to alter their play patterns when unnatural changes in setting or individuals present in the classroom have occurred (Kalverboer, 1977). Testing scores may be affected negatively by a whole host of situational, affective, or motivational factors (Keogh,
Furthermore, evaluation data gathered over a period of one or perhaps even two days ultimately present only a snippet of the student's overall developmental picture. This one-dimensional form of single session testing lacks the richness and comprehensiveness that naturalistic observation over an extended period of time can yield.

In the past, the use of play observation as an assessment device for young children had been neglected (Kalverboer, 1977). By the early 1980s, a number of play assessment tools surfaced in the research literature (Linder, 1990). Issues related to children with special needs have been addressed historically by experts in the medical field. Due to the medical orientation of these practitioners, the importance of disabled children's play as a valuable clinical tool has been overlooked (Quinn & Rubin, 1984). Within the last fifteen years, advances in the area of play assessment have been noted. Nevertheless, according to Kielhofner and Barris (1984), "the measurement of play is in its infancy" (page 175). In addition, Quinn and Rubin (1984) reported a lack of valid and reliable play observation indicators for children. Finally, Rigby, Elliott, Oster, and Pollock (1993) claimed that most play assessments are either constructed poorly or have not undergone sufficient evaluation of their validity and reliability. The fundamental need for more research and development in this area is evident.

1.1.6 Early Intervention for Young Children With Learning Disabilities

Certain observable traits indicative of possible learning difficulties emerge at an early age in children. Nonetheless, it has been my personal experience as a kindergarten teacher that the majority of school administrators dismiss these early indicators on the basis of immature development. I do not believe that learning disabilities are a school-age phenomenon. Problems appear to arise much earlier than that. The view that learning disabilities are evident in preschool children is supported by other researchers and organizations (Kirk, 1987; Margalit, 1998; McCarthy, 1989; National Joint Committee on Learning Disabilities, 1985, 1986; Wiener &
Siegel, 1992). According to Turner and Wade (1982), initial manifestations of potential learning problems may develop as early as 9 to 12 months of age. For example, an infant's lack of object permanence or exploration at that age may signal difficulty with future learning experiences. Others such as McCarthy (1989) believe that at-risk indicators are present in children from birth.

The notion of early intervention for young learners is critical when the realities of our present school system are exposed. Sadly, most children with learning difficulties are not referred for educational assessments until approximately 10 years of age (Satz & Fletcher, 1988). Often, learning disabled school age children are not identified officially until midway through their elementary school education (Odom, Jenkins, Speltz, & DeKlyen, 1982). As the amount of instructional content continues to increase in subsequent grades, the gap between pupil achievement and curricular demands widens for these disabled students. After years of failure and lowered self-esteem, disabled children may qualify for additional support. Students who receive special education support services in schools are generally two or more grade levels behind their peers. With larger class sizes and fewer resources, long waiting lists for academic support services are commonplace. Yet, if children can be identified early on in their school careers, the necessary services might be provided before their problems worsen. In this way, a child has a greater hope for a more promising academic future.

In an attempt to address the issue of early identification of educationally high-risk children, the use of play observation measures to assess young children's at-risk status for learning disabilities is explored in this study. The differences in play patterns between at-risk and not at-risk kindergarten children will be examined. At-risk status in this study is defined as: (a) a score above a cutoff mark on an at-risk index constructed from a number of different measures such as report card marks, teacher nominations, special services, and grade repetition, (b) a standard score of 84 and above on the Peabody Picture Vocabulary Test-Revised (PPVT-R), and (c) no serious academic intervention, emotional difficulties, cultural differences, and medical
conditions (see Method section). It is hypothesized that common traits in the play behaviours of at-risk children will emerge to distinguish them from not at-risk children. The main purpose of this study is to provide early childhood educators with a profile of distinctive play behaviours to help identify educationally at-risk learners at an early stage in their school careers. Another primary goal is to test the value of play observation as an assessment tool. The hope is that based on the valuable information gathered through play observation, teachers will be able to provide appropriate programming strategies to best address the specific needs of their students.

1.2 Definitions

Two constructs that have been difficult for researchers to define are play (Feitelson & Ross, 1973; Fewell & Kaminski, 1988; Jobling, 1988; Kalverboer, 1977; Kooij van der & Vrijhof, 1981; Neumann, 1971; Rubin, Fein, & Vandenber, 1983; Saracho & Spodek, 1998; Silvern, Taylor, Williamson, Surbeck, & Kelley, 1986; Vandenber, 1982; Weininger & Daniel, 1992) and learning disabilities (Hammill, Leigh, McNutt, & Larsen, 1981). As Clifford and Bundy (1989) stated, "The lack of an adequate definition of play has plagued theorists and researchers for more than twenty years (Berlyne, 1966; Reilly, 1974; Rubin, Fein, & Vandenber, 1983)." (p. 203). Furthermore, a distinction between play and exploration has been proposed by other researchers (Hutt, Tyler, Hutt, & Christopherson, 1989). Indeed, as Reilly (1974) declared, "Play…is multidimensional." (p. 118)

Attempts to define the learning disabilities construct have also been met with considerable criticism and controversy over the years (Algozine & Ysseldyke, 1986; Hammill, Leigh, McNutt, & Larsen, 1981; Lerner, 1989; Senior, 1986). This is due in large part to the lack of homogeneity in the learning disabilities (LD) population (Algozine & Ysseldyke, 1986; Cowgill, Friedland, & Shapiro, 1973; Haring et al., 1992; Lerner, 1989; Smith & Luckasson, 1992; Vaughn, Hogan, Kouzemanani, & Shapiro, 1990). As a result, there is great variability in
the traits and characteristics that are found in children who later develop a learning disability (Cowgill, Friedland, & Shapiro, 1973; Keogh, Tchir, & Windeguth-Behn, 1974). In the early 1980s, a proliferation of reworked definitions for learning disabilities emerged, once again subject to widespread criticism, confusion, and disagreement. Nevertheless, for the purposes of this study, widely accepted definitions for both play and learning disabilities will be presented.

1.2.1 Play

Rubin, Fein, and Vandenberg (1983) identified six of the most commonly cited features of children’s play:

(a) “intrinsically motivated behavior neither governed by appetitive drives (Berlyne, 1960; Bruner, 1972; Garvey, 1977a; Huizinga, 1955; Klinger, 1971; Koestler, 1964; Neumann, 1971; Schartman, 1978; Vandenberg, 1978; Weisler & McCall, 1976) nor by compliance with social demands or inducements external to the behavior itself (Klinger, 1971)”

(b) “attention to means rather than ends (Bruner, 1972; Garvey, 1977a; Koestler, 1964; Miller, 1973; Piaget, 1962; Vandenberg, 1978)”

(c) “play, unlike exploration, is organism rather than stimulus dominated … (e.g., Berlyne, 1960, 1966; Hutt, 1970; Weisler & McCall, 1976)”

(d) “nonliteral (Garvey, 1977a; 1977b), simulative (Reynolds, 1972) behavior that is characterized by an ‘as if’ representational set (Sutton-Smith, 1966, 1967)”

(e) “freedom from externally imposed rules. This criterion has been used to differentiate play from games, which ‘rule out’ the flexibility said to characterize play (Bateson, 1955; Garvey, 1977a; Schwartzman, 1978)”
“requires the participant to be actively engaged in an activity. This characteristic has been used to contrast play with daydreaming, lounging, and aimless loafing (Garvey, 1977a)” (pp. 698-699)

This comprehensive definition has been accepted widely by other researchers (Clifford & Bundy, 1989; Rigby, Elliott, Oster, & Pollock, 1993), and will serve as a reference point for the purposes of this study.

According to Vygotsky (1967), “play is purposeful activity for a child” (p. 16). From the earliest stages of infancy, it is through play that a child learns (Weininger, 1979). Over the years, the positive benefits of play in the normal development of children have been documented in the research literature.

In particular, play is associated with increased social interaction and peer acceptance (Connolly & Doyle, 1984; Fewell & Rich, 1987; Smilansky, 1968). Through play, cognitive development is enhanced (Fewell & Rich, 1987; Neumann, 1971; Piaget, 1962; Saltz, Dixon, & Johnson, 1977; Smilansky, 1968). Play improves problem-solving skills (Rubin, Fein, & Vandenberg, 1983; Sylva, Bruner, & Genova, 1976) and classification skills (Rubin & Maioni, 1975). Furthermore, play fosters creativity (Feitelson & Ross, 1973; Johnson, 1976; Smilansky, 1968), and is related positively to decreases in egocentrism (Burns & Brainerd, 1979; Rubin & Maioni, 1975). The strong link between play and language development is equally significant (Casby & Della Corte, 1987; Eisert & Lamorey, 1996; Fewell & Rich, 1987; Hulme & Lunzer, 1966; Irwin & Frank, 1977; McCune Nicolich, 1981; McCune Nicholich & Bruskin, 1982; Piaget, 1962; Sigman & Sena, 1993; Wing, Gould, Yeates, & Brierly, 1977). Finally, it has been shown that play facilitates associative responding in young children (Dansky & Silverman, 1975). Without question, play is a vital part of every child’s development.
1.2.2 Learning Disabilities

Although several definitions of learning disabilities were reviewed (Hammill, 1990; Hammill et al., 1981; National Joint Committee on Learning Disabilities, 1985, 1986), one commonly used definition developed by the Learning Disabilities Association of America (LDA), formerly known as the Association for Children with Learning Disabilities (ACLD), will be used for the purposes of this study. On October 18, 1981, the Learning Disabilities Association of Canada adopted the following definition of learning disabilities:

Learning disabilities is a generic term that refers to a heterogeneous group of disorders due to identifiable or inferred central nervous system dysfunction. Such disorders may be manifested by delays in early development and/or difficulties in any of the following areas: attention, memory, reasoning, coordination, communicating, reading, writing, spelling, calculation, social competence, and emotional maturation.

Learning disabilities are intrinsic to the individual, and may affect learning and behaviour in any individual, including those with potentially average, average, or above average intelligence.

Learning disabilities are not due primarily to visual, hearing, or motor handicaps; to mental retardation, emotional disturbance, or environmental disadvantage; although they may occur concurrently with any of these.

Learning disabilities may arise from genetic variations, biochemical factors, events in the pre- to perinatal period, or any other subsequent events resulting in neurological impairment. (p. 1)

Learning disabilities has become one of the largest and fastest rising classifications in North America for children with special needs (Algozzine & Ysseldyke, 1986; Haring et al., 1992; Lerner, 1989). The incidence of learning disabilities in the school age population has been reported to range from approximately 5 to 10 per cent (Learning Disabilities Association of Canada, 1990; O'Shea, O'Shea, & Algozzine, 1998; Patton, Blackbourn, & Fad, 1996; Silver,
1989) to 28 per cent (Bryan & Bryan, 1978). In some cases, the term learning disabilities has been used and overused to describe any type of academic difficulty in children.

According to the Learning Disabilities Association of Canada (1989), “it is difficult and potentially dangerous to attempt to identify learning disabilities, per se, among preschool-age children” (p. 5). However, they do suggest that, “A preferable strategy, . . . , is to identify children ‘at risk’ of developing learning problems” (p. 5). This suggestion is repeated by other researchers as well (e.g., Lerner, 1989). Consequently, the grade one students with poor academic achievement and average ability in the present study will not be identified as learning disabled, but rather as at risk for future learning disabilities.

Three main criteria that are reflected in most definitions of learning disabilities include: (a) a discrepancy clause, (b) an exclusionary clause, and (c) an inclusionary clause. The discrepancy clause refers to the significant difference between a student’s assessed intellectual capabilities and academic performance. The exclusionary clause states that learning disabilities are not attributable primarily to visual or hearing impairments, motor handicaps, developmental delay, emotional disturbances, or cultural differences. The inclusionary clause places emphasis on processing dysfunctions, particularly in language domains. Despite these criteria, Hammill, Leigh, McNutt, and Larsen (1981) criticized earlier definitions for reinforcing “the widespread misconception that learning disabilities can neither occur in conjunction with other handicapping conditions nor in the presence of environmental, cultural, or economic disadvantage” (p. 338).

Most definitions of learning disabilities make reference to poor student academic achievement in areas such as reading, writing, or arithmetic. The present study focuses on kindergarten children who engage primarily in play and in pre-academic skills. Hence, these young children have not been exposed to the curricular demands of these core subjects at school. Nevertheless, certain clusters of traits in young children at risk for later academic problems have been identified in the research literature. Some of these characteristics include:


(c) problems with directionality (Safford, 1978)


(f) problems with visual and/or auditory perception (Kirk, 1987; Lerner et al., 1987; Lowenthal, 1998; Smith & Luckasson, 1992)

(g) poor academic readiness skills (Lowenthal, 1998; Smith & Luckasson, 1992; Wender, 1981)


(j) temporal-sequential deficits (Learning Disabilities Association of Canada, 1990)

(k) disorganization (Irwin & Frank, 1977; Lerner, 1989; Lowenthal, 1998; McCarthy, 1989; Wender, 1981)

(l) irregular patterns of development (Lerner et al., 1987; Lowenthal, 1998)

(m) perseveration (McCarthy, 1989)

In the present investigation, kindergarten teachers will use the preceding list of attributes to help define at-risk status for academic difficulty in children within the play study. At the end of the grade one year, educators will be asked to follow this same guideline to identify children at risk for future learning disabilities within the sample.
Chapter 2

LITERATURE REVIEW

2.1 Introduction

Although only a limited number of quantitative studies related to play and academic achievement have been conducted (Pellegrini, 1980), a wealth of descriptive information on play is available. In the following sections, several important dimensions of play will be discussed. The reader will be given a brief description of the most widely accepted conceptualizations of stages in play development. Next, an overview of various play observation scales will be presented. An overview of the play behaviours in children with learning disabilities and with various handicapping conditions will also be presented. With so few studies on learning disabled children's play, the play of children with handicapping conditions was examined, as it is believed that many of these children may have a learning disability in addition to their primary handicap (Hammill, 1990; Hammill et al., 1981; Lewis, Boucher, & Astell, 1992; Mauk & Mauk, 1992; Polatajko et al., 1991). The value of play as a tool for remediation purposes will be highlighted. Finally, the statement of the problem, the research question, and a series of hypotheses will be presented. The preceding dimensions are all important to the central question in this thesis, which explores the link between kindergarten children's play behaviours and future at-risk status for learning disabilities.

2.2 Stages of Play

Most play-related studies make reference to the play categories devised by Parten (1932), Piaget (1962), or Smilansky (1968). Although Lunzer (1959) developed an instrument to
measure a child's maturity through organization of play, the conceptualizations of Parten, Piaget, and Smilansky have been recognized as the most influential in the study of play.

2.2.1 Mildred Parten (1932) – Categories of Social Participation

In her widely cited study of social participation among preschool children, Parten (1932) developed six categories of social participation: (a) unoccupied behaviour, (b) solitary play, (c) onlooker behaviour, (d) parallel play, (e) associative play, and (f) cooperative or organized supplementary play. In unoccupied behaviour, the child is not engaged actively in any activity. Solitary play describes a child playing alone. Onlooker behaviour refers to the category in which the child observes the play activities of others, but does not participate in them. In parallel play, a child plays alongside another, without social interaction. Associative play involves verbal interaction between children, but with few attempts to organize the play situation. Cooperative or organized supplementary play is characterized by structure and collaboration, in which members assume an active role in the planning of the play activity.

Age changes in social participation were noted in Parten's study. Parten (1932) reported that the preschoolers engaged in more unoccupied behaviour from 2 to 3 years of age, while onlooker behaviour was found most commonly in children 2½ to 3 years of age. Solitary play was most prevalent in children who were 2½ years of age, but by 3 and 4 years of age, there was a marked decrease in solitary play activities. Parallel play was observed most frequently in children 2 years of age, while children 3 and 4 years of age participated in less parallel play. As solitary play and parallel play decreased, an increase was observed in the amount of cooperative play among children 3 years of age and older. Thus, with age the child tended to participate overall in more social forms of play.
According to Parten (1932), “Unoccupied, solitary, and onlooker activity might be considered negative indices of social activity; while parallel, associative and cooperative or organized supplementary play might be regarded as positive indices of social participation.” (p. 256).

Due to the fine distinctions between associative play and cooperative play, and the consequent difficulties in recording accurately the two types of play behaviour during observation sessions, researchers have combined data derived from these two play categories (Rubin, 1977; Rubin, Watson, & Jambor, 1978). Others such as Fein, Moorin, and Enslein (1982) reduced Parten’s six categories to two categories (i.e., solitary and social). Regardless, many researchers have used Parten’s original social play categories in free play studies (Ballard, 1981; Federlein Cairns, Lessen-Firestone, & Elliott, 1982). Furthermore, the hierarchical nature of Parten’s social play categories has been supported in the research literature. For example, Rubin, Watson, and Jambor (1978) found that younger children engaged in less advanced levels of social play. Specifically, the preschool children in their study engaged in more unoccupied behaviour, onlooker behaviour, and solitary play than the kindergarten children. In addition, the preschool children engaged in significantly less group play than the kindergarten children, but the two groups of children engaged in similar amounts of parallel play.

2.2.2 Jean Piaget (1962) – Classification of Games

Piaget (1962) outlined three stages of play development through which children progress sequentially: (a) practice games, (b) symbolic games, and (c) games with rules. Piaget’s play categories were derived from previous work published by Charlotte Bühler (1928). Her four categories of play were: (a) Funktionsspiele, (b) Fiktionsspiele, (c) Rezeptionsspiele, and (d) Konstruktionsspiele. Translated into English, the preceding categories are: (a) functional play, (b) fictional play (i.e., imaginative play), (c) receptive play (i.e., how the senses take in and
process knowledge), and (d) constructive play. Rubin, Fein, and Vandenberg (1983) referred to Piaget’s three play categories as “play counterparts of sensorimotor, preoperational, and concrete operational intelligence” (p. 705).

During the practice play period, children engage in repetitive and functional activities. An action is repeated for the sheer pleasure a child receives in performing the same act over and over (e.g., shaking a rattle, etc.). Practice play occurs during the sensorimotor stage, from birth to 2 years of age.

Symbolic play emerges during a child’s second year of life. According to Piaget, symbolic play is associated with overall cognitive development. At this time, object substitution is observed (e.g., the child uses a cup as a bird’s nest). Symbolic play occurs during the preoperational stage, which lasts from 2 to 7 years of age. Piaget claimed that a child passes through two stages of symbolic play. The first stage of symbolic play occurs from approximately 2 to 4 years of age, while the second stage of symbolic play occurs from approximately 4 to 7 years of age. During this latter stage, the child engages in more social symbolic activity.

The final and most complex play category is games with rules, which incorporates concepts such as self-control and competition. The games with rules play category is associated with the concrete operational stage, which lasts from approximately 7 to 11 years of age.

Piaget’s play categories or adaptations of his play stages have been used frequently in research studies to describe young children’s play (Federlein, 1981; Federlein Cairns, Lessen-Firestone, & Elliott, 1982; Johnson & Ershler, 1985; McCune Nicholich, 1977). The hierarchical nature of Piaget’s play stages has also been supported by McCune Nicholich (1977), who found that the five female participants in her study progressed through the various symbolic play stages in the order in which they were outlined by Piaget (1962).
2.2.3 Sara Smilansky (1968) – Stages of Play Development

Smilansky (1968) built on the earlier work of researchers such as Bühler (1928) and Piaget (1962) to conceptualize four levels of play. Smilansky’s four stages consisted of: (a) functional play (similar to practice play), (b) constructive play - children create or assemble a structure or object, (c) dramatic or symbolic play, and (d) games with rules. Other researchers have conducted studies using Smilansky’s play categories, and have concluded that dramatic play and games with rules are the two highest forms of children’s play (Pellegrini, 1980). Smilansky’s play stages are considered by researchers to reflect a child’s cognitive development (Pellegrini, 1980; Rubin, 1982a; Rubin, Maioni, & Hornung, 1976; Rubin, Watson, & Jambor, 1978). Once again, the hierarchical nature of Smilansky’s categories has been supported in the research literature (Pellegrini, 1980; Rubin & Maioni, 1975; Rubin, Watson, & Jambor, 1978). Hence, children engage in increasingly more complex cognitive forms of play with age. For example, Rubin, Watson, and Jambor (1978) found that the preschool children in their study engaged in more functional, solitary functional, and parallel functional play than the kindergarten children. Conversely, the kindergarten children in their study engaged in more dramatic play, parallel dramatic play, group dramatic play, and parallel constructive play than the preschool children.

2.2.4 Rubin, Maioni, and Hornung (1976) – Social/Cognitive Play Classification

Rubin, Maioni, and Hornung (1976) combined four of Parten’s categories of social participation (1932) with Smilansky’s four stages of play development (1968) to create a new set of social/cognitive play categories. Smilansky’s play stages were viewed by the authors as categories of cognitive play. The new play classification consisted of: (a) solitary functional play, solitary constructive play, and solitary dramatic play, (b) parallel functional play, parallel constructive play, and parallel dramatic play, (c) associative functional play, associative
constructive play, and associative dramatic play, and (d) cooperative constructive play, cooperative dramatic play, and cooperative games.

This new scheme has been used regularly in play studies by various researchers (Higginbotham & Baker, 1981; Odom, 1981; Pack & Michael, 1995; Roopnarine & Johnson, 1983). The play instrument has been subjected to various measures of stability and was found to be generally reliable in terms of stable individual differences, as long as large blocks of play were examined (Enslein & Fein, 1981; Pellegrini, 1984). Using the combined social and cognitive play categories, Rubin (1984) subsequently refined and developed the play instrument to create the Play Observation Scale: Revised. It was Rubin’s belief (1977) that the use of Parten’s social play categories alone, without the addition of the cognitive play categories, did not provide enough information about the child’s level of play.

Of particular relevance to the present study, Rubin (1982a) reported that preschool children who are occupied primarily with solitary functional play can be considered at risk for future learning problems. Rubin (1988) also referred to solitary play and sensorimotor play as less mature forms of play. This contrasts with his earlier statement (Rubin, 1977) that parallel play was the lowest form of social play.

Recently, Coplan, Rubin, Fox, Calkins, and Stewart (1997) explored young children’s nonsocial play, characterized by three sub-types: solitary-passive behaviour, solitary-active behaviour, and reticent behaviour (i.e., unoccupied behaviour, onlooker behaviour). Among their results, Coplan et al. (1997) found that reticent behaviour related to wariness, anxiety, and hovering in their sample of preschool children. Their findings also supported the notion that reticent behaviour can be considered a stable characteristic in young children rather than a changing state. A year later, Coplan and Rubin (1998) assessed the psychometric properties of their Preschool Play Behavior Scale (PPBS) with 337 preschoolers. They found that all three types of nonsocial play related to teacher ratings of internalizing problems in the preschool
children, although reticent behaviour had the highest correlation of the three nonsocial play variables. In a study of gender-related differences in kindergarten children, Molina, Coplan, and Wichmann (1999) found that reticent behaviour also related to measures of maladjustment for both genders. Clearly, as Rubin and Coplan (1998) stated, “Nonsocial play is a complex and multidimensional construct.” (p. 151).

2.2.5 Other Play Observation Scales

Over the last twenty years, many infant and preschool play observation scales have surfaced in the research literature. These scales tap numerous features of play, including object play, symbolic play, peer play, toy or activity preferences, and level of playfulness. However, many of these play instruments are constructed poorly and have not been subjected to measures of validity or reliability (Kielhofner & Barris, 1984; Li, 1981; Rigby, Elliott, Oster, & Pollock, 1993). My analysis of the research literature on play included a review of over 25 different play observation tools used primarily for research purposes (e.g., Belsky & Most, 1981; Coplan & Rubin, 1998; Doll & Elliott, 1994; Fein, Moorin, & Enslein, 1982; Fewell, 1991; Field, 1980; Lansky, List, Lansky, Cohen, & Sinks, 1985; Novak, Olley, & Kearney, 1980; Saracho, 1984; Wolfgang & Phelps, 1983).

As symbolic play appears to be the most frequently studied form of play, it is hardly surprising that many symbolic play observation scales have been developed (e.g., Gowen, 1981; Gowen & Hussey, 1986; Jeffree & McConkey, 1976; Kalverboer, 1977; Lewis, Boucher, & Astell, 1992; Lowe & Costello, 1976; Rogers, 1986; Westby, 1980). Some symbolic play scales were created to assess language acquisition (e.g., Lewis et al., 1992; Westby, 1980). Other play instruments were devised to support clinical work in fields such as occupational therapy (e.g., Bledsoe & Shepherd, 1982; Bundy, 1994; Knox, 1974; Takata, 1969). Among all these
additional play scales, only two will be described, as they were of particular relevance to the present study.

Fantuzzo et al. (1995) created the Penn Interactive Peer Play Scale (PIPPS) for use with African American Head Start preschool children. In this teacher-rating instrument, 36 variables related to social behaviour are presented under three categories: disruption, disconnection, and play interaction. Some examples of the play behaviours included in this instrument are: hovers outside play group, grabs others' things, leads other children, refuses to play when invited, and tattles. The purpose of this play scale is to identify preschoolers who have difficulty developing positive play relationships with their peers. Another aim is to recognize the child's strengths in play.

The Transdisciplinary Play-Based Assessment (TPBA; Linder, 1990) involves a team approach which capitalizes on the expertise of various professionals (i.e., speech and language pathologists, educators, physical and occupational therapists, social workers, psychologists, psychiatrists, vision specialists, and parents). Unlike multidisciplinary or interdisciplinary approaches, the participating professionals in a transdisciplinary approach are knowledgeable about the other areas being assessed concurrently. Once the child's play has been observed and videotaped for future reference, the assessment incorporates a series of steps to be followed. After the cognitive, social/emotional, motor, and language areas of development have been analyzed using specific guidelines, a number of recommendations are suggested. This comprehensive system yields an enormous amount of valuable data, from which appropriate instructional objectives and strategies for children can be developed. Furthermore, researchers have reported that the use of transdisciplinary, play-based assessment is preferred by both professionals and parents to the use of standardized assessments with young children with special needs (Myers, McBride, & Peterson, 1996).
2.3 The Play of Children With Learning Disabilities

Deficits in social skills and poor peer interactions appear to be the most commonly reported traits in children with learning disabilities (McIntosh, Vaughn, & Zaragoza, 1991; Odom, Jenkins, Speltz, & Deklyen, 1982; Vaughn, Zaragoza, Hogan, & Walker, 1993). As Gottlieb, Gottlieb, Berkell, and Levy (1986) stated, "Indeed, there appears to be consensus that learning disabled children are socially disabled as well." (p. 619). Various researchers have documented the difficulties that learning disabled students display in the interpretation of social cues (Bryan, 1977; Gerber & Zinkgraf, 1982). Furthermore, learning disabled children are ignored or rejected more often by peers than normally developing children (Bryan, 1974; Ochoa & Palmer, 1991; Vaughn & Hogan, 1994; Vaughn, Hogan, Kouzekanani, & Shapiro, 1990), and have a tendency to remain on the periphery of social groups (Martlew & Hodson, 1991). They are teased and bullied more frequently than their nondisabled peers (Martlew & Hodson, 1991). Learning disabled children are less persuasive and less assertive in conversations with their peers (Bryan, Donahue, & Pearl, 1981). Not surprisingly, teachers rate educationally at-risk children less favourably than their average ability peers (Keogh et al., 1974).

In general, children with learning disabilities exhibit more behavioural problems than their nondisabled peers (Vaughn et al., 1993). Children with learning disabilities are reported to display attention problems (Bryan, 1974; Lerner et al., 1987; Vaughn et al., 1990; Wender, 1981), and to engage in less on-task behaviour than their normally developing counterparts (Bryan, 1974; Bryan et al., 1981). A few of the behaviour problems manifested in learning disabled children include hyperactivity, disruption, and poor concentration (Saxby & Morgan, 1993; Vaughn et al., 1993), as well as inhibition, anxiety, withdrawal, and aggression (Vaughn et al., 1993).

Only a few studies have addressed play patterns in older learning disabled children (Gottlieb, Gottlieb, Berkell, & Levy, 1986). Levy and Gottlieb (1984) observed 34 learning
disabled and 34 nondisabled school age children during outdoor play. Each child was observed for a total of 90 minutes, using a modified observation instrument similar to the one used by Higginbotham and Baker (1981). The researchers found that the learning disabled children played alone more often than their nondisabled peers. This isolation was exacerbated by the inability of the learning disabled child to join in and to stay in social groups. Interestingly, the girls in this study had greater difficulty than the boys in entering play groups. No significant differences were found between the learning disabled children and the not at-risk children in the amount of play and nonplay activities in which they engaged. Contrary to the researchers’ hypotheses, the learning disabled children did not engage in less symbolic play and games with rules and in more sensorimotor play than their playmates. However, a peer status questionnaire was given to each of the study participants, and as expected, the learning disabled children were rated significantly lower than their nondisabled classmates in terms of peer acceptance.

Poidevant and Spruill (1993) observed the pretend play behaviours of 26 at-risk and 23 not at-risk children from kindergarten through grade three in a structured play setting. In this study, the at-risk children were defined as those who without intervention would experience school failure or other negative outcomes as a result of individual and family considerations or academic factors. Toys provided for the children included two monkey puppets and a school play station. Each child was observed for a total of 30 minutes. The videotaped sessions were analysed later using the Smilansky Scale for Evaluation of Sociodramatic Play (Smilansky & Shefatya, 1990). The six subscales devised by Smilansky and Shefatya included: (a) imitative role play, (b) make-believe with objects, (c) make-believe with actions and situations, (d) persistence in role-play, (e) interaction, and (f) verbal communication. The researchers found that the at-risk students engaged in significantly more imaginative play with objects than the not at-risk group. Conversely, the not at-risk group of children engaged in significantly more imaginative play with actions and situations than the at-risk sample. Thus, the not at-risk children
demonstrated more elaborated and rich conversations during the play session than the at-risk children. Furthermore, the not at-risk children verbalized more than the at-risk group of children.

Gottlieb et al. (1986) revisited the phenomenon of solitary play and peer acceptance among learning disabled children. The researchers observed the outdoor play activities of 37 learning disabled children and 37 not-at-risk children in grades 3 through 5 for 90 minutes. A peer status questionnaire was filled out by each participant. As expected, the learning disabled children engaged in more solitary play than the not-at-risk children. The learning disabled children were not as socially accepted as their nondisabled peers, as indicated by the lower scores they received on the sociometric questionnaire. Furthermore, there was a significant negative correlation between the lower peer acceptance scores and the greater amount of solitary play in which the learning disabled children engaged.

Although no longitudinal studies exist that have linked preschool children’s play patterns with subsequent learning disabilities, the Learning Disabilities Association of Canada (1990, p. 9) produced a list of possible at-risk indicators for learning disabilities in children between the ages of 3 and 5 years. This list of characteristics was generated by a survey of practitioners in various areas of the early childhood education field. Although not an exhaustive list, some of the traits observed in at-risk young children in preschool play settings included:

- difficulty learning new concepts and songs
- rocking and other perseverative actions
- inability to follow easy instructions
- lack of spatial awareness (i.e., clumsy) or rhythm
- gross motor difficulties
- engagement in isolate play after the age of 3 years
- anxious reaction to change in routine
- distractibility or impulsive behaviour
- poor risk-taker
- inability to participate in play for extended periods of time
- excessive engagement in lower levels of play (i.e., repetitive play)

2.4 The Play of Children With Other Handicapping Conditions

For many years, the play behaviours of exceptional children have been documented in the research literature. Certain exceptionalities and age ranges in children have received more attention than others. For example, Brophy and Stone-Zukowski (1984) stated that few studies have explored the differences in play behaviours between disabled and nondisabled groups of children, toddlers in particular. Although there are no studies which have dealt exclusively with the play performance of educationally at-risk kindergarten children, the play patterns of other children with special needs will be highlighted. As some researchers believe that learning disabilities often develop in association with other handicaps (e.g., Hammill, 1990; Hammill et al., 1981; Lewis, Boucher, & Astell, 1992; Mauk & Mauk, 1992; Polatajko et al., 1991), a summary of relevant studies within this domain is appropriate. Findings from play observation studies of various groups of disabled children will be described. The classifications to be covered include: hearing and visual impairment, speech and language delay, physical handicap, autism, developmental delay (e.g., Down's syndrome), and sensory integrative (SI) dysfunction.

Several common themes reappear in the play of exceptional children. Some of these patterns include: engagement in more solitary play, onlooker behaviour, and nonplay or unoccupied behaviour, limited toy exploration, inability to remain focussed on a play activity, poor symbolic play, limited or inappropriate social interaction, and less complexity and organization in play activities. Therefore, the link between play and learning disabilities as it relates to other exceptionalities will be explored in the following discussion.
2.4.1 Hearing Impairment

Higginbotham and Baker (1981) studied the play patterns of seven hearing-impaired and seven normally hearing preschoolers. The hearing-impaired children ranged in age from 47 to 66 months, while the normally hearing children ranged in age from 47 to 63 months. Outside of corrected vision, the hearing-impaired group did not have any other type of disability. Both groups of children were observed for 15 one-minute periods during free play sessions, using the social/cognitive play categories outlined by Rubin et al. (1976). In comparison with their hearing counterparts, children with impaired hearing spent a significantly greater proportion of their time in solitary play and interacted less with their classmates. The hearing-impaired children engaged in significantly less cooperative and symbolic play with their peers, but engaged in more onlooker behaviour than their normally hearing counterparts. As for cognitive play, the hearing-impaired children engaged in significantly more constructive play, in comparison to functional and dramatic play. Conversely, the normally hearing children engaged in significantly less functional play, but spent approximately equal amounts of time engaged in constructive and dramatic play. With noted deficits in both social and cognitive play skills, opportunities for further learning were limited for the children with hearing impairments. Limitations to this study include the small sample size and the brief period of time that the children’s play was observed.

Darbyshire (1977) observed the play patterns of 45 hearing-impaired children ranging in age from 3 to 8 years. Average intelligence scores among the children were obtained using the Merrill-Palmer Scale of Ability or the Wechsler Preschool and Primary Scale of Intelligence (WPPSI). The children’s play was observed both in the classroom and on the playground. The five areas assessed were: dramatic play, constructive play, games, motor play, and social interaction (solitary play, parallel play, and associative play). Although the areas assessed correspond to the social/cognitive play categories established by Rubin et al. (1976), the author did not describe the manner in which the play was observed (e.g., frequency-count, interval,
etc.), nor the total duration the children's play was observed. Despite these omissions, the results indicated that the degree of hearing loss was related to the amount of social interaction in which the child engaged; children with more profound hearing loss engaged in less social participation with their peers. Hence, the children's hearing impairment limited their ability to engage in more social play. In addition, the hearing-impaired children who possessed more advanced speech patterns exhibited more mature play behaviours than their peers with delayed speech (e.g., achieved higher scores for games).

Finally, Levy-Shiff and Hoffman (1985) studied the social interactions of 12 profoundly hearing-impaired, 12 severely hearing-impaired, and 12 normally hearing preschoolers during free play sessions. Each child was observed for four 15-minute periods, and information on 19 social behaviours was collected. The researchers reported that the profoundly hearing-impaired children engaged in significantly less peer interaction and stared more than either of the other two groups. In addition, each group of children tended to interact with other children with the same levels of hearing ability. Overall, the hearing-impaired children gestured and wandered significantly more than the normally hearing children. Once again, the hearing impairment appears to have restricted the children's general social play skills. Even with “matched” partners, the children with hearing impairments tended to show reduced levels of peer interaction.

2.4.2 Visual Impairment

Very few studies have been conducted that have explored play patterns in young children with visual deficits. Having carried out one of the few longitudinal studies of infants who were blind since birth, Fraiberg (1977) reported a serious delay in the development of object play in infants with visual handicaps. Furthermore, Fraiberg noted that children with visual impairments often displayed stereotypic behaviours (i.e., rocking movements, rubbing of the eyes, etc.).
Fraiberg and Adelson (1973) studied ten children who were visually-impaired from birth. Of these ten children, four were followed through to age five. Fraiberg and Adelson found that there was a significant delay in the ability of these visually-impaired children to use self-representation in pretend play sequences. While sighted children can represent themselves or other characters in imaginative play from approximately 2 years of age, this feature was not noted in the visually-impaired children until between 3 and 4½ years of age. A lack of spontaneous symbolic play was evident in the visually-impaired children at 2½ years of age, even with the use of verbal prompts and the presentation of toys to engage the young children. As the speech patterns of the visually-impaired children became more complex (i.e., proper pronoun usage of “I” and “you”), a corresponding growth in their symbolic play was observed.

2.4.3 Language Delay and Speech Impairment

Since play and language development may be linked, it is expected that children with language delays or speech impairments will exhibit noticeable lags in their play performance. In fact, as noted in the play of other exceptional children, children with speech and language delays tend to engage in less social play behaviour. For example, as some researchers have reported, there is a tendency for speech, language-delayed, and learning disabled children to remain on the periphery of social groupings (Hadley & Rice, 1991; Martlew & Hodson, 1991).

Hadley and Rice (1991) observed free play behaviours in 4 language-impaired, 4 speech-impaired, 4 previously language- or speech-impaired, and 6 normally developing preschoolers. Each child's play was observed for a total of 24 minutes, and certain patterns were identified. The language- and speech-impaired children engaged in less peer interaction than the marginal and normally developing groups. Initiations by the language- and speech-impaired children were ignored twice as often by peers, when compared to the marginal and normally developing groups. Furthermore, the language- and speech-impaired children responded significantly less to
peers than the normally developing children. Indeed, the lack of positive social interactions in a play situation with these children is similar to social patterns found in children with learning disabilities.

Lovell, Hoyle, and Siddall (1968) examined the play patterns and utterances of 10 speech-impaired and 10 normally speaking preschoolers, matched for age, gender, socioeconomic status, and approximate intelligence. Each child's play was observed for a total of four hours over a period of 14 weeks. Lovell, Hoyle, and Siddall found that the older speech-impaired preschoolers engaged in less organized play activities and less symbolic play than their normally speaking peers. The speech-delayed children needed concrete props to sustain their symbolic play, unlike the normally speaking control group. Furthermore, the older speech-impaired preschoolers engaged in more solitary play, while the normal speakers engaged in more group play. Finally, the authors reported a significant positive correlation between the mean number of morphemes per utterance and the duration engaged in symbolic play by the speech-impaired children. However, the authors did not provide any information on utterances for the normally speaking control group. It is notable that the lack of organization and the engagement in solitary play seen in these speech-impaired children are traits that have also been observed in children with learning disabilities.

One obvious limitation in the study by Lovell et al. (1968) was the lack of a formal play instrument for use during the observations. Instead, the play observations were handwritten and then analyzed later using Lunzer's scale (1959) and Piaget's classification system (1962). Furthermore, measures for symbolic play and games with rules were combined, as few children played games during the four hours of observation. This is hardly surprising, given that the mean age of the speech-impaired children was 3 years 11 months, while the mean age of the normally speaking control group was 3 years 10 months. As an extension of Piaget's research (1962), Rubin et al. (1976, 1978, 1983) have reported that children engage more frequently in games
with rules during the late preoperational period (6 to 7 years of age) and the concrete operations period (7 to 11 years of age). This finding has been confirmed by other researchers as well (e.g., Pellegrini, 1980). Given the diverse nature of symbolic play compared to games with rules, the combination of these two types of play by the researchers is questioned.

Roth and Clark (1987) administered measures of symbolic play and social participation to 6 language-delayed and 8 normally developing boys, ranging in age from 5 to 7 years. Results from the three play measures (i.e., the Symbolic Play Test, Lowe & Costello, 1976; the Brown-Lunzer Scale, Brown, Redmond, Bass, Liebergott, & Swope, 1975; the Scale of Social Participation in Play, Tizard, Philps, & Plewis, 1976) revealed that the language-impaired children engaged in significantly less solitary and parallel play than their nondisabled counterparts. Instead, the disabled children engaged in more nonplay situations than the control group. Deficits in adaptive and symbolic play were documented within the disabled sample, and their interest in various play activities appeared to be somewhat limited and shallow. Indeed, the duration of the play activity is reported to reflect some degree of underlying complexity (Sylva, Roy, & Painter, 1980). Obvious limitations to the study were the small sample size, and the fact that only boys participated in the study.

2.4.4 Physical Disability

Children with physical disabilities are presented with many challenges during play situations with other children. In a longitudinal study, Brooks-Gunn and Lewis (1982) followed the development of play behaviour in 111 handicapped and 150 nonhandicapped infants for a period of three years. Among the handicapped sample, the physically handicapped children engaged in the least play, in comparison to the developmentally delayed and normal groups. The physically handicapped children explored toys less and spent more time looking at the toy materials rather than manipulating them.
Jennings, Connors, Stegman, Sankaranarayan, and Mendelsohn (1985) studied the
behaviours of 25 preschool children with physical handicaps and 44 nonhandicapped preschool
children during free play sessions and structured tasks. Each child was given four tasks and was
observed during free play for a total of 40 minutes. They found that the children with physical
disabilities did not persevere at challenging tasks, in comparison to their nonhandicapped peers.
The physically disabled preschoolers were uninvolved in play significantly more often than their
normally developing peers. As well, the level of complexity in play was lower for the physically
disabled preschoolers in comparison to the control group. Finally, the children with physical
disabilities engaged in significantly more solitary play and less social play than their
nonhandicapped counterparts. Perhaps the lack of social interaction noted in the play of children
with physical handicaps exacerbates further play problems. As Oster (1984) reported, children
with physical impairments tend to play a more passive role than nondisabled children in social
situations with their peers.

A small pilot study of two physically handicapped and two nonhandicapped preschool
children (Rigby et al., 1993) revealed a number of differences in play behaviours between those
two groups of children. Each child’s play was videotaped for 30 to 45 minutes, and was assessed
later by a group consisting of occupational therapists, an early childhood educator, a
psychologist, and a parent. The disabled group of preschoolers showed considerable difficulty
responding to the play cues of their peers, and often were left out of play groups comprised of
nondisabled children. Unlike their nondisabled peers, the handicapped children engaged
primarily in solitary play, which led to infrequent verbalizations with their playmates. Their play
consisted of repetitious actions, and they frequently visited the same activity centre. A lack of
experimentation, purpose, and interest in their play was evident. Furthermore, the physically
disabled children were distracted easily from the play task.
2.4.5 Autism

Children with autism often display a wide variety of deficits (Hermelin & O'Connor, 1970). For example, stereotypic behaviours such as hand-flapping, rocking, repetitive tapping, echolalia, and others may be observed. These children may fixate on moving objects, flashing lights or shiny materials for extended periods of time. Deficits in social skills are generally apparent, and their approach to peer interaction may be largely inappropriate or too aggressive at times.

In relation to play skills, children with autism may demonstrate the most severe deficits in play development of all handicapping conditions (Mogford, 1977). One common feature noted among children with autism is a significant deficit in social play (Black, Freeman, & Montgomery, 1975; Stone & Lemanek, 1990). Symbolic play and language development are two other areas of noticeable deficiency in children with autism (Garvey, 1977; Riguet, Taylor, Benaroya, & Klein, 1981; Sigman & Sena, 1993; Sigman & Ungerer, 1984; Wing, Gould, Yeates, & Brierley, 1977). According to Wing, Gould, Yeates, and Brierley (1977), "No child with symbolic play has the complete autistic syndrome..." (p. 173). Furthermore, gestural and vocal imitation skills in autistic children are notably lacking (Sigman & Ungerer, 1984). However, no deficiency in sensorimotor skills was noted in autistic children, when compared to normal and developmentally delayed peers (Sigman & Ungerer, 1984).

As for toy use, Tilton and Ottinger (1964) found that oral and repetitive manipulation of toys differentiated autistic children from their normal and mentally retarded peers. Their sample consisted of 13 children with autism, 12 children with mental retardation, and 18 normally developing children, all between 3 and 6 years of age. After observing each child's toy play for a total of 20 minutes, the authors also found that the children with autism engaged in significantly less combinatorial use of toys than both the normal and developmentally delayed children.
Similarly, Black, Freeman, and Montgomery (1975) found that the autistic children they observed for 36 minutes often attended to objects more than to their peers. Furthermore, the five autistic boys ranging in mental age from 25 to 40 months used objects in a repetitive and inappropriate manner. Simple toy play and the inappropriate use of toys in children with autism has been noted by other researchers as well (Hughes, 1998).

Stone and Lemanek (1990) developed a social and play behaviour checklist for parents of preschool children. Twenty parents of children with autism, 14 parents of children with developmental delay, and 18 parents of nonhandicapped children completed the survey. Results from the study indicated that the autistic children differed from the other two groups of children in a number of ways. For example, according to parents, the autistic preschoolers showed less interest in social interaction with their peers than either the developmentally delayed or the normally developing children. The autistic preschoolers were less inclined to participate in symbolic play sequences and to imitate the activities of other children. Moreover, the autistic children had significantly greater difficulty entering play situations and engaging in cooperative play. Finally, parents reported that children with autism were less likely to follow rules in easy games than either of the other two groups of children.

Riguet, Taylor, Benaroya, and Klein (1981) assessed play behaviours in 10 children with autism, 10 children with Down’s syndrome, and 10 children with normal development, matched for verbal mental age. The participants took part in both structured play sessions, in which symbolic play was modeled, and free play sessions. Although the free play sessions were only 4 minutes in duration, the results indicated that the autistic children were off task more frequently than both the normal and the Down’s syndrome children. Lack of on-task behaviour is a pattern that has been observed in children with learning disabilities as well. The autistic children engaged in fewer play sequences, and had greater difficulty entering play groups in comparison to their normal and developmentally delayed counterparts. During the structured play sessions,
the autistic children demonstrated less symbolic fluency than the other two groups of children. Furthermore, the children with autism demonstrated poorer imitation skills than both the Down’s syndrome and normal groups of children.

2.4.6 Down’s Syndrome and Developmental Delay

Down’s syndrome is the most common form of developmental disability found in children. Approximately two hundred types of syndromes related to developmental delay have been identified (Goodman & Gortin, 1983). Over the past few decades, attitudes and beliefs about children with developmental delays have changed considerably. Offensive labels such as moron, cretin, mongoloid, imbecile, mental defective, and idiot, once used to refer to individuals with impaired cognitive functioning, have fallen out of use. By the early 1960s, the classification “mental retardation” gained widespread popularity. Recently, that term has been replaced with the more global terms “developmental disability” or “developmental delay”.

Play patterns of children with cognitive delays have been studied extensively. Since many earlier studies were conducted in segregated hospital settings, the findings may have been affected by confounding variables such as institutionalization (Quinn & Rubin, 1984; Rogers, 1988; Widerstrom, 1983). With the advent of integration in the early 1970s, institutions for individuals with cognitive deficits have disappeared. Furthermore, Quinn and Rubin (1984) pointed out that in many studies dealing with the play of handicapped young children, researchers did not control for various factors such as socioeconomic status, gender, mental age, and numerous handicapping conditions.

In their widely cited study, Wing, Gould, Yeates, and Brierley (1977) assessed symbolic play patterns in 108 severely retarded and autistic children, who ranged in age from 5 to 14 years. Their findings indicated that spontaneous symbolic play did not occur in children with a nonverbal mental age below 20 months. Similar findings have been documented by Fein,
Moorin, and Enslein (1982) and Nicholich (1977). Furthermore, their results supported Piaget's assertion that advances in children's play levels are tied to their cognitive development. This interplay between cognition and play serves to reinforce the link between children's play patterns and learning disabilities. Wing et al. also noted that the children with Down's syndrome often exhibited symbolic play, unlike the children with autism. As the degree of disability becomes more severe, a corresponding rise has been documented in the amount of isolation, inappropriateness, self-stimulation, and repetitive, stereotypic behaviour in the profoundly delayed child's play (Field, Roseman, De Stefano, & Koewler, 1982; Guralnick, 1981; Thompson & Berkson, 1985; Wing, Gould, Yeates, & Brierley, 1977).

Kopp, Baker, and Brown (1992) observed 15 preschool children with mild developmental delays and 15 normally developing preschool children during structured play periods. Two play sessions lasting 12 minutes each were videotaped for further analysis. The study findings revealed that the preschoolers with developmental delays engaged in more solitary play and functional play than their nondisabled peers. The children with cognitive deficits also spent considerably more time in nonplay situations than the normally developing control group. Similarly, other researchers have reported that children with developmental delays display limited or inappropriate social interaction with peers (Field, 1980; Kallam & Rettig, 1991; Kohl & Beckman, 1984; Krakow & Kopp, 1983).

Successful entry into a play group appears to be a common difficulty for children with disabilities. Lieber (1993) found comparable patterns in her study of pretend play in 15 disabled preschoolers and 15 nondisabled preschoolers. Thirty minutes of free play were videotaped and later analyzed. The children with mild developmental disabilities, cerebral palsy, and speech and language delays entered play situations in an abrupt and disruptive way, unlike their nondisabled counterparts. The disabled preschoolers received more negative responses to their play entries,
compared to the children without disabilities. She also found that disabled preschoolers displayed fewer themes during symbolic play in comparison to the nondisabled preschoolers.

Johnson and Ershler (1985) studied the play behaviours of 21 handicapped and 21 nonhandicapped preschoolers. Their play was observed for 20 one-minute sessions. The results revealed that the handicapped children engaged in lower levels of cognitive and social play than their nonhandicapped peers. For example, the handicapped preschoolers participated in significantly more solitary symbolic play, solitary functional play, parallel functional play, and interactive functional play. The nonhandicapped preschoolers engaged in significantly more parallel constructive play than their handicapped classmates. As well, the nonhandicapped children engaged in more constructive play, and substituted objects more frequently during symbolic play than their handicapped counterparts. Concrete materials or props to foster symbolic play were needed almost twice as often with the handicapped children, in comparison to their nonhandicapped classmates. Finally, the handicapped preschoolers explored toys less than the nonhandicapped children.

Brophy and Stone-Zukowski (1984) analyzed the social and play behaviours of four developmentally delayed and four nondisabled toddlers. Although the sample size was small, a total of 60 minutes of free play was videotaped over a 12-week period. In their results, it was noted that the developmentally delayed children spent a greater percentage of their free play time in onlooker behaviour and solitary play, in comparison to the nondisabled group. The toddlers with cognitive impairments interacted less often with their peers but more often with adults, when compared to the nondisabled children. Furthermore, the developmentally disabled toddlers used more gestures than their nondisabled counterparts.

Sixteen preschool children with primarily cognitive deficits and eighteen nondisabled preschoolers were observed for 40 minutes during outdoor play activities (Field, Roseman, De Stefano, & Koewler, 1981). The researchers found that the handicapped children interacted more
often with their teachers than with their playmates. They manipulated toy items less than their nondisabled peers, preferring instead to vocalize to the play materials. In a later study, Field, Roseman, De Stefano, and Koewler (1982) found that developmentally delayed preschoolers once again manipulated toys less, verbalized less, and did not share toys as readily as their nonhandicapped peers. Kohl and Beckman (1984) also reported that children with cognitive delays tended to verbalize less. This trait is no doubt a function of their poorer language skills (Hulme & Lunzer, 1966).

In another study related to toy use, Weiner and Weiner (1974) found that limited combinatorial use of toys was the best predictor in the toy play category to distinguish developmentally delayed children from normally developing children. Tilton and Ottinger (1964) found that developmentally delayed children combined toys significantly less than their normally developing peers. Furthermore, the delayed children engaged in more pounding activities than the nonhandicapped group of children. Other researchers have found that the play of children with developmental delays is characterized by limited toy exploration, and a preference for structured, close-ended activities (Gowen et al., 1992; Krakow & Kopp, 1983; Lerner, Mardell-Czudnowski, & Goldenberg, 1987; Sigman & Sena, 1993; Tizard & Harvey, 1977; Weiner & Weiner, 1974). Furthermore, parents of children with developmental delays have reported that rough or destructive object use is common (Mogford, 1977).

Children with Down’s syndrome and other developmental delays appear to progress through the same stages of play development as normal children, except at a slower rate (Brophy & Stone-Zukowski, 1984; Cunningham, Glenn, Wilkinson, & Sloper, 1985; Hulme & Lunzer, 1966; Krakow & Kopp, 1983; Mogford, 1977; Motti, Cicchetti, & Sroufe, 1983). Children with cognitive delays often need prompts to engage in play activities, and have difficulty focusing on one activity for any length of time (Mogford, 1977). Moreover, these children frequently engage in less mature levels of play (Johnson & Ershler, 1985; Kopp et al., 1992; Lieber, 1993).
Repetition is commonly observed in the play behaviours of children from a number of disability classifications. Developmental delay is no exception. Children with developmental disabilities tend to repeat familiar play sequences and to engage in repetitive play activities (Kooij van der & Vrijhoef, 1981; Krakow & Kopp, 1983; Lerner, Mardell-Czudnowski, & Goldenberg, 1987; Riguet et al., 1981).

2.4.7 Sensory Integrative (SI) Dysfunction

In recent years, play has become a subject of interest among practitioners in the field of occupational therapy. Children with sensory integrative (SI) dysfunction have been observed, and their play behaviours have been recorded. In Polatajko et al. (1991), sensory integration “is defined as the organization and processing of sensory stimuli required for the organism to make an adaptive response to the environment (Ayres, 1972a)” (p. 157). The link between play and occupational therapy is theory-based. According to Schaaf et al. (1987), “SI theory maintains that play behavior is related to sensory integration and that poor sensory integration will adversely affect play behavior.” (p. 62).

Clifford and Bundy (1989) studied the play behaviours of 66 boys who ranged in age from four to six years. Their sample consisted of 31 boys with sensory integrative dysfunction and 35 boys with normal development. The two measures used to record the play behaviours were the Preschool Play Scale (Bledsoe & Shepherd, 1982; Knox, 1974) and the Preschool Play Materials Preference Inventory (Wolfgang & Phelps, 1983). The authors of the study reported that the boys with sensory integrative dysfunction scored significantly lower on three of the four Preschool Play Scale measures. Specifically, the boys scored lower on two motor measures – space management and material management, and one social measure – participation. Imitation was the only area in which there was no significant difference between the two groups. The low score on the social participation measure indicated problems with peer interaction. Another feature noted
in their play was a lack of adaptability. For example, the children with sensory integrative
dysfunction played in a symbolic manner with miniature toys, but could not transfer this same
type of play to larger play materials and equipment.

Over a period of ten months, Schaaf (1990) observed the play activity of a 5-year 8-month
old boy with sensory integrative dysfunction. In addition to tactile deficits, the child displayed
language processing difficulties and weaker gross and fine motor skills. During that time, Schaaf
treated the child using sensory integrative techniques and postural activities. Play observations
were conducted in the child’s home and classroom, as well as in the occupational therapy clinic.
In the home setting, the child’s free play was videotaped for two ½-hour sessions every two
weeks. In the school setting, the teacher observed and reported on the child’s free play behaviour
every two weeks. In the occupational clinic setting, the child’s play was videotaped for two 10-
minute sessions every week.

A number of noteworthy findings were revealed in Schaaf’s rich, descriptive data. Schaaf
(1990) describes in considerable detail improvements in the child’s tactile functions, attention
span, social interactions, dramatic play, and motor skills following the occupational therapy
treatment. However, the description of the child’s play behaviours at the beginning of the
treatment program was more relevant to the aims of this thesis. According to the child’s teacher,
the student was distracted easily and often wandered around the classroom. From the videotaped
play sessions at school and at the clinic, it was noted that this child showed a preference for toys
that made a lot of noise. He engaged primarily in solitary or parallel play, and did not participate
in dramatic play very often. The child liked to create a predictable, rigid environment around
him, and tended to play with materials that could be sorted, ordered, or structured. New toy items
were explored rarely by this child. As well, the boy gravitated towards repetitive, mobile, and
cause/effect activities. Other senses such as taste and smell were used to investigate toy
materials, rather than touch.
Finally, Parham (1987) discussed some of the play deficits in preschool children with poor praxis. Parham defined praxis as "the ability to form an idea about an action, plan the action, and execute the motions necessary to carry out the action" (p. 33). Parham went on to describe some of the play behaviours of preschoolers with poor praxis or dyspraxia. The discussion on ideation (one of the three steps involved in praxis) was of particular interest. Parham claimed that preschool children with poor ideation often threw toys or engaged in simple, perseverative activities. They frequently moved large toy items around the classroom without combining them with other play items or play frameworks. Furthermore, they would not engage in spontaneous play with equipment without adult instruction.

2.4.8 Play Patterns in Children With Handicapping Conditions

The preceding summary provides the reader with a considerable amount of information about the play differences in exceptional children. Depending on the severity of the handicapping condition, the play of children with various disabilities is affected to some degree. In addition to their primary impairment, many handicapped students need remediation for learning disabilities.

Several common features in the play of disabled children emerged throughout my review of the research literature. Some of these characteristics included:

- engages in more solitary play, onlooker behaviour, and unoccupied behaviour (i.e., nonplay)
- engages in less parallel play and cooperative play
- displays limited or inappropriate interaction with peers
- verbalizes less with peers and exhibits lower levels of speech
- displays difficulties reading the social play cues of peers
- engages in limited amounts of symbolic play or displays lower levels of symbolic play
- shows an inability to engage in and to focus on a play activity for an extended period of time
• repeats actions or familiar play sequences
• explores or manipulates toys in a limited manner
• exhibits a lack of experimentation in play
• does not share toys
• wanders around the classroom
• displays difficulty in entering and in staying in play groups
• exhibits less organization and complexity in play activities

In this chapter, the links between factors such as play, learning disabilities, cognitive development, social interaction, and other exceptionalities have been explored. Therefore, it appears that play is intertwined with both social and cognitive abilities in children. By analyzing the play behaviours in children with various handicapping conditions, deficits in social and cognitive play skills were observed. Some of the same social and cognitive play skill deficits have been noted in children with learning disabilities. Thus, the play of children with other handicapping conditions provides insight into some of the underlying processes which are at work in children with learning disabilities. Ultimately, by reviewing the play behaviours of children with various handicaps, a broader picture of play and learning disabilities is presented.

2.5 Play as a Method of Remediation

The use of play as an instructional medium in the classroom has benefitted many children, especially those with various special needs. The widespread appeal of play among children of all ages facilitates its use in remedial assistance. A brief summary of successful play remediation methods will be provided for the reader. As the focus of the following section is on children’s educational difficulties and not on children’s emotional problems, types of play-based intervention aimed at the latter, such as play therapy, will not be discussed. Research studies on
the effectiveness of various play-based remediation strategies reinforce the notion that play has a positive effect on learning. In the future, perhaps play will be used on a more systematic basis to remediate educationally at-risk preschool and kindergarten children.

Play training has been recognized in the research literature for its value in fostering children’s cognitive skills (Christie, 1980), such as: classification and seriation (Garrett, Busby, & Pasnak, 1999), conservation of quantity (Golomb, Goranson Gowing, & Friedman, 1982), problem solving (Smith & Dutton, 1979; Wyver & Spence, 1999), story comprehension (Pellegrini & Galda, 1982; Saltz & Johnson, 1974; Silvern et al., 1986), memory, verbal production, and verbal comprehension (Dansky, 1980). Studies have shown that play training can enhance children’s social skills (Goldstein & Cisar, 1992; McHale & Olley, 1982; Odom, Jenkins, Speltz, & DeKlyen, 1982; Strain & Wiegerink, 1976) and play skills (Dansky, 1980; Lifter, Sulzer-Azaroff, Anderson, & Edwards Cowdery, 1993, Saltz & Johnson, 1974; Wyver & Spence, 1999). Play training has been linked to increases in children’s creativity and imaginativeness (Dansky, 1980; Feitelson & Ross, 1973), as well as to improvements in the perspective-taking ability of young children (Burns & Brainerd, 1979; Saltz & Johnson, 1974).

With both handicapped and nonhandicapped children, it has been reported that structured play training leads to increases in the complexity and in the amount of their play (Devoney, Guralnick, & Rubin, 1974).

Play tutoring involves indirect or direct participation on the part of teachers, peers, or other play facilitators. In her well-known study of disadvantaged Israeli preschoolers, Smilansky (1968) essentially pioneered the notion of play training. She created a number of approaches to be adopted in a play training situation.

The first method requires teachers to ask questions, to make suggestions, and to discuss the play activity, but to not engage actively in it. Furthermore, the teacher needs to prepare the play setting with sufficient materials to promote engagement in dramatic play.
By contrast, teachers assume a more direct role in Smilansky’s second procedure. The play facilitators or “coplayers” accept a part in dramatic play sequences in order to extend the play and to model the specific play behaviours in question. Another way that teachers intervene directly is to teach specific play skills without assuming a role in dramatic play.

Finally, the third approach combines the first two approaches. Therefore, the teacher prepares the dramatic play environment, engages the children in meaningful discussion about the dramatic play themes, and teaches specific dramatic play skills. Not surprisingly, those children who received the second and third treatments displayed greater increases in sociodramatic play levels than those children in the first treatment group. In addition, those children who received the combined approaches of the third treatment performed better than those children in the second treatment group.

Ideally, the role of teacher as play facilitator occurs in all preschool and kindergarten classrooms. Realistically speaking, however, this is often not the case. In order to stimulate intellectual development in young children, the teacher needs to enter the play episode and to extend it to a higher, more complex level. Vygotsky (1967) claimed that through play, a “zone of proximal development” (p. 16) is created, whereby a child reaches a higher level of performance.

Other approaches such as modeling and mental imagery (Greerson, 1986) have been used successfully with preschoolers with learning problems to further skill acquisition. As well, Brown, Althouse, and Anfin (1993) established a seven-step guided dramatization procedure to enhance social competence among handicapped children within a play environment. Similarly, Michelman (1974) referred to researchers who have claimed that through art activities, children develop better spatial awareness and visual competencies. In turn, these skills contribute to superior student performance in the reading domain.

As noted in the preceding discussion, play experiences can be incorporated into remedial efforts for exceptional children in a variety of ways that serve to promote growth in many
developmental domains. The possibilities are promising for intervention through play in children with various disabilities.

2.6 Statement of the Problem

Currently, there are no reliable psychometric tests that can predict accurately future learning disabilities in preschool or kindergarten children. In fact, learning disabilities are viewed by many researchers as a school age phenomenon. Although remedial education is available for elementary school children, in too many cases this assistance is delayed. For preschool children with learning disabilities in Canada, few options currently exist (Wiener & Siegel, 1992). Without early identification or intervention for potential learning problems, many children suffer years of academic failure and subsequent lowered self-esteem before assistance is provided.

The present model for special education services in Canadian schools embraces a restorative approach to program delivery (Jordan, 1994). Due to the ineffectiveness of this deficit approach, a gradual shift towards preventive measures in the educational arena has been observed. With these changes in orientation, the need for an early identification screening tool for at-risk learners is evident. Consequently, the value of play observation as an assessment tool has received considerable attention in recent years.

2.7 Research Question

Which play behaviours in kindergarten children predict future at-risk status for learning disabilities?

2.8 Hypotheses

1. Kindergarten children who later develop at-risk status for learning disabilities will display earlier deficits in social play skills, in comparison to their not at-risk peers.
(a) Kindergarten children who later develop at-risk status for learning disabilities will have
difficulties in entering and in remaining in social play groups.
(b) Kindergarten children who later develop at-risk status for learning disabilities will spend
more time engaged in lower levels of social play (i.e., unoccupied behaviour, onlooker
behaviour, solitary play) and less time engaged in higher levels of social play (i.e.,
parallel play, cooperative play).
(c) Kindergarten children who later develop at-risk status for learning disabilities will have
difficulties in interacting appropriately with their peers during free play.
(d) Kindergarten children who later develop at-risk status for learning disabilities will not
effectively communicate verbally with their peers during play.

2. Kindergarten children who later develop at-risk status for learning disabilities will
display earlier deficits in cognitive play skills, in comparison to their not at-risk peers.
(a) Kindergarten children who later develop at-risk status for learning disabilities will engage
in repetitive play activities and will reverse or use toy items upside down.
(b) Kindergarten children who later develop at-risk status for learning disabilities will spend
more time engaged in functional play and less time engaged in games and in reading.
(c) Kindergarten children who later develop at-risk status for learning disabilities will
display deficits in symbolic play.

3. Kindergarten children who later develop at-risk status for learning disabilities will
display earlier attention problems during play, in comparison to their not at-risk peers.
(a) Kindergarten children who later develop at-risk status for learning disabilities will move
frequently from one learning centre to another and will wander aimlessly around the
classroom during free play.
(b) Kindergarten children who later develop at-risk status for learning disabilities will spend less time engaged in play activities.

4. Kindergarten children who later develop at-risk status for learning disabilities will display earlier engagement in more negative play behaviour combinations (e.g., solitary play, perseveration, classroom movement, etc.) and fewer positive play behaviour combinations (e.g., cooperative play, peer communication, appropriate toy use, etc.), in comparison to their not at-risk peers.

In the next chapter, the steps taken in my study will be outlined for the reader. Information will be provided on the characteristics of the sample, the study design, the pilot study, the many variables used in the study, the types of measures used to assess the children, and the procedure that was followed.
Chapter 3

METHOD

3.1 Participants

At the beginning of this study, eight elementary schools from the Toronto District School Board (Etobicoke division) in southwestern Ontario were selected for participation. In each school, one or two kindergarten teachers were contacted to solicit their involvement in the present study. As seven of the original 50 study children transferred schools during the 1997/1998 school year, the total number of schools ultimately involved in the research project rose from eight to fifteen.

The schools were chosen from primarily English-speaking, middle-class districts. This more homogeneous population was targeted to reduce the influence of factors that could modify play patterns in young children, but which were not of central concern in this study (e.g., lower socioeconomic status has been linked to less mature forms of play in children, see Fein & Stork, 1981; Rubin, Maioni, & Hornung, 1976; Smilansky, 1968; limited English language skills may inhibit peer play, etc.). In addition to school selection, subjects were further selected for English language ability. Thus, four English as a Second Language (ESL) children were excluded from participation in the study, as their scores consistently fell below a cutoff mark on a receptive vocabulary test.

As an indicator of socioeconomic status, information regarding the parents’ level of education was collected in a family profile, along with other important data. Although there are no data for 6% of the families, it was established that parents of the rest of the children in the sample were well-educated on average. The mean number of years of education completed by
fathers was 15.0 years ($SD = 3.6$), while the mean number of years of education completed by mothers was 14.7 years ($SD = 2.5$). A high school diploma plus some university/college courses or a college certificate/diploma was earned by 25.5% of fathers and 40.4% of mothers. Furthermore, 27.5% of mothers and 42.5% of fathers earned an undergraduate or graduate degree (or advanced professional training). At the lower end of the distribution, 31.8% of fathers and 31.9% of mothers had high school education or less.

In February 1997, an information letter and parent consent form were sent home with the children ($n = 201$) from the nine afternoon kindergarten classes in the study. Parents were asked to return the consent forms to their child’s classroom teacher by the following week, if they wanted to take part in the study. Participation in the study was voluntary, and parents were given the option of withdrawing their child from the study at any point in time, should they so desire. Ultimately, no parent made this type of request. From the pool of consent forms ($n = 57$) returned to the classroom teachers, approximately five to six children were selected randomly from each of the nine classes, for a total of 50 participants.

The study sample consisted of 23 boys and 27 girls ($n = 50$). The age of the children in the study ranged from 56 to 70 months, with a mean age of 62.2 months ($SD = 3.8$). The median age of the children in the study group was 62 months.

Any randomly selected child was included in the study, provided that he or she attained a standard score of 84 or higher on the Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981). A standard score of 85 is the lowest score within the low average range of the PPVT-R. Standard scores below 85 fall into the moderately low range. Although the range for average standard PPVT-R scores is from 85 to 115, one child with a standard score of 84 was accepted into the study as the score was so close to the average range.
Specifically, the PPVT-R assesses receptive vocabulary, one aspect of general intelligence. The PPVT-R provided a screen for both English language ability and general developmental ability. Of the 50 children tested using the PPVT-R, seven were excluded from the study as their standard scores fell below the cutoff point. Therefore, the other seven children originally excluded in the random selection process were tested in order to achieve the target sample size of 50 kindergarten children. The sample group’s PPVT-R standard scores ranged from 84 to 140, with a mean score of 107.8 ($SD = 13.8$). Later in this chapter, more detailed information about the PPVT-R is provided for the reader.

The play observations took place in the nine Etobicoke kindergarten classrooms from March 1997 to June 1997. At that time, a total of 201 children were enrolled in the nine afternoon kindergarten classes. There was a range of 18 to 25 students in each class, with a mean number of 22 children. From time to time, a parent volunteer would be present in the classroom to assist the teacher.

3.2 Design

The aim of this project was to determine the predictive value of certain play behaviours in the identification of kindergarten children at risk for future learning disabilities. The presence of at-risk status for a learning disability, as determined by scores on an at-risk index, was treated as the outcome variable. It was considered in conjunction with the Peabody Picture Vocabulary Test-Revised (PPVT-R) in order to define at-risk status in a way that excluded low cognitive functioning. The PPVT-R was thus examined in the design along with the at-risk index as an “outcome” variable.

The predictor variables refer to the kindergarten children’s play behaviours that were recorded using my play observation scale and play code record (see Appendix C). The play
questionnaire that was filled out by parents provided another source of descriptive data on the kindergarten children's play. Following the methods outlined for prediction studies, the children’s play patterns (i.e., the predictor variables) were evaluated at a point in development before the determination of at-risk status for future learning disabilities (i.e., the primary outcome variable). This was a two-year, longitudinal study, with observations of the children’s play carried out during the latter part of their kindergarten year. Examination of the children’s grade one marks, referrals, and participation in special support programs was carried out at the end of the grade one year.

Within a naturalistic field setting (i.e., the kindergarten classrooms), direct observation was used. In order to collect accurate information about peer interactions and cognitive play activities, the observers had to be positioned in close proximity to the children. Hence, my role and the trained graduate student’s role as observers were not concealed from the children, and we attempted to establish a positive rapport with them. Although we were always friendly with the children, communication with them was very restricted, and responses were kept to a bare minimum. When asked by the children what we were doing, we told them that we were watching children play.

Each child’s play behaviours were recorded in written form using the play observation scale and play code record (see Appendix C) for a continuous 10-minute period. The time-sampling technique was not selected as it was believed that the full range of a child’s play patterns are not captured using this method. This sentiment is echoed by other researchers as well. For example, Pack and Michael (1995) suggested that the use of time sampling tends to fragment play sessions, as only very short snippets of play are represented. As a result, the broader picture of the play episode is not revealed.
After the play observations were carried out, all kindergarten teachers in the study later completed a survey (see Appendix F). The students’ grade one academic records (Ontario Student Records or OSRs) were examined more than one full year later. The students’ grade one teachers, blind to all study data previously gathered, were surveyed regarding their nominations for pupils at risk (see Appendix G). It was expected that by the end of the grade one school year, any significant learning problems in the areas of reading, writing, or math would have surfaced. Thus, it was hypothesized that a significant connection between the children’s play behaviours in kindergarten and at-risk status for future learning disabilities could be established at that point in time. A detailed summary of the events that occurred during the course of the study is presented in Table 1.
### Table 1

**Sequence of Events and Activities in the Play Study**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Events and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>April/June 1996</td>
<td>• Study proposal approved by ethical and research review committees at the Toronto District School Board and at the Ontario Institute for Studies in Education</td>
</tr>
<tr>
<td>June 1996</td>
<td>• Pilot study conducted in four kindergarten classrooms</td>
</tr>
<tr>
<td>January 1997</td>
<td>• Schools contacted and confirmed to take part in the larger play study</td>
</tr>
<tr>
<td>February 1997</td>
<td>• Information letter and parent consent form sent home with the kindergarten children</td>
</tr>
<tr>
<td></td>
<td>• 50 kindergarten children randomly selected for participation in the study</td>
</tr>
<tr>
<td></td>
<td>• PPVT-R administered to the kindergarten children</td>
</tr>
<tr>
<td></td>
<td>• Family profile and play questionnaire sent home to parents of all participating children</td>
</tr>
<tr>
<td>March – June 1997</td>
<td>• Children’s play observed in the nine kindergarten classrooms</td>
</tr>
<tr>
<td>June 1997</td>
<td>• Kindergarten teachers nominated any at-risk children</td>
</tr>
<tr>
<td>May 1998</td>
<td>• Kindergarten teacher surveys completed</td>
</tr>
<tr>
<td>September 1997 – June 1998</td>
<td>• “Wait and see” year in the study</td>
</tr>
<tr>
<td>June/September 1998</td>
<td>• Grade one teacher surveys completed</td>
</tr>
<tr>
<td></td>
<td>• Grade one teachers nominated any at-risk children</td>
</tr>
<tr>
<td></td>
<td>• Data collected from the 50 children’s Ontario Student Records</td>
</tr>
<tr>
<td>September 1998 – January 2000</td>
<td>• Entry and analysis of the data</td>
</tr>
<tr>
<td>January 2000 – September 2001</td>
<td>• Write-up and oral defence of the dissertation</td>
</tr>
<tr>
<td></td>
<td>• Thesis bound and published</td>
</tr>
</tbody>
</table>
3.3 Pilot Study

During the months of May 1996 and June 1996, two schools within the Toronto District School Board (Etobicoke division) were contacted to participate in the pilot study. From each school, two kindergarten teachers were approached to enlist their support in the study. One primary purpose of this smaller investigation was to refine further a newly constructed play observation scale (see Appendix C) and play questionnaire (see Appendix D). Another goal of the pilot study was to identify and to eliminate potential problems in the larger, subsequent study.

From the pool of signed consent forms, the four kindergarten teachers were asked to nominate one academically at-risk student and one academically average or above-average student \( (n = 8) \). In order to maintain consistency within the selection of the nominated at-risk sample, the kindergarten teachers were provided with a guideline of at-risk behaviours in young children. The reader is referred back to the Definitions section in chapter one for the complete list of these at-risk indicators.

Soon thereafter, the eight children in the pilot study were tested using the Peabody Picture Vocabulary Test-Revised (PPVT-R). One week later, a three-page parent questionnaire (see Appendix D) related to play was sent home with each of the eight pilot study participants. Six of the eight play questionnaires were completed and returned to the classroom teacher. From the feedback provided by both parents and teachers, the wording was changed in the larger study to clarify five of the 17 questions in the play questionnaire.

Next, individual student file folders containing copies of the play observation scale and play code record (see Appendix C) were distributed to all classroom teachers. For more details about the PPVT-R, the final versions of the play observation scale, the play code record, and the play questionnaire, the reader is referred to the Measures section found later in this chapter. The four
classroom teachers were asked to observe each of the two nominated children for two 10-minute periods during free play sessions. Before the observations were carried out, teachers were provided with stopwatches and instructions on how to use the play observation tools.

Over the next few weeks, I observed each of the eight students for four 10-minute play sessions. In combination with the teachers' observations, each child was to have been observed for a total of 60 minutes. In fact, some of the teachers had difficulty completing the observations before the end of the busy school year, so this was dropped. Despite the incomplete observations, the teachers gained familiarity with the play observation tools and found the research experience to be professionally rewarding for them.

At the end of the school year, the play questionnaires, the play observation devices, and the PPVT-R scores were reviewed. Consultation with the classroom teachers in the pilot study followed. Teachers were asked to provide any additional feedback or constructive criticism that could enhance the overall study. As a result of their comments, certain variables in the play observation scale and the play questionnaire were deleted, modified, or added. As well, other important factors that were not considered before the start of the pilot study were identified (e.g., the need for a family profile, the importance of becoming familiar with the children before withdrawing them to administer the PPVT-R, etc.).

3.4 Variables

3.4.1 Selection of the Variables

At the outset of the data analysis, it quickly became apparent that the number of variables I had originally generated needed to be reduced. Certain variables were dropped eventually from the analyses, as redundant or negligible. For example, the following combined social/cognitive play variables were dropped as little of this type of activity was observed in the sample: solitary
dramatic play, solitary games, solitary exploration, solitary reading, parallel games, parallel exploration, parallel reading, cooperative functional play, cooperative games, cooperative exploration, and cooperative reading. Although very little solitary functional play was observed, this variable was retained as it relates to preschoolers’ at-risk status in the research literature (Rubin, 1982a).

In total, 46 variables were selected for the final analyses within and between groups. These variables consisted of two outcome variables, 21 demographic/personal variables, and 23 play variables. Specifically, the two outcome variables related to the child’s at-risk status for learning disabilities (LD). The 21 demographic/personal variables pertained to child and familial attributes, as well as to the child’s academic performance. Finally, the 23 play variables referred to the individual child’s play behaviours. For a complete list of the 46 continuous, ordinal, and categorical variables used in the play study, the reader is referred to Table 2.
<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Demographic/Personal Variables</th>
<th>Outcome Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unoccupied behaviour</td>
<td>Lates</td>
<td>At-risk index</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>Absences</td>
<td>PPVT-R</td>
</tr>
<tr>
<td>Solitary play</td>
<td>Age in months</td>
<td></td>
</tr>
<tr>
<td>Parallel play</td>
<td>Number of siblings</td>
<td></td>
</tr>
<tr>
<td>Cooperative play</td>
<td>Paternal education (number of years)</td>
<td></td>
</tr>
<tr>
<td>Functional play</td>
<td>Maternal education (number of years)</td>
<td></td>
</tr>
<tr>
<td>Dramatic play</td>
<td>Grade one survey total</td>
<td></td>
</tr>
<tr>
<td>Constructive play</td>
<td>Grade one English total</td>
<td></td>
</tr>
<tr>
<td>Games with rules</td>
<td>Grade one math total</td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td>Grade one learning skills score</td>
<td></td>
</tr>
<tr>
<td>Solitary constructive play</td>
<td>Senior kindergarten reading score</td>
<td></td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>Senior kindergarten writing score</td>
<td></td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td></td>
<td></td>
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<tr>
<td>Cooperative constructive play</td>
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</tr>
<tr>
<td>Total time at centres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dramatic talk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of repeated vocalizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of positive play dichotomies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of negative play dichotomies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Measured in seconds. ° Measured as a count. ‡ Measured as a percentage. § Measured as a rate. ¶ Considered ordinal variables, but often used as continuous variables in analyses.

(table continues)
Table 2

Outcome, Predictor, and Demographic/Personal Variables Used in the Study

Categorical Variables

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Demographic/Personal Variables</th>
<th>Outcome Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solitary functional play</td>
<td>Speech problems</td>
<td>LD risk</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hand dominance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preschool experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family learning disabilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Birth order</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other family members</td>
<td></td>
</tr>
</tbody>
</table>

1Dichotomous variable. 8Variable has three values or more.

3.4.2 Training and Interrater Reliability

The issue of interrater reliability was addressed by having a trained graduate student record along with me, the children’s play behaviours for 50 ten-minute sessions (or 20% of the total play observations). The student had experience in other observational types of research with children. Over a period of two weeks, the graduate student was trained in the use of the play observation scale and the play code record. Later, 13 ten-minute training sessions took place in the classrooms, until close to perfect agreement was reached on the play scale checklist, the play codes, and the number of seconds of play in which the child engaged at each activity centre. Once the training sessions had been completed, 50 ten-minute play sessions were observed
together. Percentage agreement for those 50 play sessions was calculated by using the following equation:

\[
\frac{\text{number of agreements}}{\text{number of agreements and disagreements}} \times 100
\]

Consequently, mean percentage agreement for the play codes was 99.3, with scores ranging from 94% to 100%. Mean percentage agreement for the play scale checklist was 93.2, with scores ranging from 74% to 100%. Using the SPSS® statistical software program, Cronbach’s alpha for seconds at play was computed at .998, with scores ranging from .987 to 1.00. Overall agreement among the play codes, play scale checklist, and seconds at play was extremely acceptable at 97%.

3.5 Measures

3.5.1 Measures of Study Children and Study Family Characteristics

3.5.1 (a) Family Profile

At the beginning of the play study, each of the 50 participating kindergarten children took home a family profile for their parents to fill out. Of those 50 family profiles, 47 were completed and returned to the classroom teacher. From this form, a large amount of information was gathered concerning the background of the child and of his or her family. Some of the data collected in the family profile included: child’s date of birth, child’s siblings (including stepbrothers and stepsisters) in the home, child’s current daycare or nursery school experience, parents’ occupation, parents’ level of education, and history of learning disabilities within the immediate and extended family. Sample questions on the family profile included:
(a) What language did your child speak when (s)he first learned to talk?

(b) At the present time, are any other people living in the home (i.e., relatives, friends)?

(c) Is the child living with both parents? Mother only? Father only?

To review the complete family profile, the reader is referred to Appendix B.

3.5.1 (b) Student Reports

The kindergarten and grade one report cards of all the children in the study were reviewed in September 1998. Within the former Etobicoke board of education, teachers were provided with a list of sequential stages to help describe and to evaluate individual children’s reading and writing performance.

On those now obsolete report cards from the former Etobicoke board of education, four stages of reading and writing development were distinguished: Imitative stage, Emergent stage, Expanding stage, and Fluent stage. The lowest level of performance in reading and writing was the Imitative stage. Kindergarten children’s reading and writing abilities would fall normally within the next stage of development – the Emergent stage. Although rarely seen at the kindergarten level, the Expanding stage of reading and writing development followed. No kindergarten child in the study reached the Fluent stage of reading and writing development.

Three distinct levels existed within each of these stages of reading and writing development, which differentiated between poor, satisfactory, or good performance. The categories were labelled “being monitored”, “developing appropriately”, and “showing strength”.

Originally, there were more values for the ordinal senior kindergarten reading and writing scores, in order to distinguish between the three types of progress within each of the three stages of reading and writing development. With so few numbers in each of the cells, the nine possible
categories were collapsed into four groups: (a) Imitative stage – “being monitored”, (b) Imitative stage – “developing appropriately” and “showing strength”, (c) Emergent stage – “being monitored”, “developing appropriately”, and “showing strength”, and (d) Expanding stage – “showing strength”.

The lowest stage of reading and writing development at the kindergarten level was the Imitative stage. In order to examine it more closely, this stage was broken down slightly further than the other two stages. Most kindergarten children would have reading or writing scores that would fall into the Emergent stage of development, which is why all three levels of progress were combined into one category. Finally, very few children would have reading or writing scores that would fall into the Expanding stage, although a couple of cases were noted in this study.

By the time the children had finished grade one, a new set of report cards had been implemented province-wide by the Ontario provincial government. This meant that letter grades would now appear on report cards for all grade levels, with the exception of kindergarten. At the grade one level and above, letter grades were given for performance in each subject area. For the purposes of the study, a 12-point scoring system was set up for translating the math and English letter grades. The scores ranged from 0 for a grade of R (i.e., failure) to 12 for a grade of A+.

The math and English scores were added up over the three terms to create a total score. The total grade one math marks consisted of numeracy marks added up over the three school terms. Similarly, the total grade one English marks consisted of reading, writing, and communication marks spanning three terms. The total grade one English marks were divided by three so that the highest possible score would be the same for both English and math.

The grade one learning skills scores were also added up over three terms to produce a combined total score. A rating of “Good” received 2 points, “Satisfactory” received 1 point, and
"Needs Improvement" received 0 points. The total grade one learning skills scores represented the sum of ratings on nine habits, including independent work, initiative, homework completion, use of information, cooperation with others, conflict resolution, class participation, problem-solving, and goal setting to improve work.

The math, English, and learning skills scores were taken directly from the child's grade one report cards. It has been established that there is a moderate link between failure in grade one English and grade one math subjects, and (a) poor academic performance in high school, and (b) an incomplete high school education (Simner & Barnes, 1987). Therefore, for the purposes of the present study, the significance of the grade one English and math marks should not be underestimated.

3.5.1 (c) Grade One Teacher Survey

The high predictive value of teacher observations and reports with respect to future student academic achievement has been highlighted in the research literature (Algonzzine & Yesseldyke, 1986; Cowgill, Friedland, & Shapiro, 1973). From June 1998 to September 1998, 22 grade one teachers were interviewed. In the grade one teacher survey, 22 questions on a 5-point scale were posed (see Appendix G).

Based on research findings, expert opinion, and my own experiences as a kindergarten teacher, important aspects of each child's overall development were included in the survey. Like the English, math, and learning skills scores, the grade one teacher survey scores were added up to produce a combined total. The grade one teacher survey total included the sum of 19 evaluated items, such as: gross and fine motor skills, listening skills, ability to follow oral instructions, expressive language skills, class participation, reading and writing skills, ability to grasp new concepts, emotional state, peer interaction, overall behaviour, pace of work, ability to organize
personal belongings, independent work, ability to focus on tasks and to follow class routines, problem-solving skills, and risk-taking traits. The learning skills were rated on a 5-point scale.

The last three questions in the three-page survey were not included in the total score tabulated from the grade one teacher survey responses. These questions were analyzed separately and dealt with lates or absences, special services provided during the grade one school year, and the grade one teacher’s nomination of the child’s possible at-risk status. The reader is referred to Appendix G for the complete list of survey questions. The theoretical support for inclusion of certain questions in the survey is also provided in Appendix G. Some sample questions from the grade one teacher survey included:

(a) Can the child accurately follow oral instructions?
(b) How would you rank the child’s reading skills?
(c) Is the child able to organize effectively his/her personal belongings (i.e., knapsack, desk, homework, etc.)?

3.5.2 Measures of Outcome Variables

3.5.2 (a) Definition of At-risk Status for Future Learning Disabilities

In the following sections, the combination of three factors which were used to determine a child’s at-risk status for future learning disabilities in this study will be discussed in detail. These three factors included:

(a) a score of seven and above on the at-risk index
(b) a standard score of 84 and above on the PPVT-R
(c) no serious academic intervention, emotional difficulties, cultural differences, and medical conditions
In most school jurisdictions, children are not identified formally as having a learning disability until grade three (Smith & Luckasson, 1992). In the present study, the 50 kindergarten children were monitored only until the end of their grade one school year. Hence, the formal identification of a learning disability in any of these children could not be established so early on in their school careers. An “at-risk” status was the most that could be attributed to the participants, according to the assessment and outcome criteria outlined in the following section.

3.5.2 (b) At-risk Index

One outcome variable used in the definition of a child’s at-risk status for future learning disabilities was the child’s score on the at-risk index. To establish the at-risk status of the 50 children, a 20-point scale was devised. Scores on a three-point rating scale (0 to 2) were given for each of the assessment and outcome indicators. A child could receive a maximum of two points for each of the 10 at-risk indicators, with a highest possible score of 20 points. The 10 assessment and outcome indicators included:

(a) kindergarten teacher nomination of at-risk children
(b) grade one teacher nomination of at-risk children
(c) kindergarten report card – reading scores
(d) kindergarten report card – writing scores
(e) grade one report card – English marks
(f) grade one report card – communication marks
(g) grade one report card – math marks
(h) kindergarten special services
(i) grade one special services
(j) grade repetition (kindergarten/grade one)
In Table 3, an outline of the ranking system used to determine scores on the 20-point scale is provided.
Table 3

Ranking System for the Assessment and Outcome Indicators of the At-risk Index

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Assessment Indicators</th>
<th>0 Points</th>
<th>1 Point</th>
<th>2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kindergarten Teacher</td>
<td>No</td>
<td></td>
<td>Maybe</td>
<td>Yes</td>
</tr>
<tr>
<td>Nomination of At-risk Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Grade One Teacher</td>
<td>No</td>
<td></td>
<td>Maybe</td>
<td>Yes</td>
</tr>
<tr>
<td>Nomination of At-risk Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Kindergarten Reading/Writing Report Card Scores</td>
<td>&quot;Being monitored&quot;, &quot;Developing appropriately&quot;, or &quot;Showing strength&quot; (Emergent or Expanding Stage)</td>
<td></td>
<td>&quot;Developing appropriately&quot; or &quot;Showing strength&quot; (Imitative Stage)</td>
<td>&quot;Being monitored&quot; (Imitative Stage)</td>
</tr>
<tr>
<td>4. Grade One Report Card Grades</td>
<td>No Ds or Rs</td>
<td>Mostly As, Bs, Cs; some Ds or Rs, but &lt; # of Cs, Bs, As</td>
<td>More Ds or Rs than in the last category; # of Ds, Rs ≥ # of Cs, Bs, As</td>
<td></td>
</tr>
<tr>
<td>(English, communication, math)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
<table>
<thead>
<tr>
<th>Outcome Indicators</th>
<th>0 Points</th>
<th>1 Point</th>
<th>2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Special Services</td>
<td>No services</td>
<td>Two or fewer special services/brought to school team</td>
<td>IPRC/referral to special primary classroom or three or more special services</td>
</tr>
<tr>
<td>(kindergarten/grade one)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Grade Repetition</td>
<td>No</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>(kindergarten/grade one)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The points for the 10 at-risk indicators were added up for each of the 50 children. The scores ranged from 0 points to 17 points, with a mean of 3.3 points \((SD = 4.9)\). Cronbach’s alpha was computed for the at-risk variable and was found to be very acceptable at .93. Naturally, the higher the child’s score on the 20-point scale, the more likely the child was deemed to be educationally at risk for future learning disabilities. A summary of the distribution of points for all 50 children is provided in Table 4. It is notable that 20 of the 50 children had no academic or social-related problems in either kindergarten or grade one.

Table 4

Range, Frequency, and Percentage of Scores on the At-risk Index

<table>
<thead>
<tr>
<th>Count</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>40.0</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>16.0</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>10.0</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>6.0</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>2.0</td>
</tr>
</tbody>
</table>
When scores on the at-risk index were plotted on a histogram (see Figure 1), two natural splits occurred: one after the 5-point mark, and the other after the 9-point mark. The 5-point mark was chosen a priori as the dividing line between the children who were not at risk and those who were at risk for future learning disabilities. Therefore, children at the 5-point mark and below were considered educationally not at risk, while those children at the 7-point mark and above were considered educationally at risk. Thus, 40 of the 50 children were not considered educationally at risk, while the other 10 children were deemed to be at risk for future learning disabilities.

Recent sources have reported that approximately 5 to 10 per cent of school age children have learning disabilities (Learning Disabilities Association of Canada, 1990; O’Shea, O’Shea, & Algozzine, 1998; Patton, Blackbourn, & Fad, 1996; Silver, 1989), although the incidence of learning disabilities in children has been reported to be almost as high as 30 per cent (Bryan & Bryan, 1978; Lerner, 1989). As 20% of the children in the study were considered at risk for future learning disabilities, this number was slightly higher than most reports on the incidence of learning disabilities in the school age population. If percentiles are used, children in the 80th percentile and above (or the top 20% of the scale) were considered at risk for future learning disabilities in this study. According to Lerner, Mardell-Czudnowski, and Goldenberg (1987), it is a serious and costly mistake to under-refer (i.e., false negatives) children in need of special education services. Furthermore, it was appropriate to deem a larger percentage of the sample as at risk than reported in the literature, given the meaning of the at-risk concept (i.e., not formally labelled as learning disabled, but rather as at risk for future learning disabilities).

Once the two groups of at-risk and not at-risk children were established, an LD risk categorical variable was created. The sum of the at-risk indicators variable was split into a
categorical group of at-risk scores and not at-risk scores to create the LD risk variable (i.e., yes/no). This variable was used for future tabulations of at-risk behaviour as well.

Figure 1. At-risk Index.

![Histogram showing scores on assessment and outcome indicators]

3.5.2 (c) Peabody Picture Vocabulary Test-Revised (PPVT-R)

The second outcome variable used in the definition of a child’s at-risk status for future learning disabilities in this study was a standard score of 84 and above on the Peabody Picture Vocabulary Test-Revised (PPVT-R). The PPVT-R is a standardized test designed to assess an individual’s receptive (hearing) vocabulary for standard English. Currently, it is one of the most
popular tests used in clinical and school settings. The PPVT-R can be used with participants ranging in age from 2 years 6 months to 40 years 11 months, and can also be administered to children with handicapping conditions such as autism, cerebral palsy, and slight visual impairment.

The PPVT-R is comprised of two similar packages, with a total of 175 test items in each. Four black and white illustrations of approximately equal size appear on each test plate. The student’s task is to choose one drawing which best describes the stimulus word, given orally by the examiner (e.g., “candle”, “floating”, “pedal”, etc.). The stimulus word is presented in its singular form. Each test book contains five training items, and all test items are arranged sequentially in order of increasing difficulty.

The PPVT-R provides age equivalent scores, standard score equivalents, percentile ranks, and stanines. Standard scores have a mean of 100 and a standard deviation of 15. No special training is required to administer or to score this untimed, multiple choice test. The test is quick to administer and easy to score. The test takes approximately 10 to 20 minutes to administer.

In the test manual, correlations for test-retest reliability (.71 to .91) and split-half reliability (.61 to .88) are reported, based on scores from the standardization sample. Correlations between the original Peabody Picture Vocabulary Test (PPVT) and the PPVT-R raw scores ranged from .53 to .87, thereby establishing a reasonable level of concurrent validity. Adequate support for both content and construct validity of the PPVT-R has been demonstrated (Wiig, 1985). Data for predictive validity of the PPVT-R were not provided in the test manual.

Although not a full-scale IQ test, the PPVT-R was used to measure one aspect of intelligence, specifically receptive vocabulary. In the research literature, it has been established that receptive vocabulary as assessed by the PPVT-R correlates with academic achievement (Smith, Smith, & Dobbs, 1991) and IQ (Davis & Kramer, 1985; Kutsick, Vance, Schwarting, &
West, 1988; Smith et al., 1991). In particular, Kutsick et al. (1988) found a high correlation ($r = .83$) between PPVT-R scores and verbal IQ scores of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) in 70 preschool children at risk for future learning problems. Smith et al. (1991) found an equally high correlation ($r = .81$) between PPVT-R scores and verbal IQ scores of the Wechsler Intelligence Scale for Children-Revised (WISC-R) in 181 school-age children referred for special education services. Finally, Majsterek and Lord (1991) found a positive and significant correlation between PPVT-R scores in prekindergarten children and teacher reports of reading performance at the end of grade one. Vance and Stone (1990) reviewed the PPVT-R, and found it to be a significant improvement over the original PPVT.

Over a period of two weeks in February 1997, all 50 kindergarten children in the study were given the PPVT-R. Form L of the PPVT-R was used initially to test 49 of the 50 children. Form M was used to test all other children, as I had run out of Form L protocols. Later, two children were retested using Form M of the test, as their original results proved inconclusive. Seven out of 57 children were excluded from participating in this study, as their scores fell below the established cutoff mark.

3.5.3 Measures of Control Variables

The third set of factors used in the definition of a child's at-risk status for future learning disabilities in this study included the absences of intensive academic intervention prior to entry into grade one, emotional difficulties, cultural differences, and medical conditions. To confirm that no intensive remediation was provided to the children in the study prior to their entry into grade one, the kindergarten teacher survey was developed.
3.5.3 (a) Kindergarten Teacher Survey

After the children had completed their senior kindergarten year, all nine kindergarten teachers were surveyed about issues pertaining to parent intervention and parent identification of their child’s possible at-risk status for future learning disabilities. The purpose of collecting this type of data was to control for the effects of intensive academic intervention initiated by parents to prevent a child’s future learning disability.

It was determined that there had been a limited amount of formal intervention by parents to prevent a possible learning disability from developing before their child’s entry into grade one. As expected, fewer parents enrolled their child in academic types of programs than in recreational programs. Few parents appeared to recognize that their child might have future academic problems before such problems were highlighted later by the child’s kindergarten teacher.

During the 1996/1997 school year, the nine kindergarten teachers in the study taught a total of 408 children. Of that number, only 29 children were reported to have taken part in additional academic types of activities either during their kindergarten school year or during the summer before entry into grade one. Those activities included: occupational therapy \(n = 6\), speech therapy \(n = 13\), child development programs \(n = 2\), tutoring \(n = 3\), counselling or behaviour intervention programs \(n = 2\), and literacy training \(n = 3\). No children enrolled in summer school or academic summer camps.

Only five of the 50 children received additional academic support during their kindergarten school year. Those support services included: speech therapy \(n = 3\), literacy training \(n = 1\), and counselling \(n = 1\). Of those five children, three were identified later as being at risk for future learning disabilities, according to the definition used in this study. Therefore, only 3 of the
10 at-risk children received any type of academic intervention during their kindergarten year - speech therapy \((n = 2)\) and literacy training \((n = 1)\).

In comparison, a much higher percentage of kindergarten children were involved in one or more recreational programs throughout the school year and during the summer months before entry into grade one. For example, of the 408 kindergarten children taught that year, the kindergarten teachers estimated that the children took part in: swimming lessons \((n = 202)\), story groups \((n = 116)\), summer camp \((n = 91)\), play-based programs \((n = 83)\), gymnastics \((n = 10)\), t-ball \((n = 10)\), dance or ballet classes \((n = 10)\), soccer lessons \((n = 7)\), tennis \((n = 7)\), Sparks \((n = 4)\), and Montessori morning classes \((n = 3)\).

Within the study group of 50 children, the kindergarten teachers estimated that the children took part in: swimming lessons \((n = 27)\), summer camp \((n = 16)\), story groups \((n = 16)\), play-based programs \((n = 8)\), dance or ballet lessons \((n = 4)\), t-ball \((n = 3)\), gymnastics \((n = 2)\), tennis \((n = 2)\), Sparks \((n = 1)\), and soccer \((n = 1)\). Hence, a much higher percentage of children were involved in recreational types of activities than academic programs before their entry into grade one.

The second part of the kindergarten teacher survey dealt with parent identification of a child’s at-risk status. The kindergarten teachers were asked to report whether any parents had raised serious concerns about their child’s future academic performance before the teacher had informed the parents of their child’s problems. Of the 408 children, only 10 parents had broached the subject of their child’s possible learning problems. In the study sample, only six out of 50 children’s parents had expressed concerns to the classroom teacher. Of those six parents, only two of those parents’ children eventually were deemed to be at risk for future learning disabilities. Therefore, a majority of the parents whose children were identified later as being at
risk for future learning disabilities did not recognize that their child might have later learning
difficulties in school.

Overall, parents whose children were deemed later to be at risk for future learning
disabilities did not anticipate nor provide intensive remediation to prevent their child’s
subsequent learning problems in grade one. This lack of parent intervention served as one form
of control in the study.

3.5.3 (b) Exclusionary Clause

Most definitions of learning disabilities make reference to an exclusionary clause which
states that a learning disability is not attributed to visual or hearing impairments, motor
difficulties, developmental delay, emotional concerns, or cultural differences. Information
gathered from the children’s Ontario Student Records (OSRs) indicated that no known visual,
hearing or medical problems affected any of the 50 children. Furthermore, no children in the
study wore corrective eyeglasses.

From the 47 returned family profiles, it was established that only one child in the study
spoke another language other than English at home. However, this child also spoke English
fluently and was not deemed later to be at risk for future learning disabilities. Therefore, it can be
assumed at least tentatively, that language differences were not a factor in the learning problems
of the 10 at-risk students.

The learning problems encountered by the 10 at-risk children were not associated with any
particular family composition or emotional difficulty at home. From the returned family profiles,
it was determined that the at-risk group consisted of seven children who lived with both parents,
one child whose parents had joint custody, and another child who lived with the mother only.
None of those nine at-risk children were reported as receiving any type of counselling or
behavioural support. The status of the tenth at-risk child could not be determined as the family profile was not returned. However, this child was referred to a number of special education services in grade one, including a behaviour consultant. Since seven of the at-risk group lived with both parents and nine of the at-risk children were not referred to any behaviour consultants or counsellors, one can assume that some degree of stability existed in the lives of those children. Therefore, it appears that behavioural concerns stemming from problems in the child’s home were not the cause of the child’s learning problems in school.

3.5.4 Measures of Predictor Variables

Two types of measures were used to gather information about the play patterns in the 50 kindergarten children: (a) the classroom play observation scale and play code record, and (b) the parent play questionnaire. Important data such as engagement in various types of social and cognitive play were gathered through the play observation scale and the accompanying play code record. Although not used in the final results, the parent questionnaire provided descriptive data on the child’s play behaviours. A description of both of these instruments is provided in the following discussion. The reader is also referred to the Appendices section for samples of the play observation scale and play code record (Appendix C), and the play questionnaire (Appendix D).

3.5.4 (a) Play Observation Scale and Play Code Record

The first part of the play observation tool consists of a play behaviour checklist (see Appendix C) comprised of eleven “social play” items and 14 “cognitive play” items. The child’s code name, hand dominance, and gender were recorded during each observation session, along with the date. A section for further comments was provided in a large column next to each play
variable. As the play observation tool is a checklist, either Yes, No, or N/A could be selected for each variable during the 10-minute observation period, to indicate the presence, the absence, or the lack of applicability of the play behaviour. The reader should note that unoccupied behaviour was coded in the comments section next to the onlooker behaviour variable on the play observation scale. The variables included in the play observation scale were selected from relevant research studies, expert opinion, and my own experiences as a kindergarten teacher. The studies which pertain directly to each play variable used in the play behaviour checklist are cited in the following list.

The play behaviours in the social domain of the play observation scale comprised:

(a) engages in unoccupied behaviour (Jennings et al., 1985; Kopp et al., 1992; Parten, 1932; Roth & Clark, 1987)

(b) engages in onlooker behaviour (Brophy & Stone-Zukowski, 1984; Higginbotham & Baker, 1981; Parten, 1932)


(d) engages in parallel play (Parten, 1932)

(e) engages in cooperative play (Higginbotham & Baker, 1981; Parten, 1932; Stone & Lemanek, 1990)

(f) shares toy materials with peers (Field et al., 1982)
(g) enters play situations with ease (Hadley & Rice, 1991; Levy & Gottlieb, 1984; Lieber, 1993; Martlew & Hodson, 1991; Rigby et al., 1993; Riguet et al., 1981; Stone & Lemanek, 1990)

(h) able to remain in play groups (Levy & Gottlieb, 1984)

(i) interacts appropriately with playmates (Cowgill et al., 1973; Hermelin & O’Connor, 1970; Keogh et al., 1974; Wing et al., 1977)

(j) leads the play activity (Irwin & Frank, 1977; Smilansky, 1968)

(k) communicates thoughts and opinions effectively with peers during play (Bryan et al., 1981; Darbyshire, 1977; Field et al., 1982; Hulme & Lunzer, 1966; Kohl & Beckman, 1984; Poidevant & Spruill, 1993; Rigby et al., 1993)

The play behaviours in the cognitive domain of the play observation scale comprised:

(a) moves frequently from one learning centre to another (Cowgill et al., 1973; Irwin & Frank, 1977)

(b) exchanges toy items constantly

(c) extends or expands the play situation (evidence of complex play) (Jennings et al., 1985)

(d) uses play items in an appropriate fashion (Black et al., 1975; Mogford, 1977; Parham, 1987)

(e) wanders aimlessly around the classroom (Levy-Shiff & Hoffman, 1985; Schaaf, 1990)

(f) follows established classroom routines

(g) selects simpler play tasks

(h) selects challenging play tasks (Jennings et al., 1985)

(i) completes self-selected tasks (Cowgill et al., 1973; Wender, 1981)

(j) perseverates in play activities, themes, or movements (Black et al., 1975; Field et al., 1982; Fraiberg, 1977; Kooij van der & Vrijhof, 1981; Kopp et al., 1992; Krakow & Kopp, 1983; Learning Disabilities Association of Canada, 1990; Lerner et al., 1987; McCarthy, 1989;
(k) reverses or uses toy items or materials upside down


(m) plans play (organizes or structures carefully the play environment) (Irwin & Frank, 1977; Lovell et al., 1968; Lunzer, 1959; Parten, 1932; Schaal, 1990)

(n) explores unfamiliar materials or play experiences (e.g., takes risks) (Learning Disabilities Association of Canada, 1990; Rigby et al., 1993; Schaal, 1990; Young, 1991)

The second part of the play observation tool consisted of the play code record. One of the uses of the play code sheet was to record the type of social/cognitive play in which the child engaged at each activity centre (e.g., solitary functional play, parallel constructive play, cooperative dramatic play, etc.). An adaptation of the combined social/cognitive play categories developed by Rubin, Maioni, and Hornung (1976) was used to record the play codes in this study.

Each type of play was assigned a simple code (e.g., ONL for onlooker behaviour, SC for solitary constructive play, PF for parallel functional play, CC for cooperative constructive play, etc.) that was entered into the “Code” column. In the “Order of Centre Choices” column, information was collected about the number, order, frequency, and type of learning centres that the child visited. By numbering the order in which the child visited each centre, the observer
tracked the child’s movement around the kindergarten classroom. In the adjacent “Arrival Time” column, the observer recorded the exact time in minutes and seconds that the child arrived at any particular activity centre, using a stopwatch. Thus, the duration the child spent at each play centre could be determined. The stopwatch would be stopped if the child left the play centre to get a snack or to use the washroom. It was restarted upon the child’s return to the play activity.

On the right side of the record, a large column was provided for any other additional comments. Across the top of the play code sheet, spaces were reserved for the child’s code name and the date.

Nineteen centres that are common to most kindergarten classrooms were selected for inclusion in the play code record based on the pilot study results, expert opinion, and my experiences as a kindergarten teacher. Along the left side of the play code sheet, the following stations were listed in alphabetical order: large blocks, small blocks, books, computer, cut and paste, drawing/colouring, games, house centre, listening centre, math centre, music centre, paint station, playdough, puppets, puzzles, sand centre, science centre, water centre, and writing centre. At the bottom of the play code record, two rows were allotted for any other less common activity centres not included in the list (e.g., carpentry centre).

3.5.4 (b) Play Questionnaire

The play questionnaire (see Appendix D) was sent to families in February 1997. It provided parents with an opportunity to note in detail the play behaviours that they had observed in their child on a regular basis. The three-page questionnaire included 17 questions related to play, and was adapted from the play history developed by Takata (1969). The reader is referred to Appendix D for the complete list of questions and a summary of the play questionnaire.
responses. In addition, the theoretical support for inclusion of specific questions in the questionnaire is provided. Some sample questions from the play questionnaire included:

(a) List your child’s favourite toys or play activities.

(b) Does your child engage in pretend play (i.e., takes on the role of another character)? If so, what roles does your child assume on a regular basis?

(c) Do you believe that play is a valuable part of your child’s educational experience? Why or why not?

By the end of March 1997, a total of 48 of the 50 play questionnaires were filled out by parents and returned to the classroom teachers.

Quinn and Rubin (1984) reinforced the importance of parental play reports in providing valuable data for both handicapped and nonhandicapped children. However, it should be mentioned at the outset that parents may have responded to questions about their child’s play behaviours in a somewhat biased manner. For example, in response to one of the questions, one set of parents suggested that they played with their child between 25 and 50 hours per week. Hence, the responses should be regarded with some measure of caution. Although the findings revealed certain patterns, the descriptive data from the play questionnaire were not used in the final results. A summary of the responses to the 17 play questions is presented in Appendix D.

3.6 Procedure

The study proposal was approved by the research ethics committees of both the Toronto District School Board (Etobicoke division) and the Ontario Institute for Studies in Education in April 1996 and June 1996, respectively, with regard to ethical considerations in this research.
As the policies regarding research collection in schools within the former Etobicoke board of education were undergoing significant changes in the fall of 1996, there was a delay in contacting schools. A couple of months later, the school board's research department gave me permission to contact school principals directly. Throughout the month of January 1997, I invited a number of principals in targeted schools to take part in the play study. By the end of the month, I had arranged eight suitable schools with nine kindergarten teachers who were willing to participate in the study.

In February 1997, a consent form and letter were sent home to parents in the nine afternoon kindergarten classes, to inform them about the nature of the proposed study (see Appendix A). Parents were asked to return the signed consent form to their child's classroom teacher within one week, if they were interested in participating in the study. From the pool of returned consent forms, fifty senior kindergarten children were selected randomly for participation \(n = 50\).

In the weeks that followed, I administered the PPVT-R until a total of 50 kindergarten children had met the requirements for participation in the study. It should be noted that this was the only time during the entire play study that any personal contact with the children occurred. Soon thereafter, the family profile (see Appendix B) and the play questionnaire (see Appendix D) were distributed to all participating families. Those two forms were collected approximately one week later.

With the agreement of each of the nine kindergarten teachers, arrangements were made for me to visit the classrooms. Since many young children require repeated exposure to a person before they feel comfortable with them, I visited the schools several times before the actual play observations began. As the play observations took place well into the school year (i.e., March), the child's initial adjustment to a new school setting was not a confounding factor. The children were playing with classmates with whom they were well acquainted at that point in time.
From March 1997 to June 1997, I observed the free play behaviours of the 50 children in their kindergarten classrooms on a daily basis. I came to the nine kindergarten classrooms just before the daily scheduled block of free play began. Usually, this uninterrupted block of play time lasted between 45 and 60 minutes. During the daily free play period, I sat unobtrusively in the classrooms and observed the children’s play behaviours. A separate file folder was prepared for each child, with five play code records and five play observation scales attached inside.

Since the observations were conducted in a natural setting as the children were actively engaged and engrossed in play, most of the children in the study were unaware that their play behaviour was being recorded. Based on anecdotal notes, it appears that only in 6 of the 250 recorded play sessions (or 2.4% of the total time), children noticed that they were being observed. This seemed to occur only when there were two observers in the classroom. When children did seem to notice the observers, we would appear very busy with our work and avoided any eye contact with the child. Generally, the child quickly lost interest in us and would resume his or her play activities. As the kindergarten children became so accustomed to seeing me wandering around their classroom with folder in hand, it was easy to sit or to stand within very close proximity to the children. Since the measures used in this study did not entail personal interaction, student reactivity to the play observation methods was very minimal.

By June 1997, I had observed the play behaviours of every child in the study for a total of 50 minutes. Results from an observational study conducted by Doll and Elliott (1994) suggested that “it would require at least five 10-minute observations across several weeks to represent a preschooler’s social behaviors adequately” (p. 235). As the children’s play observations took place over a four-month period of time, they can be considered representative of a child’s typical set of play patterns. At the end of every observation day, the events that took place in each of the
classrooms and the behaviours observed were summarized in a large notebook. For a sample set of observations taken from daily field notes, the reader is referred to Appendix H.

Originally, it was hoped that each kindergarten teacher would observe the children in his or her classroom for three separate 10-minute observation periods. Due to the kindergarten teachers' busy schedules, the teachers did not observe the children's play behaviours as hoped. Nonetheless, all the kindergarten teachers were supplied with copies of the play observation scale, the play code record, and the general guidelines for play observation (see Appendix E). They were also given specific instructions on how to use the play observation devices to gather valuable information about individual students.

By the end of June 1997, each of the nine kindergarten teachers was asked to nominate any educationally at-risk kindergarten children in his or her afternoon class. In order not to influence my observations of the kindergarten children, the teacher nominations of potential at-risk students occurred after the completion of all play observations. As in the pilot study, teachers were given the list of traits commonly found in educationally at-risk preschool children that was outlined in the Definitions section. Each nominated child was to have had difficulty with at least five or more of the established criteria. From the sample of 50 students, 10 kindergarten children were nominated by their classroom teachers. Months later, the nine kindergarten teachers were surveyed to establish whether the children had received any type of academic intervention throughout their kindergarten school year or over the summer holidays. The issue of parent identification of a child’s at-risk status was also addressed in this survey (see Appendix F).

The 1997/1998 school year was a “wait and see” year in the study, while the children progressed through grade one. As the grade one curriculum is much more academic in nature than the kindergarten curriculum, it was assumed that any learning problems that the children experienced in reading, writing, or math would emerge by the end of the grade one school year.
The following June, data were collected from the children’s Ontario Student Records (OSRs). From June 1998 to September 1998, I revisited each of the eight schools to review the senior kindergarten and grade one report cards of the 50 children. Seven of the original study children had moved to nearby areas within southwestern Ontario, so follow-up with principals and former classroom teachers was necessary. By the end of September 1998, the data for all of the 50 children had been collected successfully from their report cards.

In September 1998, the children’s former grade one teachers were surveyed (see Appendix G). The grade one teachers were asked to nominate any children that they deemed to be at risk for future learning disabilities. In addition, the grade one teachers were questioned about the provision of any special services during the child’s grade one school year. It should be mentioned that the grade one teachers were blind to the kindergarten teachers’ nominations and to the information collected in the study through play observation.

By the end of September 1998, an enormous amount of data had been gathered through the family profile, the teacher surveys and reports, the parent questionnaire, the play observation devices, and the vocabulary test. This information was entered into computer spreadsheets, databases, and statistical software programs (i.e., SPSS©), in order to be analyzed.

Once all the study data had been analyzed, a brief summary of the research findings was written. This summary was mailed to the parents, administrators, and teachers of the 15 schools involved in the study.
4.1 Introduction

The variables in this study were grouped into three categories: demographic/personal variables, play variables, and outcome variables. In the first part of each section, the characteristics of each set of variables will be described. For example, the demographic/personal variables will be described, to provide a picture of what the sample was like. The characteristics of the play variables will be presented, in order to answer the question: What does play look like in the overall sample? Finally, the outcome variables will be described.

In the second part of each section, the relations among each set of variables and between various sets of variables will be highlighted. It will answer questions such as: What are the relations among the child and family variables? How do the play variables relate to each other? How does the vocabulary test relate to academic achievement? What are the relations between play and academic achievement?

In the last section of this chapter, the four general hypotheses will be answered by presenting the relations between play and the outcome variables. It will answer the question: What is the evidence regarding the hypotheses?

As many of the variables did not have normal distributions, nonparametric approaches to assessing the data were used in addition to parametric techniques. Distributions were problematic for three demographic/personal variables and four play variables, as outliers were noted. The outliers were removed for parametric analyses to reduce spurious variability, but were kept for
nonparametric analyses. Specific information on outliers for these variables will be reported in this chapter.

4.2 Demographic/Personal Variables

In the following sections, I will outline briefly some descriptive statistics on the demographic/personal variables. In order to characterize the sample, I will begin with those variables related to the participating children, then proceed with those variables related to their families. Finally, I will discuss the variables related to the children's attendance and academic performance in some detail.

4.2.1 Child Variables

Among the sample of 50 kindergarten children, the ages at the start of the study ranged from 56 months to 70 months, with a mean of 62.2 months and a standard deviation of 3.8. The 47 responses for birth order ranged from only child (n = 10), 1st (n = 12), 2nd (n = 18), and 3rd (n = 7).

There were roughly equal numbers of male and female participants - 23 boys and 27 girls. In the group of 10 at-risk children, there were seven girls and three boys.

Among those 10 children, the at-risk girls scored lower on the PPVT-R and higher on the at-risk index than did the at-risk boys, although neither of these differences reached statistical significance (ps = .08 and .50, respectively). Mean score on the PPVT-R for the at-risk girls was 94.9 (SD = 9.6), while the mean score on the PPVT-R for the at-risk boys was 111.3 (SD = 16.8). Mean score on the at-risk index for the at-risk girls was 12.4 (SD = 4.5), while the mean score on the at-risk index for the at-risk boys was 10.3 (SD = 3.2).

The two types of hand dominance directly observed in the children were right-handed or mixed (i.e., a specific hand dominance had not been established yet). A total of 38 children were...
right-handed, while the other 12 children had a mixed hand dominance (i.e., left/right). Thus, it appeared that there were no true left-handed children in the study.

During the direct observations of the children's play behaviour, any type of speech difficulty was recorded. This ranged from lisps and sound sequencing errors (e.g., “aminals”), to an inability to pronounce certain sounds or blends (e.g., “fwee” for “three”). Many of the children in the study with noticeable speech impairments already were receiving some form of speech therapy. Within my sample, 39 children had no speech impairments, while 11 children had some form of speech difficulty.

Forty-six of the 47 children who returned their family profiles spoke English at home. Only one other child first learned to speak another language before learning English, which he spoke fluently.

Finally, information regarding the child's previous preschool experience was obtained from both the play questionnaire and the family profile. Of the 48 responses, 41 children had taken part in some type of preschool, nursery school, or daycare program. For specific means and standard deviations of the continuous study children and study family variables, the reader is referred to Table 5.
Table 5

Means and Standard Deviations of the Continuous Demographic/Personal Variables

<table>
<thead>
<tr>
<th>Child Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in months</td>
<td>62.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Number of siblings</td>
<td>1.1</td>
<td>.8</td>
</tr>
<tr>
<td>Number of lates</td>
<td>2.6</td>
<td>4.2</td>
</tr>
<tr>
<td>Number of absences</td>
<td>10.3</td>
<td>8.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paternal education – number of years</td>
<td>15.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Maternal education – number of years</td>
<td>14.7</td>
<td>2.5</td>
</tr>
</tbody>
</table>

4.2.2 Family Variables

Both fathers and mothers of children in this study had obtained high levels of education. From the 47 responses, the range of educational level was wider for fathers than for mothers. The number of years of education for fathers ranged from 5 years ($n = 1$) to 24 years ($n = 1$), with a median of 14 years. Both the 5-year and 24-year level of education responses were outliers in the otherwise close to normal distribution. With these two outliers removed, the mean number of years of paternal education was 15.0 ($SD = 3.1$). Overall, 23 fathers obtained 15 years of education or more.

Years of education for mothers ranged from 12 years ($n = 9$) to 22 years ($n = 1$). Unlike the pattern for paternal education, this variable was more heavily weighted at the lower end of the distribution. From the 47 returned family profiles, 18 mothers obtained 15 years of education or more.
The 47 profiles also suggested that 33 families had no previous history of learning disabilities. Another 14 families did indicate that some type of academic difficulty was experienced by one or several family members. Specific difficulties such as dyslexia and Attention Deficit Disorder (ADD) were reported, as were more general problems in reading, writing, spelling, and math. In addition, a number of family members had attended special education classes.

Forty out of 47 children lived with both biological parents. As for the other seven children, four children lived with their mother, two children lived with one biological parent and a step-parent, while the parents of one child had joint custody. Information about the remaining three families was not available.

4.2.3 Variables Related to the Study Children's Attendance and Academic Performance

Only a few of the 50 kindergarten children were frequently late or absent. The frequency of lates ranged from 0 lates \((n = 24)\) to 41 lates \((n = 1)\), with a median of 1 late. With the outlier at 41 lates removed, the mean for the rest of the lates was 2.6 \((SD = 4.2)\).

The number of absences ranged from 0 absences \((n = 1)\) to 63 absences \((n = 1)\), with a median of 9 absences. With the outlier at 63 absences removed, the mean for the rest of the absences was 10.3 \((SD = 8.7)\). The child with 63 absences evidently missed close to three months of school. Nevertheless, another four children were absent from school more than 30 times, which again translates to more than a month of missed school time.

The senior kindergarten reading scores ranged from the Imitative stage – “being monitored” \((n = 5)\) to the Expanding stage – “showing strength” \((n = 2)\). One of the senior kindergarten children was reading at a grade 6 level, a highly unusual phenomenon. The most common stage of reading development for the 50 kindergarten children was the Emergent stage – “being monitored”, “developing appropriately”, and “showing strength” \((n = 32)\). This was followed by
the Imitative stage — "developing appropriately" and "showing strength" \( (n = 11) \), then the Imitative stage — "being monitored" \( (n = 5) \), and lastly, the Expanding stage — "showing strength" \( (n = 2) \).

The 50 senior kindergarten writing scores ranged from the Imitative stage — "being monitored" \( (n = 5) \) to the Expanding stage — "showing strength" \( (n = 1) \). Once again, the most common stage of writing development among the kindergarten children was the Emergent stage — "being monitored", "developing appropriately", and "showing strength" \( (n = 25) \). This was followed closely by the Imitative stage — "developing appropriately" and "showing strength" \( (n = 19) \), then the Imitative stage — "being monitored" \( (n = 5) \), and finally, the Expanding stage — "showing strength" \( (n = 1) \).

In the final group of academic variables, the grade one scores will be discussed: math marks, English marks, learning skills scores, and teacher survey results. To begin, the grade one math marks ranged from 4 points \( (n = 1) \) to 35 points \( (n = 2) \), with a mean of 22.8 points \( (SD = 7.6) \) and a median of 24 points. The highest possible score for this variable was 36 points.

The scores for the grade one English marks ranged from 5 points \( (n = 2) \) to 35 points \( (n = 1) \), with a mean of 21.9 points \( (SD = 7.5) \) and a median of 23.7 points. Like math, the highest possible score for the English marks was 36 points. Using this point system, any score of 9 points and under would be considered a failure or close to a failure for both the English and math marks, according to the letter grade rubrics for the Ontario provincial report cards.

The 50 grade one learning skills scores ranged from 8 points \( (n = 1) \) to 54 points \( (n = 11) \), with a mean of 37.9 points \( (SD = 14.5) \) and a median of 42 points. As judged by these measures, the grade one children in the study demonstrated relatively good learning skills, as most of the scores for this variable were at the higher end of the distribution.

Finally, the 50 grade one teacher survey scores ranged from 27 points \( (n = 1) \) to 91 points \( (n = 1) \), with a mean of 65.8 points \( (SD = 16.0) \) and a median of 66.5 points. The highest possible
score for this variable was 95 points. For a report of the means and standard deviations of the
continuous demographic/personal variables, please consult Table 5.

4.3 Relations Among the Demographic/Personal Variables

The demographic/personal variables were comprised of both continuous/ordinal and
categorical variables. Hence, a number of different parametric and nonparametric tests were used
to look at associations among them (e.g., t-tests, one-way ANOVAs, Spearman rank-order
correlations, etc.). By exploring these associations, a further description of the sample is
provided. In addition, some analyses provide support for demographic/personal variables
predicting future academic success. This is similar to the core question in the study (i.e., whether
play can predict at-risk status for future learning disabilities).

Almost all of the associations were expected (e.g., correlations between parent education
and academic achievement, kindergarten reading and writing scores, kindergarten and grade one
academic achievement, etc.). However, an important finding was that age and gender were
related significantly in this sample, $t(34.656) = 2.710, p < .01$; the mean age for the boys was
63.7 months ($SD = 4.4$), while the mean age for the girls was 60.9 months ($SD = 2.6$). As a
result, age was controlled for in most subsequent analyses. The relations found among child and
family variables in this study are presented in Table 6 and will be discussed in the following
sections.
Table 6

Intercorrelations Among the Demographic/Personal Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
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<th>9</th>
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<th>11</th>
<th>12</th>
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</thead>
<tbody>
<tr>
<td>1. Senior kindergarten reading</td>
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<tr>
<td>2. Senior kindergarten writing</td>
<td>.80**</td>
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<tr>
<td>3. Paternal education</td>
<td>.41**</td>
<td>.44**</td>
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<tr>
<td>4. Maternal education</td>
<td>.35*</td>
<td>.26</td>
<td>.50**</td>
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<tr>
<td>5. Lates</td>
<td>.04</td>
<td>.04</td>
<td>.22</td>
<td>.31*</td>
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<td>6. Absences</td>
<td>.16</td>
<td>.01</td>
<td>-.29*</td>
<td>-.05</td>
<td>.13</td>
<td>--</td>
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<tr>
<td>7. Age</td>
<td>.42**</td>
<td>.25</td>
<td>.21</td>
<td>.17</td>
<td>.00</td>
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<td>--</td>
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<tr>
<td>8. Siblings</td>
<td>.18</td>
<td>.10</td>
<td>.34*</td>
<td>.33*</td>
<td>.34*</td>
<td>-.26</td>
<td>.12</td>
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<tr>
<td>9. Grade 1 English marks</td>
<td>.65**</td>
<td>.61**</td>
<td>.37*</td>
<td>.47**</td>
<td>.05</td>
<td>-.06</td>
<td>.47**</td>
<td>.26</td>
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<tr>
<td>10. Grade 1 math marks</td>
<td>.60**</td>
<td>.52**</td>
<td>.33*</td>
<td>.41**</td>
<td>.06</td>
<td>.07</td>
<td>.46**</td>
<td>.04</td>
<td>.82**</td>
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<tr>
<td>11. Grade 1 learning skills</td>
<td>.54**</td>
<td>.47**</td>
<td>.18</td>
<td>.26</td>
<td>-.27</td>
<td>.18</td>
<td>.16</td>
<td>.04</td>
<td>.64**</td>
<td>.56**</td>
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</tr>
<tr>
<td>12. Grade 1 teacher survey</td>
<td>.50**</td>
<td>.41**</td>
<td>.14</td>
<td>.20</td>
<td>-.28*</td>
<td>.08</td>
<td>.19</td>
<td>.21</td>
<td>.72**</td>
<td>.63**</td>
<td>.84**</td>
<td>--</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01.
4.3.1 Relations Among the Child Variables

4.3.1 (a) Age/Gender

As shown in Table 6, age correlated positively with senior kindergarten reading scores, grade one English marks, and grade one math marks. The findings continued to remain significant when gender was partialled out.

In the analyses conducted among the demographic/personal variables, there was a relation between only 1 of 36 chi-square tests performed on the nine categorical demographic/personal variables — namely, gender and hand dominance, \( \chi^2(1, N = 50) = 5.469, p < .05 \). Twenty-one boys and 17 girls in the study were right-handed, while two boys and 10 girls were left-/right-handed (see Table 7).

<table>
<thead>
<tr>
<th>Hand Dominance</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed hand dominance (left/right)</td>
<td>9% (or 2 boys)</td>
<td>37% (or 10 girls)</td>
</tr>
<tr>
<td>Right-hand dominance</td>
<td>91% (or 21 boys)</td>
<td>63% (or 17 girls)</td>
</tr>
<tr>
<td>Total</td>
<td>100% or 23 boys</td>
<td>100% or 27 girls</td>
</tr>
</tbody>
</table>

4.3.1 (b) Preschool Experience

The categorical preschool experience variable (i.e., yes/no) related significantly to age, \( t(14.421) = -2.161, p < .05 \). More of the older children in the study had some type of preschool experience. Mean age of those children with preschool experience was 62.5 months (SD = 4.0),
while the mean age of those children without preschool experience was 60.3 months ($SD = 2.1$).

As age and gender were related in this study, a two-way analysis of variance (ANOVA) was performed with age as the dependent variable, and preschool experience and gender as the fixed factors. The gender factor was significant, $F(1, 44) = 6.751, p < .05$. Both the preschool experience factor and the interaction between gender and preschool experience were nonsignificant.

Furthermore, preschool experience related to higher total math marks in grade one, $t(46) = -2.212, p < .05$. Mean total math marks for those children with preschool experience was 24.0 ($SD = 7.1$), while the mean total math marks for those children without preschool experience was 17.4 ($SD = 8.2$). Perhaps this was due to the fact that the children who scored higher in math were older. A one-way analysis of covariance (ANCOVA) was performed, with math marks as the dependent variable, age as the covariate, and preschool experience as the fixed factor. The age covariate was significant, $F(1, 45) = 11.969, p < .001$, while the preschool experience factor was no longer significant, $F(1, 45) = 2.985, p = .09$, thereby confirming this hypothesis.

### 4.3.1 (c) Speech Problems

In this study, speech difficulties appeared to be somewhat predictive of academic performance in both kindergarten and in grade one. The categorical speech problem variable (i.e., yes/no) related to senior kindergarten reading scores, senior kindergarten writing scores, grade one English marks, and grade one teacher survey scores. Therefore, kindergarten children with poor speech patterns scored significantly lower on senior kindergarten reading and writing scores than their classmates with normal speech. As well, those grade one children with speech difficulties scored significantly lower in English and on the grade one teacher survey than their peers without speech problems (see Table 8).
Table 8

Relations Between Speech Problems and Academic Performance (T-tests)

<table>
<thead>
<tr>
<th>Continuous Variable</th>
<th>df</th>
<th>Yes M</th>
<th>Yes SD</th>
<th>No M</th>
<th>No SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior kindergarten reading scores</td>
<td>48</td>
<td>1.1</td>
<td>.8</td>
<td>1.8</td>
<td>.6</td>
<td>2.946**</td>
</tr>
<tr>
<td>Senior kindergarten writing scores</td>
<td>48</td>
<td>.9</td>
<td>.7</td>
<td>1.6</td>
<td>.6</td>
<td>3.062**</td>
</tr>
<tr>
<td>Grade 1 English marks</td>
<td>48</td>
<td>17.7</td>
<td>8.6</td>
<td>23.1</td>
<td>6.8</td>
<td>2.190*</td>
</tr>
<tr>
<td>Grade 1 teacher survey</td>
<td>48</td>
<td>56.5</td>
<td>17.7</td>
<td>68.4</td>
<td>14.7</td>
<td>2.283*</td>
</tr>
</tbody>
</table>

*Considered ordinal variables, but often used as continuous variables in analyses; **Highest possible score = 36; **Highest possible score = 95.

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

4.3.1 (d) Kindergarten and Grade One Achievement

As expected, the senior kindergarten reading and writing scores related positively to the overall grade one assessment measures. This pattern reinforces the notion that kindergarten teachers can predict with good accuracy the future academic performance of their students. There was a strong correlation between senior kindergarten reading scores and senior kindergarten writing scores. Furthermore, another cluster of strong correlations existed among the various measures of grade one academic achievement. Those academic clusters are reported in Table 6.

The grade one math marks related significantly to gender; boys scored higher than girls, t(48) = 2.604, p < .05. The mean math score for boys was 25.7 points (SD = 6.3), while the mean math score for girls was 20.4 points (SD = 7.8). A one-way analysis of covariance (ANCOVA)
was performed, with math marks as the dependent variable, age as the covariate, and gender as the fixed factor. The age covariate was significant, $F(1, 47) = 11.296, p < .05$, but the gender factor was no longer significant, $F(1, 47) = 2.545, p = .12$.

4.3.2 Relations of the Child Variables With the Family Variables

4.3.2 (a) Parent Education

As presented in Table 6, paternal education correlated positively with senior kindergarten reading scores, senior kindergarten writing scores, grade one English marks, and grade one math marks. There were also positive correlations between maternal education and senior kindergarten reading scores, grade one English marks, and grade one math marks. As expected, there was a somewhat stronger correlation between paternal education and maternal education.

4.4 Play Variables

4.4.1 Characteristics of the Play Variables

Data for each of the 23 play variables were gathered through direct observation of the 50 kindergarten children during free play sessions in their classrooms. Each child was observed for five 10-minute play periods, for a total of 50 minutes. Observers used the play observation scale and the play code record to collect the data. As outlined in the Method section, the 23 play variables in this study were represented in a variety of forms: duration in seconds, dichotomies, counts, percentages, and rates. In the ensuing sections, the nature of each of the 23 play variables will be discussed in further detail.

4.4.1 (a) Categories of Social Participation

Unoccupied behaviour was observed rarely in this study. Of the 50 children, only 9 spent any time in unoccupied behaviour. The unoccupied behaviour times ranged from 0 seconds
Onlooker behaviour was somewhat more common. Of the 39 children who engaged in onlooker behaviour, times ranged from 0 seconds \((n = 11)\) to 582 seconds \((n = 1)\). Another 13 children engaged in one minute of onlooker behaviour or less.

The pattern for solitary play was similar. Solitary play times ranged from 0 seconds \((n = 11)\) to 1949 seconds \((n = 1)\). Over the entire 50-minute play observation session, 29 children engaged in solitary play for only three minutes or less.

Higher participation rates in the more complex types of social play were noted. Parallel play, for example, was a frequent form of social play among the kindergarten children in this study. The parallel play times ranged from 0 seconds \((n = 2)\) to 2955 seconds \((n = 1)\). Two children were not recorded as engaging in any parallel play at all, having spent almost all of their time engaged in cooperative play. Thirty-six children engaged in 10 minutes of parallel play or more during the 50-minute observation period.

Cooperative play was prevalent among the kindergarten children in this study as well. The duration of cooperative play in which the children engaged ranged from 0 seconds \((n = 4)\) to 2955 seconds \((n = 1)\). Overall, 40 children engaged in 10 minutes of cooperative play or more during the 50-minute play observation sessions. The means and standard deviations of the preceding play variables are presented in Table 9.
<table>
<thead>
<tr>
<th>Continuous Play Variablea</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unoccupied behaviour</td>
<td>8.6</td>
<td>22.6</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>132.2</td>
<td>153.1</td>
</tr>
<tr>
<td>Solitary play</td>
<td>323.6</td>
<td>428.5</td>
</tr>
<tr>
<td>Parallel play</td>
<td>1177.4</td>
<td>792.5</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>1273.4</td>
<td>834.2</td>
</tr>
</tbody>
</table>

*aNumber of seconds observed out of a total of 3000 seconds.

4.4.1 (b) Cognitive Levels of Play

As for cognitive play variables, functional play was recorded infrequently during the play observation sessions. Within the 50-minute observation period, 23 children did not engage in any functional play at all. The duration of functional play ranged from 0 seconds \((n = 23)\) to 960 seconds \((n = 1)\), with a median of 15.0 seconds. Within the functional play distribution, there were two outliers: one at the 930 second mark; the other at the 960 second mark. With these two outliers removed, the mean number of seconds of functional play was 84.0 \((SD = 128.7)\). Thirty-one children engaged in 60 seconds or less of functional play over the 50-minute play observation period.
Constructive play was the most prevalent type of play behaviour in which the kindergarten children in this play study participated. In fact, every child in the study engaged in at least 5 minutes or more of constructive play. One child even spent the entire 50 minutes of the observed sessions engaged in constructive play alone. Other researchers have reported that constructive play is the most common type of play behaviour in which preschool and kindergarten children engage (Gillis & Hardacre, 1993; Rubin et al., 1983; Rubin & Maioni, 1975). The constructive play times ranged from 300 seconds ($n = 1$) to 3000 seconds ($n = 1$).

Dramatic play was also common, but not as pervasive as constructive play. Seven children did not engage in any dramatic play activities at all. The dramatic play times ranged from 0 seconds ($n = 7$) to 2430 seconds ($n = 1$). Another five children engaged in much higher durations of dramatic play than the rest of the sample, with scores ranging from 1754 seconds to 2430 seconds.

Games with rules are one of the most complex forms of cognitive play, and are more prevalent among slightly older children. As expected, only a limited amount of this type of play was observed. Specifically, only 13 of the 50 children engaged in games with rules. The duration the children engaged in games with rules ranged from 0 seconds ($n = 37$) to 1097 seconds ($n = 1$), with a median of 144 seconds. For a complete list of the means and standard deviations of the preceding play variables, the reader is referred to Table 10.
Table 10

Means and Standard Deviations of the Duration Play Measures (Smilansky, 1968)

<table>
<thead>
<tr>
<th>Continuous Play Variable*</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional play</td>
<td>84.0</td>
<td>128.7</td>
</tr>
<tr>
<td>Constructive play</td>
<td>1533.3</td>
<td>695.1</td>
</tr>
<tr>
<td>Dramatic play</td>
<td>732.6</td>
<td>600.7</td>
</tr>
<tr>
<td>Games with rules</td>
<td>143.8</td>
<td>293.7</td>
</tr>
</tbody>
</table>

*Number of seconds observed out of a total of 3000 seconds.

4.4.1 (c) Social/Cognitive Play Classification

Although various social/cognitive play combinations (Rubin et al., 1976) were included initially in the study (e.g., solitary reading, parallel exploration, cooperative games with rules, etc.), as explained in the Method section, many of these variables were dropped from the analyses if little activity took place. Descriptive statistics of the remaining seven combined play variables will now be presented (see Table 11 for specific means and standard deviations).

Solitary constructive play was the most common type of play behaviour observed in combination with solitary play. The duration the children engaged in solitary constructive play ranged from 0 seconds ($n = 22$) to 1949 seconds ($n = 1$), with a median of 79 seconds. With the outlier at 1949 seconds removed, the mean number of seconds of solitary constructive play was 172.7 ($SD = 231.3$).
Parallel functional play had a skewed distribution, with 31 of the 50 children not engaging in any parallel functional play at all. The parallel functional play times ranged from 0 seconds \((n = 31)\) to 430 seconds \((n = 1)\). Only five children engaged in 4 minutes of parallel functional play or more.

Parallel dramatic play was not observed frequently in this study, as most kindergarten children engaged in cooperative dramatic play during pretend play sequences. The parallel dramatic play times ranged from 0 seconds \((n = 29)\) to 1148 seconds \((n = 1)\).

In contrast, parallel constructive play was the most common type of combined play behaviour in which the kindergarten children in this study engaged. The range of times for parallel constructive play extended from 0 seconds \((n = 6)\) to 2601 seconds \((n = 1)\). Parallel constructive play occurred most often at the small blocks or paint centres.

Most children engaged in cooperative dramatic play at the big blocks or house centres. Times for cooperative dramatic play ranged from 0 seconds \((n = 13)\) to 2080 seconds \((n = 1)\).

Cooperative constructive play was observed less often than parallel constructive play. The cooperative constructive play times ranged from 0 seconds \((n = 14)\) to 1433 seconds \((n = 1)\).

Finally, as solitary functional play was rare, this variable was dichotomized. Children were categorized as showing no solitary functional play \((n = 38)\) or showing some solitary functional play \((n = 12)\). From these findings, it would appear that solitary functional play behaviour is observed more commonly at the preschool age level as opposed to the kindergarten age level.
Table 11

Means and Standard Deviations of the Duration Play Measures (Rubin et al., 1976)

<table>
<thead>
<tr>
<th>Continuous Play Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solitary constructive play</td>
<td>172.7</td>
<td>231.3</td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>57.4</td>
<td>104.2</td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td>853.5</td>
<td>724.2</td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td>163.1</td>
<td>282.7</td>
</tr>
<tr>
<td>Cooperative constructive play</td>
<td>461.8</td>
<td>462.3</td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td>562.6</td>
<td>539.6</td>
</tr>
</tbody>
</table>

*Number of seconds observed out of a total of 3000 seconds.

4.4.1 (d) Play Observation Variables

Two play variables came directly from my play observation scale and were recorded as counts. The 25 play behaviours recorded during free play were divided into positive and negative items. As a result, there were 13 positive play behaviours and 9 negative play behaviours (see Table 12). The “parallel play” dichotomy was dropped as it did not relate to either positive or negative play behaviours when a reliability analysis (see Table 12) was performed. With its neutral position, parallel play can be considered typical behaviour for kindergarten age children. Due to a lack of variability, the “explores unfamiliar materials” dichotomy was dropped as it could not be dichotomized. Finally, the “selects challenging play tasks” dichotomy was removed, as it measured the exact inverse of the “selects simple play tasks” dichotomy.
In order to create a risk index, the following approach was used. Each of the play variables was dichotomized, so that the top 20% (for negative variables) and the bottom 20% (for positive variables) were given a value of 1. In a similar manner, the top 80% (for positive variables) and the bottom 80% (for negative variables) were given a value of 0. The 1 value signified at-risk behaviour, while the 0 value signified not at-risk behaviour. Then the sums of the positive play dichotomies and the negative play dichotomies were computed.

The sum of the positive play dichotomies ranged from totals of 3 points \((n = 2)\) to 13 points \((n = 11)\). The mean was 10.6 and the standard deviation was 2.5. By contrast, the sum of the negative play dichotomies had a skewed distribution, as most of the responses were at the lower end of the variable. For this variable, the scores ranged from 0 points \((n = 23)\) to 8 points \((n = 2)\), with a mean of 1.9 and a standard deviation of 2.3.
### Table 12

**Play Observation Scale Dichotomies Used to Create the Positive and Negative Play Variables**

<table>
<thead>
<tr>
<th>Play Dichotomies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Play Variable</strong>*</td>
<td><strong>Negative Play Variable</strong>*</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>Unoccupied behaviour</td>
</tr>
<tr>
<td>Shares</td>
<td>Onlooker behaviour</td>
</tr>
<tr>
<td>Enters play</td>
<td>Solitary play</td>
</tr>
<tr>
<td>Remains in play groups</td>
<td>Classroom movement</td>
</tr>
<tr>
<td>Peer interaction</td>
<td>Exchanges toys</td>
</tr>
<tr>
<td>Leads play</td>
<td>Wanders</td>
</tr>
<tr>
<td>Peer communication</td>
<td>Selects simple tasks</td>
</tr>
<tr>
<td>Extends play</td>
<td>Perseveration</td>
</tr>
<tr>
<td>Appropriate toy use</td>
<td>Reverses</td>
</tr>
<tr>
<td>Follows routines</td>
<td></td>
</tr>
<tr>
<td>Completes tasks</td>
<td></td>
</tr>
<tr>
<td>Elaborated fantasy roles</td>
<td></td>
</tr>
<tr>
<td>Plans play</td>
<td></td>
</tr>
</tbody>
</table>

*A reliability analysis of the 13 play dichotomies produced a Cronbach’s alpha of .73.

*Cronbach’s alpha was computed and was found to be acceptable at .81.*

### 4.4.1 (e) Other Play and Nonplay Variables

The third play variable recorded as a count was number of repeated vocalizations. For example, every time a child would repeat something (e.g., one child repeated “Jimminy Cricket” 10 times), it would be counted once. Most children did not engage in any repeated vocalizations or at least very few repeated vocalizations. In fact, 47 children expressed three repeated
vocalizations or less. The number of repeated vocalizations ranged from 0 times \((n = 17)\) to 7 times \((n = 1)\), with a mean of 1.5 and a standard deviation of 1.5.

The total time the children spent at the activity centres was recorded. The bulk of the scores for this variable was located at the higher end of the distribution. In fact, 10 children spent the entire 50 minutes (or 3000 seconds) at a play centre. The total time the children spent at centres ranged from 2659 seconds \((n = 1)\) to 3000 seconds \((n = 1)\), with a mean of 2914.1 and a standard deviation of 89.6.

The only play variable represented as a percentage was on-task behaviour. This percentage was obtained by dividing the total number of seconds that the child was engaged actively in play by the total number of seconds of observed play behaviour (i.e., 3000 seconds). Total durations for functional play, constructive play, dramatic play, games with rules, exploration, and reading were added up. Unoccupied behaviour (or nonplay) and onlooker behaviour were not considered active engagement in play. The percentages of on-task behaviour ranged from 63.9\% \((n = 1)\) to 100\% \((n = 2)\), with a median of 90.8\%. With the outlier at 63.9\% removed, the mean percentage of on-task behaviour was 90.5 \((SD = 7.4)\). The majority of the children in the study displayed on-task behaviour, as 49 students were on task at least 77\% of the time or more. In addition, 26 of the 50 children displayed on-task behaviour 90\% of the time or more.

Dramatic talk was a rate that was obtained by dividing the total number of pretend play utterances by the total number of seconds the child spent in dramatic play. During the 50-minute play observation sessions, only 43 of the 50 children engaged in dramatic play. As a result, seven children in the sample had missing values for this play variable. With its poor distribution, the rates for dramatic talk ranged from .00 \((n = 1)\) to .75 \((n = 1)\), with a median of .09. With its two outliers removed, one at the .45 mark and the other at the .75 mark, the mean was .10 \((SD = .06)\). However, for the majority of the sample (i.e., 35 children), the amount of dramatic talk fell between .00 \((n = 1)\) and .15 \((n = 1)\).
Although technically not considered play, reading was added to my list of observed play behaviours in order to fill out the descriptive picture of what children did. Reading also related to one of my hypotheses (i.e., whether at-risk children spent less time engaged in reading than their not at-risk peers). Most children in the study did not engage in much reading activity, although the range of reading times spanned 0 seconds \((n = 32)\) to 823 seconds \((n = 1)\). The mean was 103.0 and the standard deviation was 198.5. The fact that 32 children did not read at all during the 50-minute observed play period is noteworthy.

### 4.5 Relations Among the Play Variables

Using Spearman rank-order correlations \((r)\), 78 out of 253 play variable pairings were interrelated significantly. Clearly, certain patterns were expected (e.g., lower forms of social play correlated with lower forms of cognitive play, positive play behaviours were correlated negatively with lower forms of social play, etc.).

The reader should note that due to the manner in which the data were collected, there was a lack of independence among the play variables. For example, a child could not engage in two different types of play (e.g., parallel play and cooperative play) at the same time. This constraint may have inflated patterns of correlations across the play variables.

In the following discussion, the patterns that emerged among the play variables will be outlined in further detail. The findings will be separated into sections relating to negative play variables and positive play variables. A summary of the overall findings among these play variables can be found in Tables 13 and 14.
### Table 13

**Relations Between Solitary Functional Play and the Continuous Play Variables (T-tests)**

<table>
<thead>
<tr>
<th>Duration of Play Variables</th>
<th>No SF Play</th>
<th>Some SF Play</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>M</td>
</tr>
<tr>
<td>Unoccupied behaviour</td>
<td>11.439</td>
<td>3.2</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>48</td>
<td>112.7</td>
</tr>
<tr>
<td>Solitary play</td>
<td>48</td>
<td>231.8</td>
</tr>
<tr>
<td>Parallel play</td>
<td>48</td>
<td>1258.5</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>48</td>
<td>1335.1</td>
</tr>
<tr>
<td>Functional play</td>
<td>10.392</td>
<td>52.7</td>
</tr>
<tr>
<td>Constructive play</td>
<td>48</td>
<td>1671.2</td>
</tr>
<tr>
<td>Dramatic play</td>
<td>48</td>
<td>777.1</td>
</tr>
<tr>
<td>Games with rules</td>
<td>48</td>
<td>160.2</td>
</tr>
<tr>
<td>Solitary constructive play</td>
<td>47</td>
<td>141.0</td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>12.739</td>
<td>41.8</td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td>29.455</td>
<td>949.1</td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td>48</td>
<td>169.1</td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td>48</td>
<td>620.2</td>
</tr>
<tr>
<td>Cooperative constructive play</td>
<td>48</td>
<td>520.7</td>
</tr>
<tr>
<td>Reading</td>
<td>13.712</td>
<td>70.9</td>
</tr>
<tr>
<td>Total time at centres</td>
<td>48</td>
<td>2942.1</td>
</tr>
</tbody>
</table>

**Other Play Variables**

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative play dichotomies</td>
<td>13.793</td>
<td>1.0</td>
<td>1.4</td>
<td>4.8</td>
<td>2.2</td>
<td>-5.753***</td>
</tr>
<tr>
<td>Positive play dichotomies</td>
<td>12.595</td>
<td>11.3</td>
<td>1.6</td>
<td>8.5</td>
<td>3.4</td>
<td>2.748*</td>
</tr>
<tr>
<td>Repeated vocalizations</td>
<td>48</td>
<td>1.2</td>
<td>1.2</td>
<td>2.5</td>
<td>1.9</td>
<td>-2.735**</td>
</tr>
<tr>
<td>Dramatic talk</td>
<td>39</td>
<td>.1</td>
<td>.06</td>
<td>.08</td>
<td>.06</td>
<td>.767</td>
</tr>
<tr>
<td>On-task behaviour</td>
<td>47</td>
<td>92.1</td>
<td>7.1</td>
<td>84.8</td>
<td>5.7</td>
<td>3.150**</td>
</tr>
</tbody>
</table>

*Note. SF = solitary functional.

*Recorded in seconds. Measured as a count; Measured as a rate; Measured as a percentage.  
*p < .05. **p < .01. ***p < .001.
Table 14

Intercorrelations Among the Continuous Play Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unoccupied behaviour</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Onlooker behaviour</td>
<td>.41**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Parallel play</td>
<td>-.20</td>
<td>-.23</td>
<td>-.04</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Cooperative play</td>
<td>-.08</td>
<td>.03</td>
<td>-.39**</td>
<td>-.77**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Functional play</td>
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*p < .05. **p < .01.
### Table 14

**Intercorrelations Among the Continuous Play Variables**

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*p < .05. **p < .01.
4.5.1 Negative Play Variable Clusters

According to results in Table 14, the sum of the negative play dichotomies correlated directly with other negative play variables such as unoccupied behaviour, onlooker behaviour, solitary play, functional play, and number of repeated vocalizations. In a similar manner, the sum of the negative play dichotomies correlated negatively with a number of positive play variables, such as parallel play, parallel constructive play, constructive play, on-task behaviour, and total time at centres.

Unoccupied behaviour, a relatively asocial behaviour, correlated positively with another lower form of social interaction, onlooker behaviour. As expected, unoccupied behaviour correlated positively with functional play, the lowest form of cognitive play. Unoccupied behaviour also correlated negatively with a number of positive play variables, such as constructive play, the sum of the positive play dichotomies, on-task behaviour, and total time at centres.

Onlooker behaviour, another low form of social participation, correlated negatively with the same four positive play variables mentioned in the previous paragraph: constructive play, the sum of the positive play dichotomies, total time at centres, and on-task behaviour. However, onlooker behaviour correlated positively with games with rules. This was an expected pattern as the children in the study often would watch other children engaged in games with rules at the computer.

Functional play, the lowest form of cognitive play, correlated positively and significantly with onlooker behaviour and solitary play. Functional play also correlated negatively with two positive play variables: on-task behaviour and total time at centres. Another repetitive variable, number of repeated vocalizations, correlated negatively with the sum of the positive play dichotomies, parallel play, and parallel constructive play. Finally, solitary play correlated negatively with total time at centres.
Since solitary functional play was rare, children were categorized as engaging in no solitary functional play \((n = 38)\) or engaging in some solitary functional play \((n = 12)\). These groups were then compared with the other 22 play measures to examine associations. As noted in Table 13, those senior kindergarten children who took part in some solitary functional play spent less time at play centres and engaged in less positive play combinations, less on-task behaviour, less constructive play, and less parallel constructive play. Furthermore, those children who engaged in some solitary functional play participated in more negative play combinations, more solitary play, and more functional play, as well as uttered more repeated vocalizations.

4.5.2 Positive Play Variable Clusters

Parallel play and cooperative play are considered higher forms of social play than unoccupied behaviour, onlooker behaviour, or solitary play. As presented in Table 14, most children in the study were engaged in parallel play and constructive play at the same time. Usually these two codes were recorded when the children were building at the small block centre, one of the most frequently visited centres. In a similar manner, the children engaged in cooperative play while involved simultaneously in dramatic play, a pattern that was often noted at the house centre and at the large block centre. Furthermore, cooperative constructive play correlated positively with cooperative dramatic play, as those two play behaviour combinations were observed together regularly at the large block centre. Finally, cooperative play correlated positively with the sum of the positive play dichotomies.

As shown in Table 14, the sum of the positive play dichotomies correlated positively with total time at centres, on-task behaviour, and cooperative dramatic play. On-task behaviour correlated positively with parallel play, parallel constructive play, constructive play, and total time at centres.
As for the measure of reading, it was not the norm, with 32 of the 50 children not reading at all. The mean for reading by the other 18 children was 103 seconds (SD = 198.5). Only a few rank-order correlations for reading were found, and these were unexpected in that reading correlated with “negative behaviours”. For example, reading correlated negatively with on-task behaviour and total time at centres. In addition, reading correlated with the sum of the negative play dichotomies. Nevertheless, with age and gender partialled out, these correlations all became nonsignificant (ps = .22, .29, and .06, respectively).

4.6 Outcome Variables

4.6.1 Characteristics of the Outcome Variables

The first outcome variable, the Peabody Picture Vocabulary Test-Revised (PPVT-R), was administered successfully to all children in the second term of their kindergarten year. As a continuous variable, scores on the PPVT-R ranged from 84 (n = 1) to 140 (n = 1), with a mean of 107.8 and a standard deviation of 13.8. When plotted on a histogram, the distribution for the PPVT-R was normal. Overall, 64% of the sample achieved high average scores or above on the PPVT-R, while 36% of the children achieved low average scores or below.

Scores for the at-risk index were tabulated for all children after completion of their grade one school year. On the 20-point at-risk index, the scores for this count ranged from 0 points (n = 20) to 17 points (n = 1). The scores were not distributed normally; the mean for the at-risk index was 3.3 and the standard deviation was 4.9.

4.7 Relations Among the Outcome Variables

When the sum of the at-risk indicators was correlated with the Peabody Picture Vocabulary Test-Revised scores (PPVT-R) using Spearman rank-order correlations, a moderate negative correlation resulted (r = -.31, p < .05). This was an anticipated outcome, for it was assumed that
the higher the receptive vocabulary score on the PPVT-R, the lower the number of negative at-risk indicators. The correlation between the two variables was not expected to be any higher. Otherwise, a higher correlation would make it difficult to use the PPVT-R as an independent criterion of average ability, for vocabulary would be considered a larger part of the child’s at-risk status for learning disabilities.

As mentioned previously, the sum of the at-risk indicators variable was split into a categorical group of at-risk and not at-risk scores to create the LD risk variable (i.e., yes/no). For subsequent analyses that relate to at-risk status, the categorical LD risk variable will also be used.

4.8 Relations Between the Outcome Variables and the Demographic/Personal Variables

In this study, it is important to note that 7 of the 10 at-risk children were girls. In contrast, 20 of the 40 not at-risk children were girls. Given the disproportionate number of girls in the at-risk group, gender was controlled for, along with age, in most analyses involving outcome variables. Two-way ANCOVAs or partial correlations controlling for age and gender effects were conducted for most analyses in this section.

Results presented in this section begin with an overview of significant relations between the PPVT-R and demographic/personal variables, followed by associations between LD risk and demographic/personal variables. One of the questions to be answered in the following section is: How does the PPVT-R relate to academic achievement?

4.8.1 PPVT-R and Demographic/Personal Variables

The PPVT-R correlated significantly with kindergarten and grade one assessment variables (see Table 15) in 8 out of the 12 Spearman rank-order correlations. Controlling for age and gender with partial correlations did not affect significance, except in one case. With gender
controlled for, the PPVT-R and age were no longer significant ($r = .24, p = .09$). Still, the PPVT-R related positively to senior kindergarten reading scores and senior kindergarten writing scores.

At the grade one level, the PPVT-R correlated positively with all four grade one assessment variables: grade one English marks, grade one math marks, grade one learning skills scores, and the grade one teacher survey total. Furthermore, the PPVT-R correlated positively with maternal education. The $t$-tests and one-way analyses of variance performed between the PPVT-R and the categorical demographic/personal variables were all nonsignificant.

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<tr>
<th>Table 15</th>
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<tbody>
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<td><strong>Intercorrelations Between the PPVT-R and the Demographic/Personal Variables With Age and Gender Partialled Out</strong></td>
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<td>Grade 1 learning skills$^c$</td>
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<td>Number of siblings</td>
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</table>

*Note. * = nonsignificant when controlled for gender.

$^a$ Considered ordinal variables, but often used as continuous variables in analyses; $^b$ Highest possible score = 36; $^c$ Highest possible score = 54; $^d$ Highest possible score = 95.

$p < .05. \quad **p < .01.$
4.8.2 LD Risk and Demographic/Personal Variables

Next, associations between LD risk and demographic/personal variables were examined. As expected, LD risk related significantly to many of the same demographic/personal variables as the PPVT-R. Since the grade one report card grades were included in the formulation of the at-risk index, significant relations between LD risk and the English and math marks obviously will not be reported.

At the grade one level, LD risk related to two assessment variables: grade one learning skills scores, t(23.806) = 8.304, p < .001, and the grade one teacher survey total, t(48) = 7.591, p < .001. Those children who developed at-risk status by the end of the grade one school year had poorer grade one learning skills scores and lower scores on the grade one teacher survey than their not at-risk peers. The mean grade one learning skills score for those children later judged to be at risk for learning disabilities was 18.9 points (SD = 6.9), while the mean grade one learning skills score for those children later judged to be not at risk for learning disabilities was 42.7 points (SD = 11.7). As a point of reference, the overall mean for the grade one learning skills scores was 37.9 points (SD = 14.5), with a median of 42 points.

Similarly, the mean grade one teacher survey score for those children later judged to be at risk for learning disabilities was 42.4 points (SD = 7.9), while the mean grade one teacher survey score for those children later judged to be not at risk for future learning disabilities was 71.6 points (SD = 11.5). The overall mean for the grade one teacher survey total was 65.8 points (SD = 16.0) and the median was 66.5 points.

For each of these two measures, a two-way analysis of covariance (ANCOVA) was performed, with gender and LD risk as the fixed factors, and age as the covariate. For the grade one learning skills scores, the LD risk factor was still significant, F(1, 45) = 32.866, p < .001, but the gender factor, the age covariate, and the interaction between gender and LD risk were all nonsignificant ($p$s = .72, .15, and .99, respectively).
For the grade one teacher survey total, the LD risk factor was significant, $F(1, 45) = 50.051$, $p < .001$, but neither the gender factor nor the interaction between gender and LD risk were significant ($ps = .36$ and $.60$, respectively). The age covariate did approach statistical significance, $F(1, 45) = 3.859, p = .056$.

To further reinforce these relations, it was found that the at-risk index correlated negatively with the grade one teacher survey total ($r = -.75, p < .001$), and the grade one learning skills scores ($r = -.71, p < .001$), even when age and gender were controlled.

As for other demographic variables, LD risk related to maternal education, $t(31.149) = 2.353, p < .05$; the mothers of those children who later developed at-risk status for future learning disabilities had significantly less education than the mothers of the not at-risk children. The mean number of years of education for mothers of children who were later judged to be at risk for learning disabilities was $13.7 (SD = 1.1)$, while the mean number of years of education for mothers of children who were later judged to be not at risk for learning disabilities was $15.0 (SD = 2.6)$. Maternal education and paternal education both correlated negatively with the at-risk index ($r = -.29, p < .05$ and $r = -.46, p < .01$, respectively). However, LD risk was not related significantly to paternal education, $t(43) = 1.503, p = .14$, perhaps due to a loss of statistical power with the dichotomized LD risk variable.

Finally, unlike the PPVT-R, LD risk related with speech difficulties, $\chi^2(1, N = 50) = 10.519, p < .01$. Of the 40 not at-risk children, 35 children had no speech problems, while 5 children had some speech difficulties. Conversely, of the 10 at-risk children, 4 children had no speech problems, while 6 children had some speech difficulties.

4.9 Relations Between the Demographic/Personal Variables and the Play Variables

As expected, there were some significant relations between the play variables and the demographic/personal variables. For example, 12 of 150 t-tests were significant, 45 out of 300
Spearman rank-order correlations were significant, and 3 out of 69 one-way ANOVAs were significant. In addition to age and gender, PPVT-R scores were partialled out in analyses with play variables and assessment variables, to control for the effects of general ability. In the following sections, the results will be presented within three categories: (a) senior kindergarten scores, (b) grade one scores, and (c) demographic/personal variables other than achievement.

4.9.1 Senior Kindergarten Scores

T-tests showed that both senior kindergarten reading and writing scores were associated with solitary functional play, $t(48) = 3.206, p < .01$, and $t(48) = 3.222, p < .01$, respectively. The findings were still significant when the effects of age, gender, and PPVT-R scores were controlled. Specifically, those senior kindergarten children who engaged in solitary functional play received significantly lower reading scores ($M = 1.1, SD = .8$), compared to those senior kindergarten children who did not engage in solitary functional play ($M = 1.8, SD = .6$). Similarly, the writing scores followed the same pattern ($M = .9, SD = .7$ vs. $M = 1.6, SD = .6$).

With age and gender partialled out, correlations revealed that several play variables related to both senior kindergarten reading scores and senior kindergarten writing scores. As presented in Table 16, senior kindergarten reading scores correlated negatively with the sum of the negative play dichotomies, unoccupied behaviour, onlooker behaviour, solitary play, and number of repeated vocalizations. The senior kindergarten reading scores also correlated positively with the sum of the positive play dichotomies. With age, gender, and PPVT-R scores partialled out, senior kindergarten reading scores continued to remain significantly correlated with unoccupied behaviour, solitary play, the sum of the negative play dichotomies, the sum of the positive play dichotomies, and number of repeated vocalizations.

Senior kindergarten writing scores correlated negatively with many of the same negative play variables as noted previously for the senior kindergarten reading scores, including the sum
of the negative play dichotomies, unoccupied behaviour, solitary play, solitary constructive play, and number of repeated vocalizations. Positive correlations emerged between senior kindergarten writing scores and cooperative constructive play and the sum of the positive play dichotomies. Controlling for age, gender, and PPVT-R scores, senior kindergarten writing scores continued to remain significantly correlated with solitary play, number of repeated vocalizations, the sum of the negative play dichotomies, and the sum of the positive play dichotomies. Nevertheless, from my results, it would appear that the negative play variables and not the positive play variables were more predictive of senior kindergarten academic performance.
### Table 16

<table>
<thead>
<tr>
<th>Play Variable</th>
<th>KR</th>
<th>KW</th>
<th>1E</th>
<th>1M</th>
<th>ILS</th>
<th>ITS</th>
<th>PE</th>
<th>ME</th>
<th>AG</th>
<th>SI</th>
<th>LA</th>
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<td>- .12</td>
<td>- .40**</td>
<td>- .40**</td>
<td>- .18</td>
<td>- .03</td>
<td>- .22</td>
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<td>-.17</td>
<td>-.35*</td>
<td>-.34*</td>
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<td>-.07</td>
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<td>-.03</td>
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<td>-.51***</td>
<td>-.39**</td>
<td>-.23</td>
<td>-.45**</td>
<td>-.34*</td>
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<td>-.03</td>
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<td>.33†</td>
<td>.31†</td>
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<td>.22</td>
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<td>-.02</td>
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<td>.03</td>
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<td>-.06</td>
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<td>-.22</td>
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<td>.01</td>
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<td>.41**</td>
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<td>-.22†</td>
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<td>-.20</td>
<td>.01</td>
<td>.03</td>
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<td>-.24</td>
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<td>-.04</td>
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<td>.05</td>
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<td>-.14</td>
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<td>.09</td>
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<td>-.02</td>
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<td>.06</td>
<td>.14</td>
<td>-.12</td>
<td>-.11</td>
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<td>.18</td>
<td>.39**</td>
<td>.34†</td>
<td>.26</td>
<td>.05</td>
<td>.01</td>
<td>.19</td>
<td>.02</td>
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<td>-.08</td>
<td>-.22†</td>
<td>-.29†</td>
<td>.09</td>
<td>-.14</td>
<td>.06</td>
<td>.08</td>
<td>-.13</td>
<td>-.15</td>
<td>-.13</td>
<td>-.09</td>
</tr>
<tr>
<td>Cooperative constructive</td>
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<td>.35*</td>
<td>.19</td>
<td>.08</td>
<td>.30†</td>
<td>.22</td>
<td>.24</td>
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<td>.03</td>
</tr>
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<td>On-task behaviour</td>
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<td>.14</td>
<td>.14</td>
<td>.32*</td>
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<td>.01</td>
<td>-.02</td>
<td>-.30</td>
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<td>-.10</td>
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<td>Dramatic talk</td>
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<td>.16</td>
<td>.07</td>
<td>.03</td>
<td>.03</td>
<td>-.05</td>
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<td>.01</td>
<td>-.11</td>
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<td>-.43***</td>
<td>-.53***</td>
<td>-.51***</td>
<td>-.38***</td>
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<td>.02</td>
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<td>.27</td>
<td>.19</td>
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<td>.34*</td>
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<td>-.21</td>
<td>-.03</td>
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<td>-.50***</td>
<td>-.28</td>
<td>-.27</td>
<td>-.05</td>
<td>-.12</td>
<td>.37**</td>
<td>.19</td>
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</tbody>
</table>

**Note.** KR = senior kindergarten reading; KW = senior kindergarten writing; 1E = Gr. 1 English; 1M = Gr. 1 math; ILS = Gr. 1 learning skills; ITS = Gr. 1 teacher survey; PE = paternal education; ME = maternal education; AG = age; SI = siblings; LA = lates; AB = absences. Gender only was controlled for the age variable.

† = continued to remain significant controlling for PPVT-R scores.

*p < .05. **p < .01. ***p < .001.
4.9.2 Grade One Scores

The four demographic/personal variables measuring academic progress in grade one were English marks, math marks, learning skills scores, and grade one teacher survey scores. When these grade one assessment variables were analysed in relation to the kindergarten play variables, a number of patterns emerged. For the sake of clarity, the results for the negative play variables will be presented first, followed by the results for the positive play variables (see Table 16). Age and gender were controlled for in all of the following correlations.

To begin, the sum of the negative play dichotomies and number of repeated vocalizations were both correlated negatively with all four grade one assessment variables. These findings remained significant when the effects of age, gender, and PPVT-R scores were controlled. Furthermore, unoccupied behaviour, onlooker behaviour, and solitary play all related negatively to three of the four grade one assessment variables: grade one English marks, grade one learning skills scores, and the grade one teacher survey total. With age, gender, and PPVT-R scores partialled out, unoccupied behaviour continued to remain significantly correlated with the same three grade one assessment variables mentioned previously, while solitary play only remained significantly correlated with the grade one learning skills scores.

The presence or absence of solitary functional play related to the grade one English marks, \( t(48) = 2.916, p < .01 \), the grade one math marks, \( t(48) = 2.437, p < .05 \), and the grade one learning skills scores, \( t(48) = 2.731, p < .01 \). The findings continued to remain significant with age and gender controlled. In particular, those kindergarten children who engaged in solitary functional play received significantly lower scores in English, math, and learning skills, than those kindergarten children who did not engage in solitary functional play. The mean English score for those children who engaged in solitary functional play was 16.8 points \((SD = 7.6)\), while the mean English score for those children who did not was 23.5 points \((SD = 6.8)\). The mean math score for those children who engaged in solitary functional play was 18.4 points \((SD = 7.6)\).
= 7.6), while the mean math score for those children who did not was 24.2 points (SD = 7.1).

Finally, the mean learning skills score for those children who engaged in solitary functional play was 28.6 points (SD = 15.2), while the mean learning skills score for those children who did not was 40.9 points (SD = 13.1). Nevertheless, when PPVT-R scores were controlled in addition to the effects of age and gender, solitary functional play no longer related significantly to the grade one English marks, the grade one math marks, or the grade one learning skills scores (ps = .07, .12, and .07, respectively).

It is noteworthy that of all the positive and negative play variables, the sum of the negative play dichotomies correlated the most highly with all four grade one assessment variables. It would appear that the sum of the negative play dichotomies was the most predictive play variable in terms of forecasting grade one academic performance.

As for the positive play variables, the correlations with the grade one assessment variables were not as high as for the negative play variables. Various forms of constructive play correlated positively with the grade one assessment variables. For example, constructive play related positively to the grade one English marks, the grade one math marks, and the grade one teacher survey scores. In a similar manner, parallel constructive play related positively to the grade one English marks and the grade one math marks, while cooperative constructive play correlated with the grade one learning skills scores. All of these findings continued to remain significant even with age, gender, and PPVT-R scores partialled out.

As shown in Table 16, the sum of the positive play dichotomies related positively to all four grade one assessment indicators. Parallel play correlated positively with the grade one English marks and the grade one math marks. These preceding findings continued to remain significant with age, gender, and PPVT-R scores partialled out. On-task behaviour correlated with the grade one learning skills scores, and total time at centres correlated with the grade one English marks. Finally, cooperative dramatic play correlated negatively with the grade one math marks, even
with age, gender, and PPVT-R scores partialled out. Although nonsignificant negative correlations emerged between dramatic play and the grade one English marks and the grade one math marks when age and gender were controlled, these correlations became significant when the control for PPVT-R scores was added into the formula. The same pattern appeared between cooperative dramatic play and the grade one English marks.

4.9.3 Demographic/Personal Variables Other Than Achievement

The findings revealed that games with rules related to gender. The boys in this study spent significantly more time playing games than the girls, \( t(24.811) = 3.036, p < .01 \). The mean duration of games played by boys was 277.9 seconds (\( SD = 380.1 \)), while the mean duration of games played by girls was 29.7 seconds (\( SD = 104.0 \)). Since age and gender are related in my study, a one-way analysis of covariance (ANCOVA) was performed, with games as the dependent variable, gender as the fixed factor, and age as the covariate. The age covariate was significant, \( F(1, 47) = 6.354, p < .05 \), when entered into the model before the gender factor, but the gender factor remained significant, \( F(1, 47) = 6.377, p < .05 \). Furthermore, games with rules related positively to number of siblings.

Games with rules also related to preschool experience. Those children who received some type of preschool experience engaged in significantly more games with rules than those children who did not attend preschool, \( t(44.366) = -3.123, p < .01 \). The mean duration of games played by those children who received some preschool experience was 173.2 seconds (\( SD = 317.1 \)), while the mean duration of games played by those children who received no preschool experience was 13.1 seconds (\( SD = 34.8 \)). A two-way analysis of covariance (ANCOVA) was performed, with games as the dependent variable, gender and preschool experience as the fixed factors, and age as the covariate. Both the age covariate and the gender factor were significant, \( F(1, 43) = 6.299, p < .05 \).
$p < .05$, and $F(1, 43) = 5.287, p < .05$, respectively. The preschool experience factor and the interaction between gender and preschool experience were both nonsignificant.

Furthermore, preschool experience related to unoccupied behaviour, $t(40.000) = -2.712, p < .01$. The children with no preschool experience engaged in significantly less unoccupied behaviour than those children who had attended some type of preschool. Mean duration of unoccupied behaviour for those children who had some preschool experience was 10.4 seconds ($SD = 24.7$), while there was no unoccupied behaviour among those children who did not attend preschool. However, a two-way analysis of covariance (ANCOVA) was performed, with unoccupied behaviour as the dependent variable, gender and preschool experience as the fixed factors, and age as the covariate. The age covariate, the gender and preschool experience factors, and the interaction between gender and preschool experience were all nonsignificant.

As reported in Table 16, age related to parallel functional play ($r = -.33, p < .05$), even when controlled for gender. In addition, number of lates correlated negatively with on-task behaviour, parallel constructive play, and the sum of the positive play dichotomies. In a similar manner, number of lates correlated positively with onlooker behaviour and the sum of the negative play dichotomies.

A significant relation was found between hand dominance and solitary constructive play, $t(47) = -2.341, p < .05$. Children with a mixed hand dominance engaged in significantly more solitary constructive play than right-handed children. It appeared that there were no true left-handed children in the study. Mean number of seconds of solitary constructive play for children with a mixed hand dominance was 302.7 ($SD = 277.8$), while mean number of seconds of solitary constructive play for right-handed children was 130.6 ($SD = 200.8$).

A number of familial attributes related to both positive and negative play variables. For example, family composition related to total time at centres, $F(3, 43) = 2.959, p < .05$. Mean number of seconds at the play centres for those kindergarten children living with mother only
was 2796.0 ($SD = 110.5$), joint custody was 2989.0 ($SD = 0$), step-parent/biological parent was 2949.0 ($SD = 72.1$), and both biological parents was 2920.1 ($SD = 83.7$), respectively. Family composition also related to number of repeated vocalizations, $F(3, 43) = 4.082, p < .05$. Mean number of repeated vocalizations uttered by those children living with mother only was 3.8 ($SD = 2.8$), joint custody was 2.0 ($SD = 0$), step-parent/biological parent was 1.5 ($SD = 2.1$), and both biological parents was 1.3 ($SD = 1.2$), respectively.

Family learning disability related to constructive play. Those children whose families had a history of learning disabilities engaged in significantly less constructive play, $t(36.408) = 2.795, p < .01$, than those children whose families did not have a history of learning disabilities. The mean duration of constructive play for children whose families had a history of learning disabilities was 1162.0 seconds ($SD = 483.0$), while the mean duration of constructive play for children whose families had no history of learning disabilities was 1667.8 seconds ($SD = 728.3$).

Whether there were other family members in the home beyond the parents also related to cooperative constructive play, $F(2, 44) = 4.236, p < .05$. Mean number of seconds of cooperative constructive play for those kindergarten children with no other people living with the family was 407.7 ($SD = 408.3$), one other person living with the family was 607.8 ($SD = 609.4$), and two other people living with the family was 1280.0 ($SD = 42.4$), respectively.

Both paternal education and maternal education related to solitary functional play, $t(43) = 2.533, p < .05$ and $t(45) = 2.214, p < .05$, respectively. The parents of the senior kindergarten children who engaged in solitary functional play had lower levels of education than the parents of the senior kindergarten children who did not engage in any solitary functional play. Mean number of years of paternal education for engagement in some solitary functional play by children was 13.1 ($SD = 3.4$), while the mean number of years of paternal education for engagement in no solitary functional play by children was 15.7 ($SD = 2.8$). Mean number of years of maternal education for engagement in some solitary functional play by children was
13.4 (SD = 1.6), while the mean number of years of maternal education for engagement in no solitary functional play by children was 15.2 (SD = 2.5). Furthermore, maternal education correlated positively with total time at centres.

4.10 Relations Between the Outcome Variables and the Play Variables

In the following sections, each of the four major hypotheses will be examined in relation to the findings. In general, the hypotheses are variations on the question of whether dimensions of play in kindergarten children can predict later outcomes, defined as the at-risk index, the LD risk category, and the PPVT-R. Since age and gender were related in my study, as noted before, these two variables were controlled for in the following sets of results. In cases where the PPVT-R related to the same play variables as the risk measures (i.e., the at-risk index and LD risk), the PPVT-R was partialled out as a further control for general ability. Unless stated otherwise, please refer to Tables 17 through 27 for further information about the significant findings presented in the ensuing discussion.

General Hypothesis # 1

Kindergarten children who later develop at-risk status for learning disabilities will display earlier deficits in social play skills, in comparison to their not at-risk peers.

Specific Hypotheses

(a) Kindergarten children who later develop at-risk status for learning disabilities will have difficulties in entering and in remaining in social play groups.

Crosstabulations were performed to determine the relation between the at-risk group of children and the children’s ability to enter play groups. Play entry was not related to the at-risk
grouping of children, $\chi^2(1, N = 50) = .78, p = .40$. Play entry was also not related to the at-risk index, $t(10.513) = -1.317, p = .22$, and continued to remain nonsignificant when age and gender were controlled.

Nevertheless, play entry related to the PPVT-R, $t(20.758) = 3.205, p < .01$. Mean score on the PPVT-R for those children with good play entry was 110.2 ($SD = 13.9$), while the mean score on the PPVT-R for those children with poor play entry was 98.5 ($SD = 9.2$). A two-way analysis of covariance (ANCOVA) was performed, with the PPVT-R as the dependent variable, gender and play entry as the fixed factors, and age as the covariate. Both the gender factor and the interaction between gender and play entry were nonsignificant. The age covariate was significant, $F(1, 45) = 6.013, p < .05$, and play entry remained significant, $F(1, 45) = 6.871, p < .05$.

Other crosstabulations revealed a significant relation between remaining in play groups and the later risk category, $\chi^2(1, N = 50) = 7.02, p < .05$. Specifically, 7 per cent of the not at-risk children were not able to remain in play groups, while 40 per cent of the at-risk children were not able to remain in play groups.

As noted in Table 17, the ability to remain in a play group also related significantly to scores on the at-risk index, $t(6.614) = -2.523, p < .05$. Mean score on the at-risk index for children who were unable to remain in play groups was 9.0 ($SD = 6.8$), while the mean score on the at-risk index for children who were able to remain in play groups was 2.3 ($SD = 3.8$). To control for age and gender, a two-way analysis of covariance (ANCOVA) was performed, with the at-risk index score as the dependent variable, gender and the "remain in play groups" dichotomy as the fixed factors, and age as the covariate. The age covariate was significant, $F(1, 45) = 5.739, p < .05$, but both the gender factor and the interaction between gender and remaining in play groups were nonsignificant. Even with age and gender controlled, the difference in the at-risk index between those children who were able to remain in the play group
versus those children who were not able to remain in the play group continued to be significant, \( F(1, 45) = 15.173, p < .001 \). Finally, the ability to remain in play groups was not related to the PPVT-R, \( t(48) = 1.641, p = .11 \), and continued to be nonsignificant when age and gender were controlled.

As play entry was not related to the risk measures (i.e., LD risk and the at-risk index), but was related to the measure of general ability (i.e., the PPVT-R), the first part of this hypothesis was not supported. Thus, at-risk kindergarten children did not have more difficulty entering play groups than their not at-risk peers. However, as remaining in social play groups related to both risk measures, the second part of this hypothesis was supported. Therefore, at-risk kindergarten children did have more difficulty remaining in social play groups than their not at-risk peers.
## Table 17

T-tests of Differences in the At-risk Index Between Play Scale Dichotomies

<table>
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<tr>
<th>Dichotomous Categorical Variable</th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
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<td><strong>Unoccupied behaviour</strong></td>
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<td>4.6</td>
<td>6.0</td>
<td>-1.266</td>
</tr>
<tr>
<td><strong>Cooperative play</strong></td>
<td>9.319</td>
<td>3.1</td>
<td>4.3</td>
<td>4.0</td>
<td>7.1</td>
<td>-0.366</td>
</tr>
<tr>
<td><strong>Shares</strong></td>
<td>48</td>
<td>3.4</td>
<td>4.7</td>
<td>2.7</td>
<td>5.8</td>
<td>0.405</td>
</tr>
<tr>
<td><strong>Enters play</strong></td>
<td>10.513</td>
<td>2.7</td>
<td>4.0</td>
<td>5.7</td>
<td>7.0</td>
<td>-1.317</td>
</tr>
<tr>
<td><strong>Remains in play groups</strong></td>
<td>6.614</td>
<td>2.3</td>
<td>3.8</td>
<td>9.0</td>
<td>6.8</td>
<td>-2.523*</td>
</tr>
<tr>
<td><strong>Peer interaction</strong></td>
<td>48</td>
<td>2.7</td>
<td>4.3</td>
<td>5.5</td>
<td>6.4</td>
<td>-1.663*</td>
</tr>
<tr>
<td><strong>Leads play</strong></td>
<td>48</td>
<td>3.0</td>
<td>4.5</td>
<td>4.2</td>
<td>5.9</td>
<td>-0.740</td>
</tr>
<tr>
<td><strong>Peer communication</strong></td>
<td>7.849</td>
<td>2.3</td>
<td>3.8</td>
<td>8.4</td>
<td>6.8</td>
<td>-2.476*</td>
</tr>
<tr>
<td><strong>Classroom movement</strong></td>
<td>48</td>
<td>4.8</td>
<td>5.6</td>
<td>2.6</td>
<td>4.4</td>
<td>-1.510*</td>
</tr>
<tr>
<td><strong>Exchanges toys</strong></td>
<td>48</td>
<td>5.4</td>
<td>5.7</td>
<td>2.4</td>
<td>4.3</td>
<td>-2.035*</td>
</tr>
<tr>
<td><strong>Extends play</strong></td>
<td>10.825</td>
<td>2.5</td>
<td>4.1</td>
<td>6.3</td>
<td>6.5</td>
<td>-1.755*</td>
</tr>
<tr>
<td><strong>Appropriate toy use</strong></td>
<td>48</td>
<td>4.1</td>
<td>5.4</td>
<td>3.1</td>
<td>4.8</td>
<td>-0.578</td>
</tr>
<tr>
<td><strong>Wanders</strong></td>
<td>10.081</td>
<td>5.7</td>
<td>6.0</td>
<td>2.7</td>
<td>4.5</td>
<td>-1.394*</td>
</tr>
<tr>
<td><strong>Follows routines</strong></td>
<td>48</td>
<td>3.5</td>
<td>5.0</td>
<td>2.3</td>
<td>4.4</td>
<td>0.696</td>
</tr>
<tr>
<td><strong>Selects simple tasks</strong></td>
<td>48</td>
<td>5.9</td>
<td>5.8</td>
<td>2.7</td>
<td>4.5</td>
<td>-1.840</td>
</tr>
<tr>
<td><strong>Completes tasks</strong></td>
<td>48</td>
<td>2.8</td>
<td>4.5</td>
<td>6.3</td>
<td>6.5</td>
<td>-1.686*</td>
</tr>
<tr>
<td><strong>Perseveration</strong></td>
<td>12.824</td>
<td>7.1</td>
<td>6.7</td>
<td>2.1</td>
<td>3.4</td>
<td>-2.499*</td>
</tr>
<tr>
<td><strong>Reverses</strong></td>
<td>48</td>
<td>8.0</td>
<td>7.8</td>
<td>3.0</td>
<td>4.6</td>
<td>-1.785</td>
</tr>
<tr>
<td><strong>Elaborated fantasy roles</strong></td>
<td>48</td>
<td>3.4</td>
<td>4.9</td>
<td>2.9</td>
<td>5.1</td>
<td>0.260</td>
</tr>
<tr>
<td><strong>Plans play</strong></td>
<td>7.980</td>
<td>2.5</td>
<td>4.0</td>
<td>7.4</td>
<td>6.8</td>
<td>-1.983*</td>
</tr>
</tbody>
</table>

*Note.* † = becomes significant with age and gender controlled. ‡ = nonsignificant with age and gender controlled. †† = continued to remain significant controlling for PPVT-R scores. *$p < .05$. 
(b) Kindergarten children who later develop at-risk status for learning disabilities will spend more time engaged in lower levels of social play (i.e., unoccupied behaviour, onlooker behaviour, solitary play) and less time engaged in higher levels of social play (i.e., parallel play, cooperative play).

As expected, the kindergarten children later judged to be at risk for future learning disabilities spent more time engaged in lower levels of social play and less time engaged in higher levels of social play. Although the results were not all statistically significant, all the findings were consistently in the direction that was anticipated. In Table 18, specific durations in which the at-risk and not at-risk groups of children participated in the various social play categories are given. Unoccupied behaviour, onlooker behaviour, and solitary play were the three lower level social play variables that had significant relations with the outcome variables. In cases where t-tests revealed significant relations between the social play variables and the outcome variables, the relation held even when gender and age were entered as fixed factors and covariates in ANCOVAs.
<table>
<thead>
<tr>
<th>Social Play Category</th>
<th>At-risk Children</th>
<th>Not At-risk Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Unoccupied behaviour*</td>
<td>22.5</td>
<td>41.1</td>
</tr>
<tr>
<td>Onlooker behaviour*</td>
<td>220.3</td>
<td>188.9</td>
</tr>
<tr>
<td>Solitary play*</td>
<td>675.2</td>
<td>670.9</td>
</tr>
<tr>
<td>Parallel play</td>
<td>890.2</td>
<td>539.3</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>1088.0</td>
<td>777.3</td>
</tr>
</tbody>
</table>

*Note. * = significant relation with the outcome variables.

With age and gender partialled out, there were significant correlations between the at-risk index and unoccupied behaviour ($r = .41, p < .01$), onlooker behaviour ($r = .34, p < .05$), solitary play ($r = .52, p < .001$), and solitary constructive play ($r = .48, p < .001$). These and other significant correlations between the at-risk index and the play variables are presented in Table 19. As solitary play and solitary constructive play also correlated with the PPVT-R (refer to Table 20 and the related discussion), the effects of age, gender, and PPVT-R scores were partialled out, as an additional control. Solitary play and solitary constructive play continued to remain significantly correlated with the at-risk index ($r = .46, p < .001$ and $r = .42, p < .01$, respectively).
In particular, the following differences were found: Onlooker behaviour had a significant relation with LD risk, $t(48) = -2.106, p < .05$. The means and standard deviations are provided in Table 18. Two-way analyses of covariance (ANCOVAs) were performed to further explore the nonsignificant relations between LD risk and unoccupied behaviour and solitary play, $t(9.520) = -1.324, p = .22$ and $t(9.888) = -2.023, p = .07$, respectively.

In the first ANCOVA, unoccupied behaviour was entered as the dependent variable, gender and LD risk were entered as the fixed factors, and age was entered as the covariate. The gender factor, the age covariate, and the interaction between gender and LD risk were all nonsignificant. LD risk remained significant, $F(1, 45) = 4.476, p < .05$.

In the second ANCOVA, solitary play was entered as the dependent variable, gender and LD risk were entered as the fixed factors, and age was entered as the covariate. The gender factor, the age covariate, and the interaction between gender and LD risk were all nonsignificant. LD risk remained significant, $F(1, 45) = 10.250, p < .01$.

Furthermore, there was a significant relation between LD risk and solitary constructive play, $t(47) = -2.224, p < .05$. The mean duration engaged in solitary constructive play by the at-risk children was 321.7 seconds ($SD = 271.6$), while the mean duration engaged in solitary constructive play by the not at-risk children was 139.2 seconds ($SD = 210.8$).
Table 19

Intercorrelations Between the At-risk Index and the Play Variables With Age and Gender

Partialled Out

<table>
<thead>
<tr>
<th>Play Variables</th>
<th>At-risk Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seconds of Play</strong></td>
<td></td>
</tr>
<tr>
<td>Unoccupied behaviour</td>
<td>.41**</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>.34*</td>
</tr>
<tr>
<td>Solitary play</td>
<td>.52***†</td>
</tr>
<tr>
<td>Parallel play</td>
<td>-.27</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>-.10</td>
</tr>
<tr>
<td>Functional play</td>
<td>.03</td>
</tr>
<tr>
<td>Constructive play</td>
<td>-.23</td>
</tr>
<tr>
<td>Dramatic play</td>
<td>.09</td>
</tr>
<tr>
<td>Games with rules</td>
<td>-.14</td>
</tr>
<tr>
<td>Reading</td>
<td>-.04</td>
</tr>
<tr>
<td>Solitary constructive play</td>
<td>.48***†</td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>.04</td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td>-.25</td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td>-.06</td>
</tr>
<tr>
<td>Cooperative constructive play</td>
<td>-.28*</td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td>.10</td>
</tr>
<tr>
<td>Total time at centres</td>
<td>-.17</td>
</tr>
</tbody>
</table>

| **Other Continuous Play Variables**                 |               |
| Negative play dichotomies                           | .47***†       |
| Positive play dichotomies                           | -.45***†      |
| Number of repeated vocalizations                    | .48***        |
| On-task behaviour                                   | -.25          |
| Dramatic talk                                       | -.06          |

*Note.* † = continued to remain significant with PPVT-R scores partialled out.

\*p < .05. **p < .01. ***p < .001.
With age and gender partialled out, significant negative correlations were found between
the PPVT-R and time engaged in solitary play \((r = -0.34, p < 0.05)\) and solitary constructive play
\((r = -0.30, p = 0.05)\). For additional correlations between the PPVT-R and the play variables, please
refer to Table 20.

### Table 20

**Intercorrelations Between the PPVT-R and the Play Variables With Age and Gender Partialled**

<table>
<thead>
<tr>
<th>Play Variables</th>
<th>PPVT-R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seconds of Play</strong></td>
<td></td>
</tr>
<tr>
<td>Unoccupied behaviour</td>
<td>-0.17</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>-0.27</td>
</tr>
<tr>
<td>Solitary play</td>
<td>-0.34*</td>
</tr>
<tr>
<td>Parallel play</td>
<td>0.09</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>0.17</td>
</tr>
<tr>
<td>Functional play</td>
<td>-0.06</td>
</tr>
<tr>
<td>Constructive play</td>
<td>-0.02</td>
</tr>
<tr>
<td>Dramatic play</td>
<td>0.16</td>
</tr>
<tr>
<td>Games with rules</td>
<td>0.01</td>
</tr>
<tr>
<td>Reading</td>
<td>0.15</td>
</tr>
<tr>
<td>Solitary constructive play</td>
<td>-0.30*</td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>-0.07</td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td>0.08</td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td>0.06</td>
</tr>
<tr>
<td>Cooperative constructive play</td>
<td>0.10</td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td>0.15</td>
</tr>
<tr>
<td>Total time at centres</td>
<td>0.22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Continuous Play Variables</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative play dichotomies</td>
<td>-0.33*</td>
</tr>
<tr>
<td>Positive play dichotomies</td>
<td>0.29*</td>
</tr>
<tr>
<td>Number of repeated vocalizations</td>
<td>-0.25</td>
</tr>
<tr>
<td>On-task behaviour</td>
<td>0.28</td>
</tr>
<tr>
<td>Dramatic talk</td>
<td>0.22</td>
</tr>
</tbody>
</table>

\*p < 0.05.
Generally higher levels of social play were not related to the three outcome variables. Controlling for age and gender, parallel play and cooperative play were not correlated with the at-risk index ($ps = -.27$ and $-.10$, respectively) or with the PPVT-R ($ps = .09$ and $.17$, respectively). LD risk was also not related to parallel play or cooperative play, $t(48) = 1.290, p = .20$ and $t(48) = .783, p = .44$, respectively. The findings remained nonsignificant when the effects of age and gender were controlled. Although parallel constructive play and cooperative constructive play related to the LD risk groups, $t(40.794) = 2.541, p < .05$ and $t(27.191) = 2.064, p < .05$, respectively, both of these findings became nonsignificant when age and gender were controlled. However, one significant negative correlation was found between the at-risk index and cooperative constructive play ($r = -.28, p < .05$), controlling for age and gender (see Table 19).

Since there were significant relations between the outcome variables and all three lower levels of social play (i.e., unoccupied behaviour, onlooker behaviour, solitary play), this part of the hypothesis was clearly supported by the statistical results. Therefore, at-risk kindergarten children spent more time engaged in lower levels of social play than their not at-risk peers. The second part of the hypothesis, that at-risk kindergarten children will spend less time engaged in higher levels of social play (i.e., parallel play, cooperative play) than their not at-risk peers, received only modest support.

(c) Kindergarten children who later develop at-risk status for learning disabilities will have difficulties in interacting appropriately with their peers during free play.

Those children who engaged in inappropriate interactions with their peers did not receive significantly higher scores on the at-risk index ($M = 5.5$, $SD = 6.4$), compared to those children who engaged in appropriate interactions with their peers ($M = 2.7$, $SD = 4.3$); $t(48) = -1.663, p = $
Nonetheless, a two-way analysis of covariance (ANCOVA) was performed, with the at-risk index as the dependent variable, gender and inappropriate interactions as the fixed factors, and age as the covariate. The gender factor remained nonsignificant, but both the age covariate and the interaction between gender and inappropriate interactions were significant, $F(1, 45) = 5.325$, $p < .05$ and $F(1, 45) = 5.929$, $p < .05$, respectively. Inappropriate interactions remained significant, $F(1, 45) = 4.916$, $p < .05$.

The at-risk grouping of children did not engage in significantly more inappropriate behaviour with their peers, $\chi^2(1, N = 50) = .78$, $p = .40$, perhaps due to a loss of statistical power using the categorical LD risk variable. Finally, inappropriate behaviour with peers was not related to the PPVT-R, $t(48) = .821$, $p = .42$, and continued to remain nonsignificant when age and gender were controlled.

Therefore, the results partially supported the hypothesis that at-risk kindergarten children will interact more inappropriately with peers, compared with not at-risk kindergarten children.

(d) Kindergarten children who later develop at-risk status for learning disabilities will not effectively communicate verbally with their peers during play.

As expected, weaker oral communication skills were noted in the at-risk group of kindergarten children. There was a significant relation between the LD risk category and poor peer communication, $\chi^2(1, N = 50) = 10.75$, $p < .01$. Specifically, 50 per cent of the children later judged to be at risk for future learning disabilities demonstrated poor oral communication skills, while only 7.5 per cent of the children later judged to be not at risk for future learning disabilities demonstrated poor oral communication skills.

Another significant relation which supported this finding was also found between the at-risk index and peer communication, $t(7.849) = -2.476$, $p < .05$. Mean score on the at-risk index for
children with poor oral communication skills was 8.4 ($SD = 6.8$), while the mean score on the at-risk index for children with good oral communication skills was 2.3 ($SD = 3.8$). Subsequently, a two-way analysis of covariance (ANCOVA) was performed, with the at-risk index as the dependent variable, gender and the peer communication dichotomy as the fixed factors, and age as the covariate. Both the gender factor and the interaction between gender and peer communication were nonsignificant. The age covariate was significant, $F(1, 45) = 6.454, p < .05$, and peer communication remained highly significant, $F(1, 45) = 19.080, p < .001$. Nevertheless, peer communication was not related to the PPVT-R, $t(48) = .935, p = .35$, and continued to remain nonsignificant when age and gender were controlled.

Any type of speech problem that was displayed by the kindergarten children during the play sessions was noted (i.e., lisps, speech impairments, sound sequencing errors, etc.). Once again, the at-risk children displayed significantly more speech problems during play than their not at-risk peers. For example, the LD risk category related significantly to speech problems, $\chi(1, N = 50) = 10.52, p < .01$. Specifically, 54.5 per cent of the kindergarten children later judged to be at risk for future learning disabilities had some speech difficulties, while only 10.3 per cent of the kindergarten children later judged to be not at risk for future learning disabilities had some speech difficulties.

In addition, speech problems related significantly to the at-risk index, $t(12.400) = -2.252, p < .05$. Mean score on the at-risk index for children with some speech problems was 6.7 ($SD = 6.2$), while the mean score on the at-risk index for children with no speech problems was 2.3 ($SD = 4.0$). A two-way analysis of covariance (ANCOVA) was performed, with the at-risk index as the dependent variable, gender and speech problems as the fixed factors, and age as the covariate. Although the gender factor and the interaction between gender and speech problems were nonsignificant, the age covariate was significant, $F(1, 45) = 5.007, p < .05$. Furthermore, speech problems remained significant, $F(1, 45) = 7.478, p < .01$. Finally, speech problems were
not related to the PPVT-R, \( t(48) = -0.244, p = .81 \), and continued to remain nonsignificant with age and gender controlled.

Therefore, the hypothesis that at-risk kindergarten children will have greater difficulty in communicating orally with peers during play, in comparison to not-at-risk kindergarten children, was clearly supported by the results.

**General Hypothesis # 2**

Kindergarten children who later develop at-risk status for learning disabilities will display earlier deficits in cognitive play skills, in comparison to their not-at-risk peers.

**Specific Hypotheses**

(a) Kindergarten children who later develop at-risk status for learning disabilities will engage in repetitive play activities and will reverse or use toy items upside down.

It was revealed through crosstabulations that there was a significant relation between the at-risk grouping of children and presence of perseveration, \( \chi^2(1, N = 50) = 4.63, p < .05 \).

Specifically, 17 per cent of the not-at-risk children engaged in some perseveration, while 50 per cent of the at-risk children engaged in some perseveration.

A t-test comparing perseveration and scores obtained on the at-risk index further supported the significant relation between the two variables, \( t(12.824) = -2.499, p < .05 \). The mean score on the at-risk index for children who engaged in some perseveration was 7.1 (\( SD = 6.7 \)), while the mean score on the at-risk index for children who engaged in no perseveration was 2.1 (\( SD = 3.4 \)).

A two-way analysis of covariance (ANCOVA) on the at-risk index was performed, with the at-risk index as the dependent variable, gender and perseveration as the fixed factors, and age as the covariate. Both the gender factor and the interaction between gender and perseveration were
nonsignificant. However, the age covariate was significant, $F(1, 45) = 5.448, p < .05$, and the effects of perseveration on the at-risk index remained significant, $F(1, 45) = 9.711, p < .01$.

As noted later in this discussion, perseveration also related with the PPVT-R. Hence, the effects of age, gender, and PPVT-R scores were controlled in a two-way analysis of covariance (ANCOVA). The at-risk index was entered as the dependent variable, age and PPVT-R scores were entered as the covariates, and perseveration and gender were entered as the fixed factors. The gender factor and the interaction between gender and perseveration were both nonsignificant. The age covariate and the PPVT-R covariate were both significant, $F(1, 44) = 5.679, p < .05$ and $F(1, 44) = 7.638, p < .01$, respectively. Perseveration continued to remain significantly related with the at-risk index, $F(1, 44) = 5.186, p < .05$. Therefore, children who engaged in perseverative behaviour scored higher on the at-risk index and were more likely to be classified as at risk for future learning disabilities.

As mentioned previously, scores on the PPVT-R related with perseveration, $t(48) = 3.369, p < .001$. Mean score on the PPVT-R for those children who displayed no perseveration was 111.2 ($SD = 13.2$), while the mean score on the PPVT-R for those children who displayed some perseveration was 97.2 ($SD = 10.3$). Subsequently, a two-way analysis of covariance (ANCOVA) was performed, with the PPVT-R as the dependent variable, gender and perseveration as the fixed factors, and age as the covariate. The gender factor and the interaction between gender and perseveration were both nonsignificant. The age covariate was significant, $F(1, 45) = 6.307, p < .05$, and perseveration remained significant, $F(1, 45) = 8.998, p < .01$.

A third source of support for this hypothesis stemmed from the number of repeated vocalizations uttered by the children. This type of perseveration in speech also related significantly to at-risk status. Specifically, number of repeated vocalizations related significantly to the at-risk index ($r = .29, p < .05$) and to the LD risk groups, $t(48) = -2.964, p < .01$. As presented in Table 19, the correlation between the at-risk index and number of repeated...
vocalizations improved substantially with age and gender partialled out ($r = .48$, $p < .001$). The mean number of repeated vocalizations uttered by the at-risk group of children was 2.7 ($SD = 1.9$), while the mean number of repeated vocalizations uttered by the not at-risk group of children was 1.2 ($SD = 1.3$). With age and gender partialled out, the PPVT-R was not correlated significantly with number of repeated vocalizations ($r = -.25$, $p = .09$).

A two-way analysis of covariance (ANCOVA) was performed to further test the relation between LD risk and number of repeated vocalizations, with gender and LD risk as the fixed factors, age as the covariate, and number of repeated vocalizations as the dependent variable. Both the age covariate and the gender factor were nonsignificant. However, the interaction between gender and LD risk was significant, $F(1, 45) = 6.580$, $p < .05$. Estimated mean number of repeated vocalizations for at-risk boys was 1.3, while the estimated mean number of repeated vocalizations for not at-risk boys was 1.6. Estimated mean number of repeated vocalizations for at-risk girls was 3.2, while the estimated mean number of repeated vocalizations for not at-risk girls was .9. Clearly, the at-risk girls in the study uttered significantly more repeated vocalizations than the not at-risk girls. Furthermore, LD risk remained significant, $F(1, 45) = 8.887$, $p < .01$. In summary, the at-risk children uttered more repeated vocalizations than their not at-risk peers.

Therefore, the hypothesis that at-risk kindergarten children will engage in more repetitive play than their not at-risk peers was supported by the findings.

The second part of this hypothesis was not supported by the findings. Children who later developed at-risk status for learning disabilities did not reverse toy items significantly more than their not at-risk peers, $\chi^2(1, N = 50) = .36$, $p = .50$. Toy reversals were not related significantly to the at-risk index, $t(48) = -1.785$, $p = .08$, and continued to remain nonsignificant when age and gender were controlled. In addition, toy reversals were not related significantly to the PPVT-R, $t(48) = 1.641$, $p = .11$, and continued to remain nonsignificant when age and gender were
controlled. However, very little toy reversal was observed at all during the recorded play sessions ($n = 3$).

(b) Kindergarten children who later develop at-risk status for learning disabilities will spend more time engaged in functional play and less time engaged in games and in reading.

A number of t-tests were conducted to investigate a possible relation between LD risk and duration engaged in functional play, reading, and games. As expected, the at-risk children spent more time engaged in functional play and less time engaged in games and in reading than their not at-risk peers. However, none of these differences reached statistical significance (see Table 21 for specific means and standard deviations). In all three cases, the findings between LD risk and functional play, reading, and games were nonsignificant, $t(46) = -.703, p = .49$, $t(48) = .880, p = .38$, and $t(36.516) = 1.776, p = .08$, respectively. All three findings continued to remain nonsignificant when age and gender were controlled. Furthermore, the at-risk index was not correlated significantly with functional play, reading, or games, with age and gender partialled out ($ps = .47$, .91, and .47, respectively). However, functional play correlated significantly with the PPVT-R, controlling for age and gender ($r = -.29, p < .05$). Games and reading were not correlated significantly with the PPVT-R, controlling for the effects of age and gender ($ps = .94$ and .67, respectively).
Table 21

Mean Durations in Seconds and Standard Deviations of Cognitive Activities Engaged in by At-risk and Not At-risk Children

<table>
<thead>
<tr>
<th>Cognitive Activity</th>
<th>At-risk Children</th>
<th>Not At-risk Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Functional play</td>
<td>111.3</td>
<td>110.8</td>
</tr>
<tr>
<td>Reading</td>
<td>53.5</td>
<td>118.4</td>
</tr>
<tr>
<td>Games with rules</td>
<td>50.9</td>
<td>131.8</td>
</tr>
</tbody>
</table>

As for solitary functional play, a t-test revealed that the at-risk index related significantly with solitary functional play, t(48) = -2.112, p < .05. A two-way analysis of covariance (ANCOVA) was performed, with the at-risk index as the dependent variable, gender and solitary functional play as the fixed factors, and age as the covariate. The age covariate was significant, F(1, 45) = 4.642, p < .05. The gender factor, the interaction between gender and solitary functional play, and solitary functional play were all nonsignificant. LD risk was also not related to solitary functional play, χ²(1, N = 50) = .25, p = .69.

Nevertheless, solitary functional play related to the PPVT-R, t(48) = 2.518, p < .05. Those children who engaged in solitary functional play scored lower on the PPVT-R. Mean score on the PPVT-R for children who engaged in some solitary functional play was 99.5 (SD = 10.5), while the mean score on the PPVT-R for children who engaged in no solitary functional play was
110.5 (SD = 13.8). When a two-way analysis of covariance (ANCOVA) was performed controlling for the effects of age and gender, the main effect held up.

Therefore, although the findings emerged in the direction that was anticipated, most of them did not reach statistical significance. Thus, the hypothesis that at-risk kindergarten children will engage in more functional play and less games and reading than their not at-risk peers was not supported. However, the relations between both functional play and solitary functional play and the measure of general ability (i.e., the PPVT-R) were significant.

(c) Kindergarten children who later develop at-risk status for learning disabilities will display deficits in symbolic play.

The relation between LD risk and the absence of elaborated fantasy roles was not significant, \( \chi^2(1, N = 50) = .00, p = 1.00 \). The at-risk index was also not related significantly to elaborated fantasy roles, \( t(48) = .260, p = .80 \), and continued to remain nonsignificant when age and gender were controlled. Finally, the PPVT-R was not related significantly to elaborated fantasy roles, \( t(48) = .284, p = .78 \). When age and gender were controlled in a two-way analysis of covariance (ANCOVA), the findings continued to remain nonsignificant.

A nonsignificant relation emerged between the at-risk grouping of kindergarten children and duration engaged in dramatic play, \( t(48) = -1.172, p = .25 \), and continued to remain nonsignificant with age and gender controlled. Dramatic play duration was also not correlated significantly with the at-risk index or with the PPVT-R, controlling for age and gender (\( ps = .52 \) and .29, respectively).

Furthermore, a nonsignificant relation was found between the at-risk grouping of kindergarten children and the amount of pretend play talk uttered during dramatic play, \( t(39) = \)
This relation continued to remain nonsignificant when age and gender were controlled. Finally, pretend play talk was not correlated significantly with the at-risk index or with the PPVT-R, controlling for age and gender ($p$s = .97 and .90, respectively).

Therefore, the results did not support the hypothesis that at-risk kindergarten children will display deficits in symbolic play, in comparison to their not at-risk peers.

**General Hypothesis #3**

**Kindergarten children who later develop at-risk status for learning disabilities will display earlier attention problems during play, in comparison to their not at-risk peers.**

**Specific Hypotheses**

(a) Kindergarten children who later develop at-risk status for learning disabilities will move frequently from one learning centre to another and will wander aimlessly around the classroom during free play.

Children who moved frequently from learning centres did not receive significantly higher scores on the at-risk index, $t(48) = -1.510, p = .14$. Mean score on the at-risk index for those children who moved frequently to various centres was 4.8 ($SD = 5.6$), while the mean score on the at-risk index for those children who moved infrequently to various centres was 2.6 ($SD = 4.4$). Nevertheless, a two-way analysis of covariance (ANCOVA) was performed, with the at-risk index as the dependent variable, gender and classroom movement as the fixed factors, and age as the covariate. The gender factor and the interaction between gender and classroom movement were both nonsignificant. The age covariate was significant, $F(1, 45) = 4.679, p < .05$, and classroom movement was significant, $F(1, 45) = 4.019, p = .05$. 
There was not a significant relation between LD risk and presence of classroom movement, \( \chi^2(1, N = 50) = .37, p = .71 \). Although classroom movement related to the at-risk index when age and gender were controlled, a loss of statistical power with the categorical LD risk variable may explain the difference in the findings. Classroom movement was also not related to the PPVT-R, \( t(48) = 1.192, p = .24 \), and continued to remain nonsignificant with age and gender controlled.

The kindergarten children who wandered frequently in class did not receive significantly higher scores on the at-risk index, \( t(48) = -1.675, p = .10 \). Mean score on the at-risk index for the children who wandered frequently in class was 5.7 (SD = 6.0), while the mean score on the at-risk index for the children who wandered infrequently in class was 2.7 (SD = 4.5). Again, a two-way analysis of covariance (ANCOVA) was performed, with the at-risk index as the dependent variable, gender and wandering as the fixed factors, and age as the covariate. The gender factor and the interaction between gender and wandering were both nonsignificant. The age covariate and wandering were significant, \( F(1, 45) = 4.817, p < .05 \) and \( F(1, 45) = 5.359, p < .05 \), respectively.

There was not a significant relation between LD risk and wandering, \( \chi^2(1, N = 50) = 1.22, p = .36 \), perhaps again due to a loss of statistical power using this categorical variable. Finally, the PPVT-R was not related significantly to wandering, \( t(48) = .752, p = .46 \), even after age and gender were controlled.

Therefore, the hypothesis that at-risk children move to centres more often and wander more frequently than their not at-risk peers was partially supported.

(b) Kindergarten children who later develop at-risk status for learning disabilities will spend less time engaged in play activities.
Total time spent at the play centres was not related significantly to the LD risk groups, $t(48) = .702, p = .49$, and remained nonsignificant when age and gender were controlled. The mean duration that the at-risk children spent at the activity centres was 2896.2 seconds ($SD = 103.0$), while the mean duration that the not at-risk children spent at the activity centres was 2918.6 seconds ($SD = 86.8$). Furthermore, total time spent at the play centres was not correlated significantly with the at-risk index or with the PPVT-R, controlling for age and gender ($ps = .24$ and .13, respectively).

Nonsignificant relations were also found between the outcome variables and on-task behaviour while at the play centres. Specifically, on-task behaviour was not related significantly to the LD risk groups, $t(47) = .605, p = .55$, and remained nonsignificant after age and gender were controlled. A nonsignificant correlation was found between on-task behaviour and the at-risk index, controlling for age and gender ($p = .21$). Nevertheless, on-task behaviour correlated significantly with the PPVT-R, with age and gender partialled out ($r = .28, p = .05$).

Therefore, the hypothesis that at-risk kindergarten children will be less engaged in their play activities than their not at-risk peers was not supported by the research findings.

**General Hypothesis # 4**
Kindergarten children who later develop at-risk status for learning disabilities will display earlier engagement in more negative play behaviour combinations (e.g., solitary play, perseveration, classroom movement, etc.) and fewer positive play behaviour combinations (e.g., cooperative play, peer communication, appropriate toy use, etc.), in comparison to their not at-risk peers.
As outlined in Table 12, the sum of the negative play dichotomies consisted of nine factors, while the sum of the positive play dichotomies consisted of 13 factors. As detailed in this section, both variables related to all three outcome variables, with age and gender controlled.

As expected, the children who later developed at-risk status for learning disabilities engaged in more negative play behaviour combinations and fewer positive play behaviour combinations than their not at-risk peers. Specific means are provided in Table 22. I will begin this section with a discussion of the significant relations involving the positive play behaviour combinations.

**Table 22**

Means and Standard Deviations of Positive and Negative Play Behaviour Combinations in At-risk and Not At-risk Children

<table>
<thead>
<tr>
<th>Play Behaviour Combination</th>
<th>At-risk Children</th>
<th>Not At-risk Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive play dichotomies*</td>
<td>9.4</td>
<td>10.9</td>
</tr>
<tr>
<td>Negative play dichotomies*</td>
<td>3.2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

* Measured as a count.

In Tables 19 and 20, significant correlations are reported between the sum of the positive play dichotomies and both the at-risk index and the PPVT-R, with age and gender partialled out \( (r = -.45, p < .001 \text{ and } r = .29, p < .05, \text{ respectively}) \). To further explore the relation between the at-risk index and the sum of the positive play dichotomies, the effects of age, gender, and the PPVT-R were partialled out. There continued to be a significant correlation between the at-risk index and the sum of the positive play dichotomies \( (r = -.38, p < .01) \).
There was not a significant relation between the sum of the positive play dichotomies and LD risk, \( t(48) = 1.801, p = .08 \). The mean score on the positive play count for at-risk children was 9.4 \((SD = 3.2)\), while the mean score on the positive play count for the not at-risk children was 10.9 \((SD = 2.2)\). Nevertheless, a two-way analysis of covariance (ANCOVA) was performed, with the sum of the positive play dichotomies as the dependent variable, gender and LD risk as the fixed factors, and age as the covariate. The gender factor, the interaction between gender and LD risk, and the age covariate were all nonsignificant. LD risk remained significant, \( F(1, 45) = 4.780, p < .05 \).

With respect to the negative play behaviour combinations, significant correlations were found between the sum of the negative play dichotomies and both the at-risk index and the PPVT-R, with age and gender partialled out \((r = .47, p < .001 \) and \( r = -.33, p < .05 \), respectively; see Tables 19 and 20). Again, the effects of age, gender, and PPVT-R scores were partialled out to further explore the relation between the at-risk index and the sum of the negative play dichotomies. The at-risk index continued to be significantly correlated with the sum of the negative play dichotomies \((r = .40, p < .01)\).

As noted in Table 23, a significant relation existed between the sum of the negative play dichotomies and LD risk, \( t(48) = -2.089, p < .05 \). The mean score on the negative play count for at-risk children was 3.2 \((SD = 2.6)\), while the mean score on the negative play count for not at-risk children was 1.6 \((SD = 2.1)\). A two-way analysis of covariance (ANCOVA) was performed, with the sum of the negative play dichotomies as the dependent variable, gender and LD risk as the fixed factors, and age as the covariate. The age covariate, the gender factor, and the interaction between gender and LD risk were all nonsignificant. LD risk remained significant, \( F(1, 45) = 4.233, p < .05 \).

Through these various analyses, it was determined that the at-risk children engaged in more negative play behaviour combinations and fewer positive play behaviour combinations than their
not at-risk peers. It was shown that a child’s participation in negative play behaviours was a more important factor in the identification of at-risk status for learning disabilities than a child’s lack of participation in positive play behaviours. By referring to the specific means in Table 23, the reader will note that the at-risk children engaged in twice as many negative play behaviour combinations as their not at-risk peers. Conversely, the at-risk children engaged in only slightly fewer positive play behaviour combinations than their not at-risk peers. Consistently, the negative play behaviours have emerged as a key component in the play of children who later developed at-risk status for future learning disabilities.

Therefore, the hypothesis that at-risk kindergarten children will engage in more negative play behaviour combinations and fewer positive play behaviour combinations than their not at-risk peers was clearly supported by the statistical analyses.
Table 23

Relations Between the Outcome Variable (LD Risk) and the Play Variables (T-tests)

<table>
<thead>
<tr>
<th>Seconds of Play Variables</th>
<th>Not At-risk</th>
<th>At-risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>M</td>
</tr>
<tr>
<td>Unoccupied behaviour</td>
<td>9.520</td>
<td>5.1</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>48</td>
<td>110.1</td>
</tr>
<tr>
<td>Solitary play</td>
<td>9.888</td>
<td>235.7</td>
</tr>
<tr>
<td>Parallel play</td>
<td>48</td>
<td>1249.2</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>48</td>
<td>1319.7</td>
</tr>
<tr>
<td>Functional play</td>
<td>46</td>
<td>77.7</td>
</tr>
<tr>
<td>Constructive play</td>
<td>48</td>
<td>1591.3</td>
</tr>
<tr>
<td>Dramatic play</td>
<td>48</td>
<td>682.8</td>
</tr>
<tr>
<td>Games with rules</td>
<td>36.516</td>
<td>167.1</td>
</tr>
<tr>
<td>Reading</td>
<td>48</td>
<td>115.4</td>
</tr>
<tr>
<td>Solitary constructive play</td>
<td>47</td>
<td>139.2</td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>48</td>
<td>49.4</td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td>40.794</td>
<td>931.4</td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td>48</td>
<td>150.6</td>
</tr>
<tr>
<td>Cooperative constructive play</td>
<td>27.191</td>
<td>508.5</td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td>48</td>
<td>525.8</td>
</tr>
<tr>
<td>Total time at centres</td>
<td>48</td>
<td>2918.6</td>
</tr>
</tbody>
</table>

Other Continuous Play Variables

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative play dichotomies</td>
<td>48</td>
<td>1.6</td>
<td>2.1</td>
<td>3.2</td>
<td>2.6</td>
<td>-2.089*</td>
</tr>
<tr>
<td>Positive play dichotomies</td>
<td>48</td>
<td>10.9</td>
<td>2.2</td>
<td>9.4</td>
<td>3.2</td>
<td>1.801↑</td>
</tr>
<tr>
<td>On-task behaviour</td>
<td>47</td>
<td>90.8</td>
<td>7.7</td>
<td>89.1</td>
<td>6.4</td>
<td>.605</td>
</tr>
<tr>
<td>Dramatic talk</td>
<td>39</td>
<td>.1</td>
<td>.06</td>
<td>.1</td>
<td>.07</td>
<td>-.01</td>
</tr>
<tr>
<td>Repeated vocalizations</td>
<td>48</td>
<td>1.2</td>
<td>1.3</td>
<td>2.7</td>
<td>1.9</td>
<td>-2.964**</td>
</tr>
</tbody>
</table>

Note. ↑ = becomes significant with age and gender controlled. ↓ = nonsignificant with age and gender controlled.

*p < .05. **p < .01.
4.11 Multiple Regression Models

The play observation scale devised for teachers was comprised of two components: a play behaviour checklist and a play code sheet where seconds of play were recorded. Since two types of measures (i.e., checklist, seconds of play) were used, two multiple regression models will be presented. The multiple regression models presented in both cases used the continuous at-risk index variable as the dependent variable.

In both instances, demographic/personal variables were entered into the first two blocks of the multiple regression model. In the third block of both models, 13 play variables that were related to the outcome variables were entered individually and in sets of two. Among these 13 play variables, three variables were taken from the play behaviour checklist and 10 variables were taken from the play code sheet (i.e., seconds of play). The three variables from the play behaviour checklist were: number of repeated vocalizations, the sum of the positive play dichotomies, and the sum of the negative play dichotomies. The 10 variables from the play code sheet were seconds of: unoccupied behaviour, onlooker behaviour, solitary play, parallel play, functional play, constructive play, solitary constructive play, parallel constructive play, cooperative constructive play, and solitary functional play (dichotomous variable). Among these 10 variables, four were significant when entered individually into the third block of the multiple regression model. However, onlooker behaviour provided the greatest explanatory power among these variables ($R^2 = .52, p < .001$). As for the three checklist variables, all were significant when entered into the third block of the model. Of the three, the sum of the negative play dichotomies variable provided the greatest explanatory power ($R^2 = .45, p < .001$). In the following discussion, a summary of both multiple regression models (i.e., seconds of play, play behaviour checklist) will be provided for the reader.
4.11.1 Seconds of Play

Using the hierarchical method of multiple regression, demographic variables were entered into the first step of this model. Specifically, age, gender, and maternal education were entered into the first block. Age and gender were entered into the model, as these two variables were related in my study. Maternal education was included in the model to control for the effects of socioeconomic status. Speech problems, a personal variable, was entered into the second step of the model. It was important to include speech problems in the model, as the link between speech and language problems and learning difficulties has been well established in the research literature (see definition for "learning disabilities" in Chapter 1). In the third and final step, a play variable measured in seconds was entered into the model. Therefore, onlooker behaviour was entered into the third block. Considered a lower form of social participation, onlooker behaviour has been observed in young children both with and without handicapping conditions. Variables entered on steps 2 and 3 had been shown to be significant in analyses reported earlier.

Of these five variables, three were significant. Specifically, speech problems and onlooker behaviour were significant at the .001 level, while maternal education was significant at the .01 level. All three blocks were statistically significant. With this combination of variables, 51.8% of the variance for scores obtained on the at-risk index was explained. None of the three step 1 variables were significant when entered. However, at step 2, maternal education became significant. For more specific information about the seconds of play model, see Table 24.
### Table 24

**Hierarchical Multiple Regression Analysis of Predictor Variables of Child’s At-risk Index Score**

(Seconds of Play)

<table>
<thead>
<tr>
<th>Step and Predictor Variable</th>
<th>$\beta$ (on step)</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal education</td>
<td>-.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech problems</td>
<td>.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>.38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$\beta$, $R^2$, $\Delta R^2$, and $\Delta F$ values are provided for each step of the hierarchical multiple regression analysis.

*p < .05. ***p < .001.

#### 4.11.2 Play Behaviour Checklist

In this second model, the hierarchical method of multiple regression was employed once again. As in the previous model, the same three demographic variables were entered into the first step: age, gender, and maternal education. In the second step of the model, the speech problems variable was entered again. In the third step of the model, the sum of the negative play dichotomies variable from the play behaviour checklist was entered.

Two of the five variables were significant in this hierarchical multiple regression model. Speech problems was significant at the .01 level, while the sum of the negative play dichotomies
was significant at the .05 level. Maternal education was significant on the second step, and approached statistical significance on the third step. Using the play behaviour checklist model, 45.3% of the variance for scores obtained on the at-risk index was explained. All three blocks were statistically significant. Further information about the play scale model is presented in Table 25.

Table 25

Hierarchical Multiple Regression Analysis of Predictor Variables of Child’s At-risk Index Score (Play Behaviour Checklist)

<table>
<thead>
<tr>
<th>Step and Predictor Variable</th>
<th>β</th>
<th>$R^2$</th>
<th>Δ$R^2$</th>
<th>Δ$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.29</td>
<td>.17*</td>
<td>.17</td>
<td>2.887*</td>
</tr>
<tr>
<td>Gender</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal education</td>
<td>-.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td>.37***</td>
<td>.20</td>
<td>13.720***</td>
</tr>
<tr>
<td>Speech problems</td>
<td>.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td>.45***</td>
<td>.08</td>
<td>6.039*</td>
</tr>
<tr>
<td>Sum of the negative play dichotomies</td>
<td>.31</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05. **p < .001.
4.12 Play, Academic Achievement, and At-risk Status

One of the goals of this study was to explore the potential use of play as an assessment device. In Tables 26 and 27, the relations between the play variables and the senior kindergarten and grade one assessment variables are presented, with the effects of age, gender, and general ability (i.e., PPVT-R scores) partialled out. The fact that many relations continued to remain significant while controlling for these effects only strengthens the position that play observation can provide an alternative form of assessment for young children, compared with traditional standardized tests like the PPVT-R.

Several patterns consistently appeared in the study findings. The first major trend to develop was that children's engagement in negative play behaviours was predictive of academic achievement and future at-risk status for learning disabilities. For example, all senior kindergarten and grade one assessment variables correlated significantly with the sum of the negative play dichotomies (see Table 26). Two forms of nonsocial play behaviour (i.e., unoccupied behaviour and solitary play) also correlated negatively with various senior kindergarten and grade one assessment variables. In particular, it would appear that the sum of the negative play dichotomies variable is an even better predictor of senior kindergarten and grade one achievement than the PPVT-R.

Furthermore, as discussed in previous sections, there were significant relations between the risk measures (i.e., the at-risk index and LD risk) and negative play behaviours, such as: unoccupied behaviour, onlooker behaviour, solitary play, solitary constructive play, the sum of the negative play dichotomies, the inability to remain in a play group, inappropriate interactions with peers, classroom movement, and wandering. Overall, it appears from the findings that negative social play behaviours were more predictive of a child's academic achievement and at-risk status for future learning disabilities than negative cognitive play behaviours.
Another pattern that appeared in this study was the importance of repetitive behaviour in the identification of young children at risk for future learning disabilities. For example, one form of perseverative speech (i.e., number of repeated vocalizations), correlated consistently with all senior kindergarten and grade one assessment indicators (see Table 26). Again, it would appear that the number of repeated vocalizations is an even better predictor of senior kindergarten and grade one achievement than the PPVT-R. Solitary functional play, another form of nonsocial, repetitive play related significantly to senior kindergarten reading and writing scores (refer to Table 27). As reported earlier in the chapter, similar significant relations emerged between the risk measures (i.e., the at-risk index and LD risk) and both perseveration and number of repeated vocalizations. Poor oral communication skills also related to the risk measures.

Although the relations were not as significant, engagement in positive play behaviours such as the sum of the positive play dichotomies, parallel play, constructive play, parallel constructive play, and cooperative constructive play related positively to various measures of senior kindergarten and grade one achievement (see Table 26). In particular, the sum of the positive play dichotomies correlated significantly with all senior kindergarten and grade one assessment variables. The sum of the positive play dichotomies and cooperative constructive play also related significantly with the risk measures. In summary, it seems that participation in negative play behaviours was more predictive of a child's future learning problems than participation in positive play behaviours.

It is notable that dramatic play and cooperative dramatic play correlated negatively with the grade one English marks and the grade one math marks, controlling for age, gender, and PPVT-R scores. Furthermore, dramatic play was not correlated significantly with the grade one English marks and the grade one math marks, controlling only for age and gender. The same pattern emerged between cooperative dramatic play and the grade one English marks. Children with higher PPVT-R scores had higher English and math scores, but did not engage in significantly
less dramatic play or less cooperative dramatic play (in the case of the grade one English marks). This helps to explain the masking effect of the PPVT-R.

### Table 26

**Intercorrelations Between the Play Variables, the PPVT-R, and Academic Achievement With Age and Gender Partialled Out**

<table>
<thead>
<tr>
<th>Play Variable</th>
<th>SK reading</th>
<th>SK writing</th>
<th>Gr. 1 English</th>
<th>Gr. 1 math</th>
<th>Gr. 1 survey</th>
<th>Gr. 1 skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative play dichotomies</td>
<td>-.50****†</td>
<td>-.46****†</td>
<td>-.58****†</td>
<td>-.40****†</td>
<td>-.50****†</td>
<td>-.55****†</td>
</tr>
<tr>
<td>Positive play dichotomies</td>
<td>.36*†</td>
<td>.37****†</td>
<td>.52****†</td>
<td>.37†</td>
<td>.45****†</td>
<td>.42****†</td>
</tr>
<tr>
<td>Unoccupied behaviour</td>
<td>-.37†</td>
<td>-.32*</td>
<td>-.40****†</td>
<td>-.12</td>
<td>-.40****†</td>
<td>-.40****†</td>
</tr>
<tr>
<td>Onlooker behaviour</td>
<td>-.29*</td>
<td>-.28</td>
<td>-.33*</td>
<td>-.17</td>
<td>-.34*</td>
<td>-.35*</td>
</tr>
<tr>
<td>Solitary play</td>
<td>-.51****†</td>
<td>-.51****†</td>
<td>-.39**</td>
<td>-.23</td>
<td>-.34*</td>
<td>-.45****†</td>
</tr>
<tr>
<td>Parallel play</td>
<td>.25</td>
<td>.17</td>
<td>.33†</td>
<td>.31†</td>
<td>.22</td>
<td>.10</td>
</tr>
<tr>
<td>Cooperative play</td>
<td>.11</td>
<td>.19</td>
<td>.01</td>
<td>.12</td>
<td>.06</td>
<td>.25</td>
</tr>
<tr>
<td>Functional play</td>
<td>-.22</td>
<td>-.23</td>
<td>-.09</td>
<td>-.22</td>
<td>.01</td>
<td>-.16</td>
</tr>
<tr>
<td>Constructive play</td>
<td>.22</td>
<td>.19</td>
<td>.41****†</td>
<td>.33†</td>
<td>.36†</td>
<td>.25</td>
</tr>
<tr>
<td>Dramatic play</td>
<td>-.21</td>
<td>-.21</td>
<td>-.25†</td>
<td>-.22†</td>
<td>-.20</td>
<td>.01</td>
</tr>
<tr>
<td>Games with rules</td>
<td>.22</td>
<td>.18</td>
<td>.05</td>
<td>.05</td>
<td>.09</td>
<td>.07</td>
</tr>
<tr>
<td>Reading</td>
<td>.04</td>
<td>.18</td>
<td>-.05</td>
<td>.01</td>
<td>-.14</td>
<td>-.18</td>
</tr>
<tr>
<td>Repeated vocalizations</td>
<td>-.44****†</td>
<td>-.43****†</td>
<td>-.53****†</td>
<td>-.51****†</td>
<td>-.40****†</td>
<td>-.38****†</td>
</tr>
<tr>
<td>Total time at centres</td>
<td>.20</td>
<td>.23</td>
<td>.29°</td>
<td>.22</td>
<td>.19</td>
<td>.27</td>
</tr>
<tr>
<td>Dramatic talk</td>
<td>.06</td>
<td>.16</td>
<td>.07</td>
<td>.03</td>
<td>-.05</td>
<td>.03</td>
</tr>
<tr>
<td>Solitary constructive play</td>
<td>-.27</td>
<td>-.29°</td>
<td>-.13</td>
<td>-.07</td>
<td>-.14</td>
<td>-.28</td>
</tr>
<tr>
<td>Parallel functional play</td>
<td>-.19</td>
<td>-.18</td>
<td>-.02</td>
<td>-.12</td>
<td>.14</td>
<td>.06</td>
</tr>
<tr>
<td>Parallel dramatic play</td>
<td>-.07</td>
<td>-.09</td>
<td>.00</td>
<td>.07</td>
<td>-.08</td>
<td>-.05</td>
</tr>
<tr>
<td>Parallel constructive play</td>
<td>.26</td>
<td>.18</td>
<td>.39****†</td>
<td>.34†</td>
<td>.26</td>
<td>.14</td>
</tr>
<tr>
<td>Cooperative dramatic play</td>
<td>-.12</td>
<td>-.08</td>
<td>-.22†</td>
<td>-.29†</td>
<td>-.14</td>
<td>.09</td>
</tr>
<tr>
<td>Cooperative constructive play</td>
<td>.24</td>
<td>.35°</td>
<td>.19</td>
<td>.08</td>
<td>.22</td>
<td>.30†</td>
</tr>
</tbody>
</table>

### PPVT-R

<table>
<thead>
<tr>
<th>Variable</th>
<th>SK reading</th>
<th>SK writing</th>
<th>Gr. 1 English</th>
<th>Gr. 1 math</th>
<th>Gr. 1 survey</th>
<th>Gr. 1 skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPVT-R</td>
<td>.40**</td>
<td>.41**</td>
<td>.48****</td>
<td>.38**</td>
<td>.29°</td>
<td>.35°</td>
</tr>
</tbody>
</table>

*Note. SK = senior kindergarten. Gr. 1 survey = grade one teacher survey. Gr. 1 skills = grade one learning skills.*

† = continued to remain significant controlling for PPVT-R scores.

*p < .05. **p < .01.
Table 27

Relations Between Solitary Functional Play and Academic Achievement (T-tests)

<table>
<thead>
<tr>
<th>Variable</th>
<th>No SF Play</th>
<th>Some SF Play</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>M</td>
<td>SD</td>
<td>df</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior kindergarten reading&quot;a&quot;</td>
<td>48</td>
<td>1.8</td>
<td>.6</td>
<td>48</td>
<td>1.1</td>
<td>.8</td>
</tr>
<tr>
<td>Senior kindergarten writing&quot;a&quot;</td>
<td>48</td>
<td>1.6</td>
<td>.6</td>
<td>48</td>
<td>.9</td>
<td>.7</td>
</tr>
<tr>
<td>Grade one English&quot;b&quot;</td>
<td>48</td>
<td>23.5</td>
<td>6.8</td>
<td>48</td>
<td>16.8</td>
<td>7.6</td>
</tr>
<tr>
<td>Grade one math&quot;b&quot;</td>
<td>48</td>
<td>24.2</td>
<td>7.1</td>
<td>48</td>
<td>18.4</td>
<td>7.6</td>
</tr>
<tr>
<td>Grade one teacher survey&quot;c&quot;</td>
<td>48</td>
<td>67.7</td>
<td>14.5</td>
<td>48</td>
<td>59.8</td>
<td>19.5</td>
</tr>
<tr>
<td>Grade one learning skills&quot;d&quot;</td>
<td>48</td>
<td>40.9</td>
<td>13.1</td>
<td>48</td>
<td>28.6</td>
<td>15.2</td>
</tr>
</tbody>
</table>

Note. SF = solitary functional. Findings were still significant with age and gender controlled.
† = continued to remain significant controlling for PPVT-R scores.
*aConsidered ordinal variables, but often used as continuous variables in analyses; "Highest possible score = 36; ©Highest possible score = 95; dHighest possible score = 54.
*p < .05. **p < .01.

In the following chapter, the major results of the study will be discussed. Findings will be compared with past research literature. The implications of the findings and the limitations of the study will be presented. Finally, possibilities for future research initiatives will be suggested.
Chapter 5

DISCUSSION

5.1 Summary and Discussion of the Findings

The purpose of my research study was to identify specific play behaviours that could help teachers of young children to identify at-risk learners at an early stage in their school careers. Indeed, this study revealed that there are identifiable play patterns which differentiate at-risk kindergarten children from their not at-risk peers.

5.1.1 Characteristics of the Kindergarten Children in the Study

Overall, this middle class sample was low-risk. Parents of the children in the play study generally had high levels of education, thereby indicating a fairly homogeneous socioeconomic status. Some families had a previous history of learning difficulties, and a few family members had attended special education classes. Only a few families had other people living with them.

The children commonly came from smaller families. Most of the children lived with both biological parents, attended some type of preschool program, and spoke English at home. There were no true left-handed children in the sample; only right-hand and mixed hand dominances were noted.

Of the 50 children, 10 were later deemed to be at risk for future learning problems by the measures employed in the study. Although this number (i.e., 20%) was slightly higher than most reports on the incidence of learning disabilities in the school age population, researchers have claimed that it is a serious and costly mistake to under-refer children in need of special education services (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Furthermore, it was appropriate to deem a larger percentage of the sample as at risk than reported in the literature, as the children
were not formally labelled as learning disabled, but rather as at risk for future learning disabilities. It is notable that only a limited amount of intervention was received by the high-risk children, prior to their entry into grade one.

In the group of 10 at-risk children, there were 7 girls and 3 boys. In contrast, Lerner (1989) reported that approximately 72% of children with learning disabilities are boys, while only 28% are girls. Although learning problems seem to occur more often in boys than in girls (Mercer, 1997), identified learning disabilities are usually more severe in girls (Vogel, 1990). Furthermore, learning disabled females generally have lower IQs than learning disabled males, and are identified less frequently than learning disabled males (Vogel, 1990).

In the present study, the fact that more girls than boys were identified as at risk for learning disabilities may be due to the environment in which the children were assessed. Perhaps the under-reporting of females occurs in the more structured, work-oriented classrooms of the older grades, where girls may become more quiet, reserved, and inhibited than boys. As a result, it may take longer for teachers to notice learning difficulties in females, if they don’t stand out in the classroom setting. In this study, the girls may have been more uninhibited with the less structured play environment in the kindergarten classrooms. This may have allowed their true behaviours to be manifested and thus recorded during the free play sessions.

5.1.2 General Summary of the Findings

The first set of hypotheses stated that various forms of social play would predict risk for future learning disabilities. In fact, the results revealed that the at-risk children generally had more social play problems than their not at-risk classmates. For example, the at-risk children had more difficulty remaining in social play groups and demonstrated poorer communication skills than their not at-risk peers. The at-risk children spent more time engaged in lower levels of social play (i.e., unoccupied behaviour, onlooker behaviour, solitary play, solitary constructive play)
and less time engaged in cooperative constructive play than the not at-risk children. In addition, those kindergarten children who engaged in more inappropriate interactions with their peers received higher scores on the at-risk index, only with age and gender controlled.

The second set of hypotheses related to cognitive play factors. It was found that the at-risk kindergarten children engaged in more repetitive activities during play than their not at-risk peers. The at-risk kindergarten children did not demonstrate deficits in symbolic play nor reverse or use toy items upside down more often than the not at-risk kindergarten children. However, in the case of toy reversal, it is important to note that very little of this type of activity was observed at all during the play sessions, being too rare to be useful as a predictor in this sample.

The third set of hypotheses dealt with a child’s level of attention during play. The findings showed that the kindergarten children who moved more frequently from one learning centre to another and who wandered more in the classroom received higher scores on the at-risk index, only with age and gender controlled. It was found that both the at-risk children and the not at-risk children engaged in similar amounts of on-task behaviour and time at the play centres, reinforcing the fact that play holds widespread appeal among young children.

The last major hypothesis related to a combination of play behaviours. As expected, the at-risk kindergarten children engaged in more negative play behaviour combinations and fewer positive play behaviour combinations than their not at-risk peers. This example was one of several in the study that emphasized the importance of engagement in negative play behaviours as opposed to engagement in positive play behaviours in the identification of at-risk children.

Other differences, although in the expected direction, did not reach statistical significance. For example, the at-risk children spent less time engaged in higher levels of social play (i.e., parallel play, cooperative play) than the not at-risk children. As well, the at-risk kindergarten children did not have difficulty entering social play groups, compared with their not at-risk peers. The at-risk kindergarten children spent more time engaged in functional play and less time
engaged in games and in reading than the not at-risk kindergarten children, although limited durations of all three variables were recorded. Finally, a number of play variables related to the child’s general ability (i.e., PPVT-R scores) including: play entry, functional play, and solitary functional play.

5.1.3 Detailed Analysis of the Findings

5.1.3 (a) Play Entry and Ability to Remain in Play Groups

It was predicted that the at-risk kindergarten children would have more difficulty remaining in social play groups than the not at-risk kindergarten children. In fact, this hypothesis was supported by the findings. The tendency for at-risk children to have greater difficulty remaining in play groups than their nondisabled peers has been documented by other researchers (Levy & Gottlieb, 1984). Perhaps remaining in a social play group is a more difficult task for at-risk kindergarten children than merely entering a play group.

This pattern was apparent throughout the play observations. It was as though the not at-risk children had already detected that their at-risk peers were slightly different from themselves, as if using finely tuned social radar. Anecdotal notes revealed that the not at-risk children often would physically move away from the at-risk children who entered their play groups. In some cases, the not at-risk children literally ran away from the at-risk children who had joined in play.

Contrary to expectation, the at-risk kindergarten children did not have more difficulty entering play groups than the not at-risk kindergarten children. In previous studies involving learning disabled children and children with other handicapping conditions (i.e., autism, developmental delay, speech and language impairment, physical disability), play entry was found to be problematic for them (Hadley & Rice, 1991; Levy & Gottlieb, 1984; Lieber, 1993; Martlew & Hodson, 1991; Rigby et al., 1993; Riguet et al., 1981; Stone & Lemanek, 1990).
Nevertheless, the two studies involving the play of learning disabled children (Levy & Gottlieb, 1984; Martlew & Hodson, 1991) differed considerably from the present study. Both studies used older learning disabled children ranging in age from seven to eleven years. Furthermore, both studies observed the children’s play behaviours outdoors on the school playground. In my study, the children were observed indoors in the kindergarten classrooms. Hence, younger children may be more open and receptive to permitting other children into social play groups. As a child gets older, one can assume that more permanent friendships or social circles would be established, and that it may be more difficult for another less popular child to break into social groups. This may be one reason why more difficulty in play entry was not observed in the at-risk kindergarten children.

Another explanation for the divergence between the present findings and the findings in the research literature may be the direct result of the effects of space on play. For example, in the two studies involving the outdoor play of older learning disabled children (Levy & Gottlieb, 1984; Martlew & Hodson, 1991), the children were not confined to a smaller classroom setting. Therefore, a child’s entry into a potentially larger play group outside conceivably was less noticeable than a child’s entry into a possibly smaller play group inside.

Although play entry did not relate significantly to the risk measures, those children who demonstrated poor play entry scored higher on the at-risk index. Perhaps the small sample size of the at-risk grouping of children or the large standard deviations associated with the play entry variable may have masked significant differences.

It is notable that poor play entry related to lower PPVT-R scores. This would suggest that play entry is associated more with a child’s general ability than with a child’s at-risk status for a learning disability.

In general, it was fascinating to observe the strategies children used to gain entry into social play groups. Some children repeatedly asked, “Can I play?”. Others positioned themselves next
to children at the sand table, for example, and in time started to play with the toy materials. On a few occasions, children used disruptive play entry techniques such as hitting a child to force their way into a play group. Certainly, this is an area of play that could be explored in future research.

### 5.1.3 (b) Social Play

It was determined that the at-risk kindergarten children in this study spent more time engaged in lower levels of social play (i.e., unoccupied behaviour, onlooker behaviour, solitary play, solitary constructive play) than the not at-risk kindergarten children, controlling for age and gender. Solitary play and solitary constructive play also correlated with the PPVT-R. Nevertheless, solitary play and solitary constructive play continued to correlate significantly with the at-risk index, with the effects of age, gender, and general ability (PPVT-R) partialled out.

The preceding results are supported by findings in the research literature. For example, more unoccupied behaviour or nonplay has been observed in the play of children with various handicapping conditions in comparison to their nonhandicapped peers (Jennings et al., 1985; Kopp et al., 1992; Roth & Clark, 1987). The same pattern has been observed with both onlooker behaviour (Brophy & Stone-Zukowski, 1984; Higginbotham & Baker, 1981) and solitary play (Brophy & Stone-Zukowski, 1984; Gottlieb et al., 1986; Higginbotham & Baker, 1981; Jennings et al., 1985; Johnson & Ershler, 1985; Kopp et al., 1992; Learning Disabilities Association of Canada, 1990; Levy & Gottlieb, 1984; Lovell et al., 1968; McCarthy, 1989; Rigby et al., 1993; Schaaf, 1990).

In her now famous study on social participation, Parten (1932) reported that the preschoolers she observed engaged in very little unoccupied behaviour. As well, onlooker behaviour was observed less often than solitary play, parallel play, or cooperative play. Parten found that those preschool children who engaged in more unoccupied behaviour also engaged in more onlooker behaviour. Therefore, she concluded that the two types of behaviour were related.
A similar trend emerged in the present study, as unoccupied behaviour correlated significantly with onlooker behaviour. Ultimately, Parten claimed that, "Unoccupied, solitary, and onlooker activity might be considered negative indices of social activity;" (p. 256).

The negative effect of participation in unoccupied behaviour has been noted by other researchers as well. Rubin (1982a) found that preschool children who engaged in unoccupied behaviour conversed less with their peers, and were rated by their teachers as being socially unskilled. In the same study, preschool children who engaged in onlooker behaviour were found to construct less complex play structures and engaged in fewer conversations with their peers.

Dunn and Herwig (1992) found that solitary play related negatively to intelligence in the preschool children in their study. Onlooker behaviour also correlated negatively with one of the divergent thinking measures. However, no cognitive play measures related to the preschoolers' intelligence or convergent and divergent thinking skills. Therefore, it would appear that in their study, social play measures were more reflective of a child's intellectual abilities than cognitive play measures. A similar pattern appears in this study, as social play variables were more predictive of future learning problems in the kindergarten children than cognitive play variables.

As noted in the preceding examples in the research literature, unoccupied behaviour, onlooker behaviour, and solitary play all appear to be linked with negative characteristics in young children. A comparable trend was noted for these same three variables in the present study.

Although the findings did not reach statistical significance, it was determined that the at-risk kindergarten children spent less time engaged in higher levels of social play (i.e., parallel play, cooperative play) than their not at-risk peers. One possibility for the nonsignificant findings is that the large standard deviations associated with these two play variables may have in fact hidden significant differences. Nevertheless, those kindergarten children who spent less time engaged in cooperative constructive play received higher scores on the at-risk index.
Although it is generally agreed that cooperative play is a higher level of social play (Higginbotham & Baker, 1981; Parten, 1932; Rubin, Watson, & Jambor, 1978), there are differences in opinion with respect to the meaning of parallel play. For example, Rubin (1982a) found that preschool children who engaged in a significant amount of parallel constructive play were good problem-solvers and were viewed in a positive manner by both peers and teachers. Only a few years earlier though, Rubin (1977) identified parallel play as “indicative of the least mature level of the social-cognitive play hierarchy” (p. 20).

In Mildred Parten’s conceptualization of social participation in preschool children, parallel play was categorized as “a type of group play” (1932, p. 250). Parallel play was weighted positively in her study and correlated moderately with intelligence (.69). Parten considered parallel play to be a positive form of social participation in young children, as she stated, “parallel, associative, and cooperative or organized supplementary play might be regarded as positive indices of social participation” (p. 256). In the same manner, both parallel play and cooperative play were considered positive play behaviours in the present study.

Later, Parten (1933) found that the preschool children in her study engaged primarily in parallel play at the paint centre. A similar pattern was noted in the kindergarten children who visited the paint centre in the present study. Parallel play has also been reported in the research literature to be the most common form of social play among preschool children (Howe, Moller, Chambers, & Petrakos, 1993).

Finally, cooperative constructive play related to cooperative dramatic play in this study. Generally, those two types of play were observed while the kindergarten children were at the large block centre. A comparable trend was reported by Christie and Johnsen (1987), who found that kindergarten children often engage first in constructive play and then use their creations in pretend play.
Overall, the lack of engagement in positive, social play was not as important an indicator of at-risk status in kindergarten children as excessive engagement in negative, nonsocial play. However, considering that deficits in social skills and poor peer interactions are the most commonly reported traits in children with learning disabilities (McIntosh et al., 1991; Odom et al., 1982; Vaughn et al., 1993), it is logical that social play deficits would be predictive of those kindergarten children later deemed to be at risk for future learning disabilities.

5.1.3 (c) Inappropriate Behaviour

It was predicted that the at-risk kindergarten children would engage in more inappropriate peer interactions than the not at-risk kindergarten children. This hypothesis was partially supported, as the children who displayed more inappropriate behaviour with their peers received higher scores on the at-risk index, only with age and gender controlled.

In the research literature, inappropriate peer interaction has been documented in children with autism and developmental delay (Hermelin & O'Connor, 1970; Wing et al., 1977). Teachers have also reported that inappropriate interactions with peers (e.g., hits others) is one of many characteristics found in young children at risk for learning problems (Cowgill et al., 1973; Keogh et al., 1974). Hence, the study findings correspond with the findings in the research literature related to children's inappropriate behaviour with their peers.

5.1.3 (d) Communication

As expected, it was found that the at-risk kindergarten children did not effectively communicate orally with their peers and demonstrated more speech problems during play, in comparison with the not at-risk kindergarten children. This finding is consistent with various findings in the research literature which have linked communication with play (Bryan et al., 1981; Casby & Della Corte, 1987; Darbyshire, 1977; Eisert & Lamorey, 1996; Fewell & Rich,
1987; Field et al., 1982; Hulme & Lunzer, 1966; Irwin & Frank, 1977; Kohl & Beckman, 1984;
McCune Nicolich, 1981; McCune Nicholich & Bruskin, 1982; Piaget, 1962; Poidevant &
Spruill, 1993; Rigby et al., 1993; Sigman & Sena, 1993; Wing, Gould, Yeates, & Brierly, 1977).
A concrete example of the communication difficulties experienced by at-risk kindergarten
children in this study was when one of the children made the sound sequencing error ("aminals")
among those reported by parents of children with learning disabilities (McCarthy, 1989). Since
communication is interwoven with social aspects of play, it is not surprising that this hypothesis
was supported.

5.1.3 (e) Perseveration and Toy Reversal

As predicted, the at-risk kindergarten children in this study engaged in more repetitive play
behaviours and more perseverative speech than their not at-risk kindergarten peers. One example
of a perseverative play behaviour observed in the study was a child who continuously pressed the
same computer key for an unusually long period of time while staring into space. An example of
perseverative speech heard in the study included a child who repeated "Jiminy Cricket" ten times
within a matter of seconds.

In the play of children with various handicapping conditions, perseveration has been
observed frequently (Black et al., 1975; Field et al., 1982; Fraiberg, 1977; Kooij van der &
Vrijhof, 1981; Kopp et al., 1992; Krakow & Kopp, 1983; Learning Disabilities Association of
Canada, 1990; Lerner et al., 1987; McCarthy, 1989; Parham, 1987; Piaget, 1962; Rigby et al.,
1993; Riguet et al., 1981; Smilansky, 1968; Tilton & Ottinger, 1964; Wing et al., 1977). Hence,
the results in the present play study correspond with the findings in the research literature
regarding perseverative behaviour in children.

In the second part of this hypothesis, it was established that the at-risk kindergarten children
did not reverse or use toy items upside down more than their not at-risk kindergarten peers. In
fact, this type of activity occurred only three times during the 2500 minutes of observed free play. Although this hypothesis was not derived from the research literature, I included it in my set of hypotheses since I had observed this pattern in the at-risk kindergarten children whom I had taught and in the nominated kindergarten children in the pilot study. For example, I have observed a child attempt to put large puzzle pieces into an enclosed puzzle board, with the board face up but with its bottom edge facing away from the child. This type of behaviour, although rare, did provide an interesting element to the play study.

5.1.3 (f) Cognitive Play

It was hypothesized that the at-risk kindergarten children would spend more time engaged in functional play, the least mature form of cognitive play (Smilansky, 1968). Conversely, it was hypothesized that the at-risk kindergarten children would spend less time engaged in more complex activities such as reading and games with rules (Piaget, 1962; Smilansky, 1968). Although none of these differences reached statistical significance, the at-risk kindergarten children in this study did spend more time engaged in functional play and less time engaged in games and in reading than their not-at-risk kindergarten classmates. It is notable that when age and gender were partialled out, many significant relations with functional play became nonsignificant.

No doubt one reason why there were not significant differences in the durations of functional play, games, and reading between the at-risk children and the not-at-risk children was due to overall frequency. Few of the children spent much time at all in functional play, games, or reading. Furthermore, the large standard deviations associated with each of these three play variables may have masked real differences between the at-risk groupings of children.

Nevertheless, engagement in functional play and solitary functional play related to lower PPVT-R scores. Hence, functional play and solitary functional play may be tied to normative,
developmental levels in children (e.g., general language ability) rather than a child’s at-risk status for future learning disabilities.

In the research literature, Rubin and Hayvren (1981) claimed that the lowest level of children’s play is a combination of solitary play and functional play. Rubin (1982a) also indicated that excessive engagement in solitary functional play in preschoolers may be used as an indicator of at-risk status. More specifically, those preschoolers in Rubin’s study who engaged in solitary functional play were approached less often by peers, engaged in fewer conversations with peers, were not rated as favourably by peers, and constructed less complex structures when presented with a problem-solving activity. However, Levy and Gottlieb (1984) found that the older learning disabled children in their study did not engage in less games with rules and more sensorimotor play than their nondisabled peers. Thus, it appears that functional play is age-related and may be more indicative of learning problems at the preschool age level.

5.1.3 (g) Symbolic Play

Although unexpected, the at-risk kindergarten children in my study did not display deficits in symbolic play when compared with their not at-risk kindergarten peers. The at-risk children did not engage in less dramatic play or display less elaborated fantasy roles, nor utter less pretend play talk during dramatic play than their not at-risk peers.

In the research literature on the play of young children with handicapping conditions, poor symbolic play has been reported frequently (Clifford & Bundy, 1989; Fraiberg & Adelson, 1973; Garvey, 1977; Higginbotham & Baker, 1981; Johnson & Ershler, 1985; Lewis, Boucher, & Astell, 1992; Lieber, 1993; Lovell et al., 1968; Poidevant & Spruill, 1993; Riguet et al., 1981; Roth & Clark, 1987; Sigman & Sena, 1993; Sigman & Ungerer, 1984; Stone & Lemanek, 1990; Wing et al., 1977). Due to the frequency with which poor symbolic play has been noted in
populations of various handicapped children, it was assumed that this pattern would emerge in the kindergarten children at risk for future learning disabilities as well.

However, few play studies have been conducted with groups of learning disabled children. In fact, similar patterns in learning disabled children’s symbolic play performance were noted between the findings in the present study and other studies. For example, Levy and Gottlieb (1984) reported that the 34 learning disabled children in their study did not engage in significantly less symbolic games than the non-learning disabled children. Poidevant and Spruill (1993) also found that there was no significant difference in the amount of symbolic play in which the at-risk children and the not at-risk children in their study engaged. Thus, perhaps there is little difference in the symbolic play of children with learning disabilities when compared to nondisabled children.

Although symbolic play in young children has been considered to be more complex in nature than constructive play (Gillis & Hardacre, 1993; Malone & Stoneman, 1990) or other types of social play (Fein, Moorin, & Enslein, 1982), some researchers have questioned whether a high level of intelligence is even necessary for sociodramatic play to occur (Johnson, 1976; Saltz et al., 1977; Smilansky, 1968). For example, Smilansky (1968) reported that she was unable to foster the development of sociodramatic play in developmentally delayed children with IQ levels lower than 70. Therefore, it would appear that only a minimal level of intelligence (i.e., an IQ level above 70) is required in order for symbolic play to occur in young children. Through play tutoring, Smilansky found that children with lower intelligence quotients made gains in level of sociodramatic play equal to those found in children with higher intelligence quotients. This led Smilansky to claim that, “Intelligence is not the main variable affecting the sociodramatic play behavior of children.” (p. 128).

This pattern corresponds with the findings in my study. Children’s scores on the PPVT-R did not relate to quality or duration of dramatic play, nor amount of pretend play talk uttered
during dramatic play. For example, one child in particular scored extremely high when tested with the PPVT-R. A year later, this child’s grade one teacher felt that this student could be a future candidate for the gifted program. Yet, this child did not engage in any dramatic play at all during the entire 50-minute play session. Furthermore, this child’s mother stated on the play questionnaire that her child did not engage in pretend play sequences at home either. The same child engaged in significant durations of constructive play as well as some of the more complex games with rules, during the entire 50-minute observed play sessions. Naturally, one would question whether or not this child ever engaged in symbolic play either at home or at school. It would appear that this child had bypassed the symbolic play stage and had advanced directly to the games with rules stage. This type of occurrence is confirmed by Smilansky (1968), who claimed that it is not necessary for a child to progress through the symbolic play stage in order to reach the more complex games with rules stage. All this leads one to question the value of assessing symbolic play on its own in play observation scales with learning disabled children. In fact, perhaps the importance placed on the assessment of children’s symbolic play in the past has been somewhat overemphasized.

5.1.3 (h) Classroom Movement and Wandering

In this study, it was predicted that the at-risk kindergarten children would move more frequently from one learning centre to another when compared with the not at-risk kindergarten children. This hypothesis was partially supported by the findings. Those children who moved more frequently to various activity centres in the classroom had significantly higher scores on the at-risk index than those children who did not move frequently around the classroom, only with age and gender controlled. These results correspond with previous findings on classroom movement in the research literature (Cowgill et al., 1973; Irwin & Frank, 1977).
In the second part of this hypothesis, it was predicted that the at-risk kindergarten children would wander more frequently in the classroom than the not at-risk kindergarten children. Again, this hypothesis was only partially supported by the results. Those kindergarten children in the study who wandered more around the classroom received a significantly higher score on the at-risk index, only with age and gender controlled. Similar findings have been reported in the research literature. For example, children with other handicapping conditions such as sensory integrative dysfunction and hearing impairment have also been observed to wander around the classroom more often than their nondisabled peers (Levy-Shiff & Hoffman, 1985; Schaaf, 1990).

5.1.3 (i) On-task Behaviour

Considering the appeal of play for young children, it is not totally unexpected that the at-risk kindergarten children did not spend significantly less time at the activity centres, compared with the not at-risk kindergarten children. In fact, both groups of children spent similar durations at the play centres.

In this study, the at-risk kindergarten children also did not display less on-task behaviour while at the play centres, when compared with the not at-risk kindergarten children. In the research literature, it has been reported that children with learning disabilities (Bryan, 1974; Bryan et al., 1981) and other handicapping conditions such as autism (Riguet et al., 1981) displayed less on-task behaviour than their nondisabled peers. However, none of these studies examined on-task behaviour in young children in play situations. This difference may explain the lack of significant results between the research findings and the results in the present study. Thus, it would appear that when it comes to self-selected play activities, even children at risk for future learning disabilities are actively engaged and on task.
5.1.3 (i) Positive and Negative Play Behaviour Combinations

As predicted, the at-risk kindergarten children in this study engaged in more negative play behaviour combinations and fewer positive play behaviour combinations than the not at-risk kindergarten children. Although both the sum of the positive play dichotomies and the sum of the negative play dichotomies had significant correlations with the outcome variables, engagement in the negative play variables emerged as a more important indicator in the identification of a child’s at-risk status for future learning disabilities.

Both the sum of the positive play dichotomies and the sum of the negative play dichotomies were comprised of variables taken directly from the play observation scale. Theoretical support for each individual variable included in the play observation scale was provided in Chapter 3. Although there are no specific studies in the research literature that provide support for the combination of these positive and negative play dichotomies, I included them in my hypotheses as an attempt to identify a cluster of positive and negative play behaviours that could predict at-risk status for future learning disabilities in children.

5.2 Implications of the Findings

From the findings, it is apparent that play observation can be a useful device in the prediction of a child’s at-risk status for future learning disabilities. In fact, in some instances, certain play behaviours seemed to be more predictive of various forms of children’s academic achievement than the standardized PPVT-R (i.e., the sum of the negative play dichotomies, number of repeated vocalizations, the sum of the positive play dichotomies, unoccupied behaviour, and solitary play), even after controlling for the effects of age, gender, and general ability (PPVT-R). In particular, the sum of the negative play dichotomies and number of repeated vocalizations correlated higher with all of the senior kindergarten and grade one achievement measures than the PPVT-R. It would also appear that specific play variables are associated more
with developmental ability (as measured by the PPVT-R) than with at-risk status for future learning disabilities (i.e., play entry, functional play, and solitary functional play). The link between play and literacy was also reinforced, as play variables correlated more often with senior kindergarten reading and writing scores, and grade one English measures, compared with the grade one math measures. Thus, the use of play observation as an alternative form of assessment was validated in this study.

As mentioned earlier, certain patterns emerged in the play of the at-risk kindergarten children in this study. Together, these patterns can be used to create a profile of play characteristics in young children at risk for future learning disabilities. This profile could be circulated to teachers of young children so that there is an awareness of young children’s at-risk play indicators. With a concrete list of potential warning signs of at-risk children’s play behaviour, teachers could be alerted early on in a child’s school career to possible learning problems in the future. To promote early awareness, these concerns should be shared with parents and followed up later. However, it is never easy to conduct parent teacher conferences when a child is experiencing difficulties at school. The reaction of parents may be one of denial or refusal to follow specific recommendations (Manning & Schindler, 1997), perhaps due to the parents’ fear of labelling. In an effort to sensitize parents to their child’s problems, it is suggested that teachers show great empathy towards parents, provide specific documented examples of the child’s difficulties observed in the classroom, and reinforce the benefits of helping children at an early stage of their school career (Manning & Schindler, 1997).

In the present study, the use of the play observation scale and the play code record provided valuable information about the kindergarten children’s play. Compared to other play observation devices (e.g., Gowen, 1981; Gowen & Hussey, 1986; Jeffree & McConkey, 1976; Kalverboer, 1977; Lewis, Boucher, & Astell, 1992; Lowe & Costello, 1976; Rogers, 1986; Westby, 1980), my play observation scale does not deal exclusively with children’s symbolic play. Unlike many
of the play observation tools in the literature, my play scale incorporates aspects of children’s social play, cognitive play, and communication. It is less time-consuming than some play assessments, and does not require the input of various professionals such as occupational or speech therapists in order to use it (i.e., Linder, 1990). As it was developed by a teacher expressly for teachers, the play scale is presented in an easy-to-use, “teacher-friendly” format. It can provide teachers with a considerable amount of descriptive information about children’s social and cognitive play patterns that can easily be included in report cards for parents. As a checklist, the play scale would be simpler for teachers to use in general. However, the play code record provides a more precise description of the duration play states as it is recorded in seconds. In the future, perhaps a condensed and standardized version of the play observation scale and the play code record could be published for the benefit of teachers and their efforts at early identification of at-risk children.

As a teacher, the overall study highlighted for me the importance of regular observation of children’s play behaviours. Through observation, many aspects of a child’s development are revealed (i.e., social/emotional, motor, cognitive, language, etc.). It was fascinating to listen to children play with language through songs, repetitions, and chants while at the activity centres. For example, one afternoon a group of girls decided to “pretend to speak Chinese” to one another while at the art table. On another occasion, a child initiated a conflict by hitting another child on the shoulder for no apparent reason. Naturally, the other child’s response was to hit back. The child who started the initial conflict “tattled” on the other child, who inevitably got into trouble from the teacher. To me, this was a clear example of how one child completely manipulated a situation to his advantage. However, more consistent play observation could potentially reduce these types of conflicts and ultimately provide valuable information for teachers about an individual child’s social behaviour and cognitive development.
In light of the present findings, the use of symbolic play assessments to identify children at risk for future learning disabilities seems questionable. Although symbolic play deficits have been noted in children with other handicapping conditions, this same pattern does not seem to apply to children with learning disabilities. Hence, it would appear that play assessments which tap play behaviours other than symbolic play should perhaps be used in the future to identify educationally at-risk groups of young children.

From the findings, it seems that parents might not be the most reliable source in the identification of their child's future learning problems. From the kindergarten teacher surveys, it was established that only 20% of parents whose child was later deemed to be at risk for future learning disabilities expressed concerns to their child's kindergarten teacher before the teacher communicated these problems to the parents. This lack of parental identification may stem from the parents' denial that their child has learning problems, or the hope that their child's problems may be developmental in nature and may disappear in time. Furthermore, some of the parents' responses to the play questionnaire were questionable. In one example, parents reported that they played with their child between 25 to 50 hours per week. As a result, the play questionnaire responses were not included in the final results, but were used to provide descriptive data on the childrens' play behaviours (see Appendix D).

On a consistent basis, the negative dimensions of play were more predictive than the positive dimensions of play in the identification of a child's at-risk status. This may be due to the frequency with which these types of behaviours occur in young children. For example, it has been reported in the literature that typical preschool and kindergarten children regularly spend considerable durations engaged in positive social and cognitive play behaviours such as parallel play, cooperative play, constructive play, parallel constructive play, symbolic play, etc. (Higginbotham & Baker, 1981; Johnson & Ershler, 1985; Kopp et al., 1992; Parten, 1932) during their play time. The opposite pattern has been noted for negative play behaviours. Hence, young
children do not commonly spend substantial durations engaged in negative play behaviours such as unoccupied behaviour, onlooker behaviour, solitary play, functional play, etc. (Gottlieb et al., 1986; Higginbotham & Baker, 1981; Kopp et al., 1992; Parten, 1932) during free play sessions. Since it is common for young children to engage in positive play behaviours and uncommon for young children to engage in negative play behaviours, the excessive engagement in the negative play behaviours as noted in the children at risk for future learning disabilities in the study may explain why this type of behaviour is more predictive of learning problems. Therefore, future research studies should focus more on young children’s negative play behaviours rather than their positive play behaviours.

Overall, it is recommended that three specific areas be explored when further researching the link between children’s play behaviours and learning disabilities in future studies. These areas include nonsocial play, speech difficulties, and perseveration. In the ensuing discussion, each of these factors will be reviewed briefly.

The results of this study clearly highlight the importance of social play. Although some aspects of cognitive play were significant, measures of nonsocial play appeared to be more predictive in the identification of educationally at-risk young children. In addition, the at-risk kindergarten children had greater difficulty than the not at-risk children remaining in social play groups. Indeed, children at risk for future learning disabilities appear to be more socially impaired than their peers, even from a very early age. This pattern corresponds with the findings of the study conducted by Dunn and Herwig (1992), who found that social play rather than cognitive play correlated negatively with intelligence in preschool children.

In this study, the children’s speech patterns were valuable indicators of potential learning problems. Those children with speech impairments, lisps, sound sequencing errors, or the inability to pronounce certain sounds or blends were more likely to be deemed at risk for future learning disabilities than those children with normal speech. Given the importance of speech in
developing positive social interactions with peers during play activities, this was an expected outcome.

Finally, perseveration in both speech and play behaviours is another factor to consider in future studies of at-risk kindergarten children. As perseverative behaviour has been widely reported in studies dealing with handicapped children, the same trend appears to apply to at-risk kindergarten children as well.

5.3 Limitations of the Study

The use of observational methods in my study accounts for one probable area of weakness. The effects of observer bias or observer drift (Borg & Gall, 1989) may have influenced the scoring, thereby reducing the validity of the data. In the present investigation, three types of observation were incorporated into the play observation scale: (a) descriptive, (b) evaluative, and (c) inferential (Borg & Gall, 1989). Observational data are more difficult to assess accurately if they require an evaluative or inferential judgement on the part of the observer.

Observer reactivity or the presence of an unfamiliar observer in the kindergarten classroom may have created slight changes in the children’s behaviour (Ballard, 1981). However, I spent a significant amount of time in the kindergarten classrooms before the actual observations were recorded. Furthermore, my notes suggested that the kindergarten children displayed awareness that their play behaviours were being recorded on only 6 out of 250 occasions (or 2.4% of the time). Of these six cases, most occurred when there were two observers watching the play behaviours of a single child.

With only 10 children in the at-risk group, the small sample size may have created more difficulty in finding differences between the at-risk children and the not at-risk children. Due to this lack of statistical power, real differences between the two groupings of children may have
been missed. This is reinforced by the fact that some results were in the anticipated direction, but did not reach statistical significance.

In addition, many of the play variables had large standard deviations, which would have reduced the possibility of finding statistically significant findings even when differences may have actually existed. However, despite this limitation, statistically significant differences did emerge between the at-risk children and the not at-risk children, indicating that these findings were indeed robust.

Environmental differences in kindergarten classrooms may affect play behaviours in children. For example, if the house centre is never converted into a spaceship, a pet store, a supermarket, or some other fantastic setting, a child’s creativity and imagination may be impaired. In a similar manner, other factors such as classroom size and arrangement (Shure, 1963), teaching strategies, educational program, or availability and amount of toys and materials (Johnson, 1935; Kalverboer, 1977; Rubin et al., 1983) can influence the children’s social and cognitive play behaviours. Even the time of day may have an impact on the students’ play patterns. Since all play observations were carried out in the afternoon, perhaps certain children were more fatigued than their morning session counterparts. Nevertheless, the reverse may be true as well, for some young children benefit from additional sleep in the morning. Finally, the behaviours of young children may be affected by other influences such as the weather, classroom regulations and set-up, and time considerations (i.e., season, holiday, day of the week, etc.; Hardacre, 1978). It was anticipated that some degree of uniformity would be apparent in these schools, as observations took place in homogeneous neighbourhoods within one school board. Moreover, the observations took place late in the school year (i.e., March to June), so the children were familiar with their classroom, their peers, and the expected rules and routines in their classroom.
Several techniques were used to gather the information (e.g., standardized test, teacher reports and surveys, parent questionnaire, play assessment). However, some forms of data collection are generally more subjective than others (e.g., parent questionnaires). Hence, the play questionnaires filled out by parents were used to provide descriptive data only.

The trained graduate student and I had to record numerous play behaviours, play codes, and arrival times on the play observation scale and the play code record in the 10-minute period. Ultimately, if the number of items to record was reduced, it would not be as stressful for observers. More importantly, the play observation scale that was created for the purposes of this study was not standardized. Hence, the results of this study need to be interpreted with caution.

One difficulty encountered in this study was the inability to gather data each time at the beginning of the child’s play session at a particular centre (Omärk, Fiedler, & Marwin, 1976). Ideally, I would like to have recorded information on children’s play behaviours at the beginning of their play sequences and not midway through them. However, due to the time constraints I faced in the completion of my data collection, this arrangement was not an option.

5.4 Future Directions

Although the play of children with various handicapping conditions has been studied extensively, very few studies have been conducted on play in older children with learning disabilities. As learning disabilities is one of the largest and fastest growing classifications of exceptionality in North America (Algozzine & Ysseldyke, 1986; Haring et al., 1992; Lerner, 1989), more studies that focus on early identification of learning disabilities are needed. Furthermore, as all children play long before they ever learn to read or to write, the play patterns of children at risk for future learning disabilities should be studied further (e.g., play entry, etc.). Researchers need to focus on the play behaviours of preschool or kindergarten children who later are formally identified as learning disabled. Although longitudinal studies are time-consuming
and expensive, it would be interesting to track the play behaviours of a large sample of preschool or kindergarten children until the 3rd or 4th grade. By that time, children experiencing serious academic difficulties would be formally identified as learning disabled. Therefore, a more direct link between children's earlier play patterns and later learning disabilities could be established at that point in time.

In the future, the play scale used in my study could be refined further. Any of the play behaviours that were not observed more frequently in the at-risk children in comparison to the not at-risk children could be removed from the play observation tool. The possibility of standardizing my play observation scale could be explored as well.

In addition, play tutoring or play training programs could be implemented in preschool or kindergarten classrooms to assist children at risk for future learning disabilities. Play intervention facilitators could work with children exhibiting the types of play behaviours found in my study to be characteristic of at-risk children. From this initiative, special play intervention classrooms could be set up for small groups of severely at-risk preschool or kindergarten children.

For those parents with educationally at-risk children, strategies to implement at home during their child's play time could be explored. If parents know what play behaviours in young children may indicate future learning problems, the next logical step is to provide parents with the best possible approaches to helping their children. Play training programs could be set up for parents of educationally at-risk children. The notion of early intervention and the active role that parents need to take in this domain could be examined further. As many parents will deny that their child has a learning problem, researchers could investigate ways to promote parents' help and involvement with their at-risk children. Finally, the importance of playing with your child needs to be conveyed to parents.

Although there were no apparent differences in the symbolic play of the at-risk children compared to the not at-risk children in this study, other research questions which relate to
symbolic play emerged. For example, is symbolic play in fact more complex than constructive play? Although children with other handicapping conditions generally exhibit poorer symbolic play, is the opposite true for learning disabled children? Do learning disabled girls display richer symbolic play than learning disabled boys or non-learning disabled girls? The answers to these and other important questions could be answered in future research studies.

The possibilities for future research about play and children with learning disabilities are endless. As mentioned in an earlier discussion, future research studies that deal with young children’s play and learning disabilities should focus specifically on nonsocial play patterns, speech problems, and perseveration.

Overall, the need for more research in the area of children’s play and learning disabilities is apparent. However, if one could create a standardized play observation tool that could accurately identify children at risk for future learning disabilities before they fail in school, the implications for our educational system as we know it today no doubt would be exciting and profound.
REFERENCE LIST


Appendix A

Dear Parents,

This letter is to ask your permission for your child to participate in a study on play. As a former kindergarten teacher with the Etobicoke board of education, I became very interested in the play behaviours of young children. As part of the work towards a doctorate in education, I am trying to develop play-based assessment materials for kindergarten children to help identify their strengths and weaknesses in the areas of language and math readiness.

In the present study, senior kindergarten children will be observed as they play at school. Children will be given a vocabulary assessment, and information on school achievement will be collected from teacher interviews/report cards. In addition, you will be asked to fill out an information sheet on family composition and a play questionnaire.

As a teacher with the Etobicoke school board, I am very sensitive to issues of confidentiality. Therefore, the names of all participants will be replaced with special codes known only to the investigators directly involved in the study. Furthermore, all participants have the right to withdraw from the study at any time. Finally, should you choose not to participate in the study, your child’s education would not be affected in any way.

The information gathered from this project will be extremely valuable for parents, teachers and students in Etobicoke. For more details about this study, please contact me or Dr. Carl Corter, my thesis supervisor.

Sincerely yours,

Aimee Wolanski

Aimee Wolanski
41 Leland Avenue
Etobicoke, ON
M8Z 2X6
home phone #: 234-8054
work phone #: 394-7910

Dr. Carl Corter
Institute of Child Study
University of Toronto
45 Walmer Road
Toronto, ON M5R 2X2
phone #: 978-3455

I hereby give my permission for ____________________________ to participate in the
(Child’s name)
kindergarten play project. I have read both information letters and understand the nature of my child’s participation in this study. With the use of random selection procedures, I realize that there is a possibility that my child might not be involved in the present study.

(Name of parent/caregiver and signature)

* Please return this form to your child’s teacher by February 17, 1997
Dear Parents,

I am a part-time special education teacher and former kindergarten teacher with the Etobicoke school board. I have many years of teaching experience at the primary level. For the past three years, I have been working towards my doctorate in education at the University of Toronto, with a focus in early childhood.

In this study, we will explore the possibility that children’s play behaviours may provide an indication of later academic achievement. As the first step in this project, I wish to give some of the randomly selected children in this school a picture vocabulary assessment which evaluates children’s understanding of spoken words. Afterwards, both the classroom teacher and I will be observing kindergarten children during free play activities, using two play observation scales. As well, parents will be asked to fill out a play questionnaire and an information sheet on family composition, which should take no more than twenty minutes to complete. The academic progress of each participant in the study will be checked at the end of the 1997/1998 school year. This will be done either through reports from the classroom teacher and/or review of the child’s report card. If requested, I will be happy to discuss the results of the vocabulary assessment and play observations with parents.

This study has been reviewed and approved by a research ethics committee at the University of Toronto and by the research department at the Etobicoke board of education. Your school has also agreed to participate in the project.

Once all the data have been collected, feedback will also be given to the kindergarten teachers. A presentation which summarizes the results of the study will be organized for any interested parents and educators. If you would like more information about this study, please contact me directly at (416) 234-8054.

Sincerely yours,

Aimee Wolanski
Dear Parents,

I would like to take this opportunity to thank you for your interest in the senior kindergarten play project. I appreciate your support of this research initiative, and its potential role in enhancing our educational system.

Currently, nine kindergarten afternoon classes from eight Etobicoke schools are involved in this study. I have enclosed a copy of the family profile and the play questionnaire for you to fill out and return to the classroom teacher at your earliest convenience. As previously mentioned, all personal information gathered throughout the study will remain strictly confidential.

Once all the data have been collected, a presentation which summarizes the general findings of the study will be organized for any interested parents or school staff. In addition, a written report will be submitted to the school board's research department. Again, my sincerest thanks for your support of this research endeavour.

Best wishes,

Aimee Wolanski
Dear Parents,

As the kindergarten play project is now under way, I will be visiting the nine Etobicoke classrooms on a regular basis until June. Through this study, I have been given the opportunity to observe the fascinating world of children's play. It has been very interesting to see the diverse approaches taken by children to discover new concepts, solve problems and interact with their classmates.

Since it is really important to hear the parents' perspective on play, I am sending out another copy of the family profile and play questionnaire. If you could take a few minutes to fill out these forms and return them to your child’s teacher at your earliest convenience, it would be greatly appreciated. As previously mentioned, all personal information that is gathered throughout the study will remain completely confidential.

I sincerely appreciate your willingness and consent to take part in this research project. Without the support of parents, this study would not be possible.

Best wishes,

Aimee Wolanski
Appendix B

Family Profile

Child’s name ______________________
Child’s date of birth ______________________

What language did your child speak when (s)he first learned to talk?
__________________________

Please list the ages of the child’s brothers or sisters (including stepbrothers or stepsisters) who currently live at home. ________________________________

Is the child living with both parents? ___________
Mother only ___________ Father only ___________

At the present time, are any other people living in the home (i.e., relatives, friends)?
________________________

Child’s current daycare or nursery school experience (if any) ________________________________

Did anyone in your family (or extended family) have difficulties with reading, writing, spelling, or math skills as a child? ___________ If so, please explain.
________________________

Father’s education:
High school: Yes____ No____ Last grade completed ______________________
College: Yes____ No____ Diploma or certificate ______________________
University: Yes____ No____ Degree ______________________
Other: ________________________________

Mother’s education:
High school: Yes____ No____ Last grade completed ______________________
College: Yes____ No____ Diploma or certificate ______________________
University: Yes____ No____ Degree ______________________
Other: ________________________________

Father’s occupation (job title): __________________________________________
Mother’s occupation (job title): __________________________________________
Appendix C

Date: ________________________________
Code Name: ___________________________
Hand Dominance: _______________________
Gender: M  F (Please circle)

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<th>Social Play Variables</th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engages in onlooker behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engages in solitary play</td>
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<tr>
<td>Engages in parallel play</td>
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<tr>
<td>Engages in cooperative play</td>
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<tr>
<td>Shares toy materials with peers</td>
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<tr>
<td>Enters play situations with ease</td>
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<tr>
<td>Able to remain in play groups</td>
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<tr>
<td>Interacts appropriately with playmates</td>
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<tr>
<td>Leads the play activity</td>
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<tr>
<td>Communicates thoughts and opinions effectively with peers during play</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive Play Variables</th>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moves frequently from one learning centre to another</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchanges toy items constantly</td>
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<td></td>
</tr>
<tr>
<td>Extends or expands the play situation (evidence of complex play)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses play items in an appropriate fashion</td>
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<tr>
<td>Wanders aimlessly around the classroom</td>
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<tr>
<td>Follows established classroom routines</td>
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<tr>
<td>Selects simpler play tasks</td>
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<tr>
<td>Selects challenging play tasks</td>
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<tr>
<td>Completes self-selected tasks</td>
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<tr>
<td>Perseverates in play activities, themes or movements</td>
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<tr>
<td>Reverses toy items or materials</td>
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<tr>
<td>Evidence of elaborated roles in fantasy play</td>
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<tr>
<td>Plans play (organizes or structures carefully the play environment)</td>
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<tr>
<td>Explores unfamiliar materials or play experiences (i.e. takes risks)</td>
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</tbody>
</table>

Check any activities observed within a single 10 minute period. © Wolanski 1996
Date: ____________________________
Code Name: ________________________

<table>
<thead>
<tr>
<th>Learning Centres</th>
<th>Arrival Time</th>
<th>Code</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blocks, large</td>
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<tr>
<td>Blocks, small</td>
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<tr>
<td>Books</td>
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<td>Computer</td>
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<td>Cut &amp; Paste</td>
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<tr>
<td>Drawing/Colouring</td>
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<td>Games</td>
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<td>House Centre</td>
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<td>Listening Centre</td>
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<td>Math Centre</td>
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<td>Music Centre</td>
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<td>Paint</td>
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<td>Playdough</td>
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<td>Puppets</td>
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<tr>
<td>Puzzles</td>
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<td>Sand Centre</td>
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<tr>
<td>Science Centre</td>
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<td>Water Centre</td>
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<tr>
<td>Writing Centre</td>
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</tbody>
</table>

Please number the order in which the child visits each centre as well as their arrival time.
Appendix D

Play Questionnaire

Child’s name: ______________________
Child’s age: ______________________

1. List your child’s favourite toys or play activities. ________________________________
   ____________________________________________________________________________

2. Name any activities that your child avoids regularly. ____________________________
   ____________________________________________________________________________

3. Did your son or daughter participate in any type of preschool program before kindergarten entry (i.e., play groups, nursery school, etc.)? _____ If so, please explain (i.e., type of activity, number of hours per week, length of time enrolled in the program). ________________
   ____________________________________________________________________________

4. Other than brothers or sisters, does your child play regularly with children outside of the school setting? _____ If so, with how many others? ____________________________

5. Describe the manner in which your child interacts with his or her peers (i.e., shares toys, follows the lead of others during play activities, prefers to play alone, etc.). ________________
   ____________________________________________________________________________

6. What is your child’s reaction when invited to handle unusual materials such as chocolate pudding or finger paints? ____________________________
   ____________________________________________________________________________

7. Does your child display any play behaviours that you may consider inappropriate (i.e., throws or grabs toys, hits playmates, uses toys in an improper and noncreative way, etc.)?
   ____________________________________________________________________________
8. How would you describe your child's mood and activity level during play sessions (e.g., happy/irritated, actively engaged/distracted, noisy/quiet, etc.)? 

9. How does your child respond to challenges that arise with toy materials during play sessions (i.e., gives up easily, asks for adult assistance, persists until a solution is found, etc.)? 

10. Do you see any organization or structure in your child's play (e.g., toys are arranged a certain way before the play session begins, cleans up toys in a particular manner, chooses play materials carefully before starting to play)? If so, please explain. 

11. At home, does your child sing chants or songs that were taught at school? Is your child able to recall the words to longer, more difficult nursery rhymes or songs? Name any nursery rhymes that your child is able to recite. 

12. Does your child engage in pretend play (i.e., takes on the role of another character)? If so, what roles does your child assume on a regular basis? 

13. List any behaviours or patterns that you notice frequently in your child's play (e.g., builds towers using small blocks). 

14. Approximately how many minutes per day does your child engage in play activities? 

15. How long is your child able to concentrate on self-selected play activities in one session (e.g., <15 minutes, 15 – 30 minutes, 30 – 45 minutes, one hour, etc.)?
16. Within the past week, how many times have you taken part in your child's play?

On average, how long do you participate in each of your child’s play sessions?

Describe your involvement or role in the play activity.

17. Do you believe that play is a valuable part of your child’s educational experience?

Why or why not?
Summary of Play Questionnaire Findings

In the first of the 17 questions, parents were asked to list their child's favourite toys or play activities. Considering that every parent listed a number of items, 198 responses from the 48 questionnaires were given. The most popular toys or activities of the children included: figurines and cars \( (n = 21) \), blocks \( (n = 19) \), dolls \( (n = 19) \), drawing/colouring \( (n = 17) \), dress-up/make-believe \( (n = 16) \), games \( (n = 15) \), computer \( (n = 13) \), books \( (n = 11) \), crafts \( (n = 9) \), and puzzles \( (n = 8) \). Less popular activities included: paint \( (n = 5) \), biking \( (n = 5) \), hockey \( (n = 5) \), playdough \( (n = 4) \), soccer \( (n = 4) \), science experiments \( (n = 3) \), skating \( (n = 3) \), and swimming \( (n = 3) \).

Pastimes like baseball, movies, writing, basketball, and baking received two responses each from parents. Finally, the least popular activities which were listed only once by parents included: music, ballet, gymnastics, running, tennis, golf, skiing, and tobogganing. Clearly, some parents included sports as part of their child's play activities, while other parents excluded them from the questionnaire.

In contrast, when asked to name any activities that their child avoided regularly, cleaning up was the most popular of the 28 responses \( (n = 10) \). Other pastimes avoided by children included: writing \( (n = 5) \), crafts \( (n = 2) \), blocks \( (n = 2) \), games \( (n = 2) \), walks \( (n = 1) \), swimming \( (n = 1) \), playing alone \( (n = 1) \), puzzles \( (n = 1) \), drawing/colouring \( (n = 1) \), television \( (n = 1) \), and group activities \( (n = 1) \).

From the 48 returns, it was determined that 39 children took part in preschool or daycare programs before kindergarten entry. Conversely, 9 children did not participate in any preschool or daycare programs before formal schooling began.

It is well established in the research literature that school age children with learning disabilities have greater difficulties interacting with same-age peers than their normally developing schoolmates (Bryan, 1974, 1977; Gerber & Zinkgraf, 1982; Gottlieb et al., 1986; McIntosh et al., 1991; Ochoa & Palmer, 1991; Odom et al., 1982; Vaughn & Hogan, 1994;
Vaughn et al., 1990, 1993). In order to gauge the children’s sociability outside of the school setting, parents were asked whether their child played regularly with other children before or after school, not including brothers or sisters. When asked to estimate the number of friends the children played with outside of the school setting, the 47 responses ranged from zero friends \((n = 4)\) to 12 friends \((n = 1)\). The most common number of friends that the children played with outside of school was four \((n = 11)\). Furthermore, in 33 of the 47 responses, the number of friends played with ranged from two \((n = 7)\) to six \((n = 6)\). From the feedback given, it can be assumed that most parents considered their child to have a solid network of friends with whom to interact on a regular basis.

From my own experiences as an elementary school teacher, children who are willing to take risks in school appear to be better learners. In the research literature, the link between risk-taking and learning in young children is reinforced (Young, 1991). As a measure of a child’s risk-taking tendencies, parents were asked how their child would react when invited to handle materials such as finger paints or chocolate pudding. From the 46 responses, 39 parents stated that their child would enjoy playing with these sensory materials. Meanwhile, parents of the remaining seven children felt that their child would be reluctant to participate in these types of activities. Certainly, most study parents considered their children to be active participants, willing to explore new materials and play experiences.

Numerous researchers have conducted studies on pretend play (Cunningham et al., 1985; Elder & Pederson, 1978; McCune Nicholich, 1977, 1981; McCune Nicholich & Bruskin, 1982), believed to be one of the highest forms of play (Garvey, 1977). Symbolic play has been linked to positive benefits in the areas of cognitive development (Piaget, 1962; Rubin & Maioni, 1975; Saltz et al., 1977; Smilansky, 1968), communication (Casby & Della Corte, 1987; Eisert & Lamorey, 1996; McCune Nicholich, 1981; McCune Nicholich & Bruskin, 1982; Piaget, 1962, Sigman & Sena, 1993), and socialization (Connolly & Doyle, 1984; Fewell & Rich, 1987;
Consequently, parents were asked whether or not their child engaged in pretend play at home. Of the 47 responses, 44 children participated in pretend play, while three children did not. The high percentage of kindergarten children who engaged in pretend play was expected, as symbolic play is one of the play stages through which most children progress (Bühler, 1928; Piaget, 1962; Smilansky, 1968). However, one of the three children who did not engage in symbolic play at home was deemed later to be extremely bright or perhaps even gifted by the child’s grade one teacher.

The fantasy roles that the children assumed fell into one of five themes: family, occupations, animals, television characters/superheroes, and fairy tales. Family characters were the most common roles taken up by the children. Of the 109 responses, 43 parents maintained that their children act out the roles of mother ($n = 18$), father ($n = 9$), baby ($n = 10$), and sister ($n = 6$). The next most popular theme was occupations ($n = 20$). Children enjoyed assuming the roles of sports players ($n = 4$), teacher ($n = 4$), policeman ($n = 3$), doctor ($n = 3$), fireman ($n = 1$), baby-sitter ($n = 1$), dancer ($n = 1$), military personnel ($n = 1$), cashier ($n = 1$), and student ($n = 1$). The two next most popular themes were animals and television characters/superheroes ($n_s = 18$, respectively). As expected, the two most favourite animals were dogs ($n = 7$) and cats ($n = 6$). Other animals such as horses and elephants each received five responses. As for the television character/action figure/superhero theme, characters mentioned included Ninja Turtles, Sailor Moon, Power Rangers, Barbie, etc. In total, 12 responses fell under the action figure/superhero theme, while 6 responses were defined as television characters. The least popular theme of pretend play roles was fairy tales ($n = 10$). Included in this category were the following characters: princess ($n = 4$), queen ($n = 2$), king ($n = 1$), monster ($n = 1$), pirate ($n = 1$), and dinosaur ($n = 1$). Overall, these five themes correspond to similar pretend play themes found by other researchers (Garvey, 1977; Smilansky, 1968).
Researchers have reported that a child’s experience with traditional nursery rhymes is related positively to phonemic awareness and to future performance in reading and spelling (Bryant, Bradley, Maclean, & Crossland, 1989; Lerner, 1989). In a similar manner, parents were surveyed to determine whether their child recited rhymes and chants at home. It was hypothesized that more children would recite easier songs or chants that were taught at school, rather than more difficult nursery rhymes or songs. This assumption was supported by the play questionnaire results. From the 48 responses, parents reported that 40 of the children sang chants or songs that were taught at school, while in the home setting. Likewise, two children sometimes sang chants or songs that were taught at school. The final six children did not sing chants or songs that were taught at school. As for the ability to recall longer rhymes or songs, 34 children from a total of 44 responses were able to recall the words to longer, more difficult nursery rhymes or songs. Two children were sometimes able to recall the words to longer, more difficult nursery rhymes or songs. Finally, eight children were not able to recall the words to longer, more difficult nursery rhymes or songs. Therefore, it would appear that the majority of the children had less difficulty reciting easier chants, songs, and rhymes, as opposed to more difficult ones.

To investigate further the child’s social play behaviours, parents were asked whether their child displayed any play behaviours that could be considered inappropriate (e.g., throwing or grabbing toys, hitting playmates, using toys in an improper manner, etc.). In the research literature, incidents of throwing toys (Krakow & Kopp, 1983; Parham, 1987), using toys in a destructive manner (Mogford, 1977), and hitting other children (Cowgill et al., 1973) have been reported. Of the 46 responses, 25 children did not use inappropriate play behaviours at home. In contrast, 7 children did use inappropriate play behaviours and 14 children sometimes used inappropriate play behaviours in the home setting. Of further interest is the fact that five of the seven children who did use inappropriate play behaviours at home were boys, indicating a possible gender difference.
With respect to the child’s mood and activity level during play sessions, most parents stated that their child was happy \((n = 37)\) and actively engaged \((n = 31)\) during play time. Of the 102 responses, parents confirmed that during play, their child was noisy \((n = 13)\), quiet \((n = 9)\), frustrated/upset \((n = 6)\), shy/inhibited \((n = 3)\), distracted \((n = 2)\), and competitive \((n = 1)\).

To obtain a measure of the children’s level of persistence, parents were asked to comment on their child’s reaction to challenges that arise with toy materials during play sessions. In the research literature, it has been reported that children with disabilities do not persist at more challenging activities in comparison to their nondisabled peers (Jennings et al., 1985). Of the 57 responses, an equal number of children persisted until a solution was found \((n = 17)\), as well as asked for adult assistance \((n = 17)\). Similarly, the same number of children tried first and then asked for assistance \((n = 11)\), as well as gave up easily \((n = 11)\). Only one parent noted that her child cried when a challenge arose in the play situation. Clearly, there seemed to be an equal split among the children in their attempts to solve a problem on their own or with the help of adults.

Interaction with the child’s peers was the next area to be investigated. Parents were asked to describe the manner in which their child interacts with his or her peers (e.g., shares toys, follows the lead of others during play activities, prefers to play alone, etc.). In the research literature, it has been shown that handicapped preschoolers do not share toys as easily as their nonhandicapped peers (Field et al., 1982). From the 125 responses, most parents indicated that their child shared toys \((n = 30)\). In contrast, only three parents stated that their child did not share toys.

As there is evidence in the research literature that more intelligent children lead the play activity (Smilansky, 1968), the notion of leading or following the play lead was an area that I wanted to explore further. From the questionnaire results, it appeared that most of the children led the play \((n = 25)\) or shared the play lead \((n = 4)\) when interacting with peers. Conversely, 16 children followed the play lead of others. Nevertheless, leading or following the play direction
 appeared to be age-dependent (i.e., parents commented that their child would often follow the lead with older children, but lead the play with younger children). Personally, I was somewhat surprised that the number of children who followed the play lead of others was so high.

In response to the peer interaction question, 20 parents stated that their child played well with other children, while 13 parents answered that their child preferred to play alone. Other less popular comments included: expresses feelings well/sociable ($n = 3$), competitive ($n = 2$), respects others ($n = 2$), becomes frustrated ($n = 2$), focussed ($n = 1$), creative ($n = 1$), shy ($n = 1$), fights ($n = 1$), and creates elaborate rules for play ($n = 1$).

To get an idea of how long the children played daily, parents were asked how many minutes per day their child engages in play activities. From the 47 responses, the numbers ranged from 30 minutes per day ($n = 1$) to all day ($n = 12$). As it is not possible for a child to play all day every day, the responses to this particular question should be regarded with caution. It appeared that the most common duration that each study child played each day (outside of the school setting) ranged from two hours ($n = 5$) to six hours ($n = 4$). Twenty-eight children fell within this range.

When asked how long their child was able to concentrate on self-selected play activities in one session, a total of 50 responses were given. Some parents did distinguish between various types of activities and therefore, varying degrees of concentration. The responses to the children’s ability to focus on a self-selected task ranged from less than 15 minutes ($n = 4$) to more than an hour ($n = 6$). However, most of the children (64%) were reported by parents to be able to concentrate on self-selected activities for either 15 to 30 minutes ($n = 17$) or 30 to 45 minutes ($n = 15$) at a time.

The parents’ role in their child’s play sessions was the next issue raised in the play questionnaire. Parents were asked how many times per week they take part in their child’s play and how long they participate in each of their child’s play sessions. Here again was another area
where parent responses seemed somewhat questionable. From the 40 replies, parents indicated that on average they spent between no time \((n = 1)\) to 25 – 50 hours per week \((n = 1)\) involved in their child’s play. The most common duration per week that parents played with their child ranged from 1 hour \((n = 4)\) to 5 hours \((n = 3)\). A total of 24 responses fell within that range. Some parents did indicate that they spent time playing with their child, but did not specify the duration or number of times per week that they engaged in play activities with their child \((n = 6)\). It is encouraging to note that only one of the 46 parents said that they did not spend any time playing with their child. To me, this was a very positive sign that 97.8% of the study parents were actively involved in their child’s play.

Researchers have concluded that children who organize their play experiences demonstrate a higher level of play (Parten, 1932; Lunzer, 1959). Similarly, children with speech impairments have been reported to engage in less organized play than their normally speaking peers (Lovell et al., 1968). In order to explore the issue of play organization, parents were asked whether they see any organization or structure in their child’s play (e.g., arranges toys in a certain way before the play session begins, cleans up toys in a particular manner, chooses play materials carefully before starting to play, etc.). From the 46 replies, 27 parents saw structure or organization in their child’s play, while the parents of 19 children saw no organization or structure in their child’s play.

In a similar manner, parents were asked to list any behaviours or patterns that they noticed frequently in their child’s play. Obviously, this was a very hard question for parents to answer. Perhaps this question was too open-ended or too difficult for parents to interpret. Some parents did make comments such as puts dolls in rows \((n = 1)\), unorganized/messy \((n = 1)\), changes clothes constantly on herself and dolls \((n = 2)\), and creative – does something completely different with the toys than expected \((n = 1)\). However, the majority of the parents did not provide the types of responses that I was seeking.
As a final question, parents were asked whether or not they believe play is a valuable part of their child’s educational experience. With the recent changes by the Ontario government to our educational system, higher academic expectations at all levels have been created. With this change in approach, parents are more focused on their child’s academic abilities from a very early age. Yet, all 48 respondents believed that play was a meaningful component of their child’s education.

The preceding overview of the parent questionnaire provided some insights into the play behaviours of the children. In summary, the five notable trends reported in the play questionnaire were: (a) lack of engagement in symbolic play at home did not seem to be a predictor of academic performance in grade one, (b) pretend play roles assumed by the children consistently fell into five recurring themes, (c) boys played in a more aggressive manner than girls, (d) more children than expected followed the play lead of others, and (e) all study parents viewed play as an important part of their child’s education.
Appendix E

General Guidelines for Play Observation

1. When you first start to observe a child at play, the arrival time is noted as 0:00. When the child visits a second centre, mark down the arrival time (i.e., the time the child actually begins play at that centre).

2. Number the order in which the child visits each centre, even if the child leaves and returns to the same centre a few times (i.e., the child plays at the puppet centre for five minutes - #1, then paints a picture - #2, then goes back to the same puppet centre - #3, etc.)

3. Feel free to add any additional notes under the “Comments” sections (i.e., explanation of a problem-solving situation, direct quotes from the child, a record of the number of boys and girls in the group, specific examples of inappropriate behaviour, etc.).

4. Checks are not allowed in between the Yes/No boxes. Either choose Yes, No, or N/A, whichever applies best. For example, if a child shares most of the time but refuses once, check Yes next to that column. If you need to qualify the checkmark, use the “Comments” section. If still uncertain, it may help to ask yourself the question – “What does the child do generally more often than not?”

5. Stop the timer if the child leaves the centre to use the washroom, get a snack, retrieve something from his knapsack, etc., or if a pressing situation arises and your assistance is required. Once the child has returned to the centre, resume your observations by pressing the Start/Stop button on the stopwatch until the 10-minute mark has been reached. At that point, reset the stopwatch to 0:00 by pressing the Split/Reset button.

6. The child needs to be observed during self-selected play activities. As a result, this would not include teacher-imposed recommendations for play activities or teacher-assigned tasks (e.g., Jolly Phonics work sheets, journal entries, etc.).
7. Fill in the date, code name (located on the side tab of the file folder), gender and hand dominance in the spaces provided.

8. List any additional learning centres in your classroom that are not mentioned on the play code form in the spaces provided at the bottom of the sheet.

9. Always try to check off the various play behaviours that you observe as you go along. Otherwise, if you wait until the end of the 10-minute period to fill out the check list, you may have forgotten some important details.

10. “Never assume what you cannot see.” For example, if a child is hidden behind a wall or large blocks, what exactly is happening there? At that point, you will need to reposition yourself so that the child is in view at all times.
<table>
<thead>
<tr>
<th>Social Play Variables</th>
<th>Qualifiers/Exemplars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engages in onlooker behaviour</td>
<td>- the child watches other children as they play or work, but does not engage in the actual activity</td>
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<td>- if unoccupied behaviour (i.e., the child is staring into space or wandering in the classroom) is observed, note this in the “Comments” section under this heading</td>
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<tr>
<td>Engages in solitary play</td>
<td>- the child plays alone with his own separate toys at least 3 feet or more away from the other children; if the child is playing in a small space, this 3-foot rule does not apply</td>
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<tr>
<td>Engages in parallel play</td>
<td>- the child plays alongside another child but works on his own project, with little or no verbal interaction with his peers (usually the child is playing with toys that are similar to those of the peer(s) next to him)</td>
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<tr>
<td>Engages in cooperative play</td>
<td>- the child actively works with other children towards a common goal (e.g., everyone is building a fort in the block centre; three children are playing the various roles of a family in the home centre, etc.)</td>
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<tr>
<td>Shares toy materials with peers</td>
<td>- the child gives toys to his peers, passes needed items to others, takes turns using materials, etc.</td>
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<tr>
<td>Enters play situations with ease</td>
<td>- when the child approaches a group of children, he displays ease in play entry and is involved quickly in a positive manner (e.g., does not hit someone, yell at others or grab a toy from another child, etc. to gain entry into a play group; does not hover outside of a play group)</td>
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<tr>
<td>Able to remain in play</td>
<td>- once in the play group, the child is able to maintain his status within the group (i.e., the other children don’t leave right away to play elsewhere or with new friends)</td>
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<td>------------------------</td>
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<tr>
<td>Interacts appropriately with playmates</td>
<td>- the child shares, negotiates, and cooperates with his peers - the child does not scream, swear or use other inappropriate language, hit others, grab toys from others, destroy others’ play creations, etc.</td>
</tr>
<tr>
<td>Leads the play activity</td>
<td>- the child directs the next sequence of events in the play activity; the child initiates most of the new ideas, while the other child follows along rather passively - there must be a clear example of this; if not, check off N/A - if the child is able to hold his own with his peers, check off N/A but note this in the “Comments” section</td>
</tr>
<tr>
<td>Communicates thoughts and opinions effectively with peers during play</td>
<td>- the child uses a clear, audible voice to express ideas in a way that is understood by other children - note in the “Comments” section any type of speech impairment, lisp, etc.</td>
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</tbody>
</table>

**Cognitive Play Variables**

<table>
<thead>
<tr>
<th>Moves frequently from one learning centre to another</th>
<th>- the child visits 3 or more play centres within the 10-minute observation session</th>
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<tbody>
<tr>
<td>Exchanges toy items constantly</td>
<td>- this refers to the superficial use and exchange of toys (i.e., the child picks up a toy, barely looks at it before putting it back and</td>
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</tbody>
</table>
picking up another toy, and another and another; the child may also take a number of toys from various unrelated tubs (e.g., at the small block centre, the child takes some Duplo blocks, puts them back and selects some Mobilo blocks, then Lego blocks, etc.) without really manipulating them thoroughly or focussing much attention on them before putting them back in the bins)

Extends or expands the play situation (evidence of complex play) - the child extends the play situation to a higher, more complex level, often adding materials from different centres (e.g., the child builds a large enclosure with small wooden blocks, but places small teddy bears on the top of the walls, adds dinosaur figures inside the enclosure and builds a drawbridge in front of the “castle”; the child cuts out a mask from construction paper, but adds sparkles, attaches a long string to fit around the face and glues feathers on top of it, etc.)

Uses play items in an appropriate fashion - the child takes proper care of the play items and uses them in the way they were intended (not including the use of objects in new ways during pretend play sequences or inventive manipulation of toys)

- an example of inappropriate toy use - the child uses a piece of train track to knock over another child’s creation or hit a child

Wanders aimlessly around the classroom - the child can’t seem to decide upon a centre in the classroom and wanders around; not focussed or engaged in any activity

Follows established classroom routines - the child follows pre-set classroom rules (e.g., pushes in chairs when leaving a centre, puts on a paint smock before beginning to
Selects simpler play tasks - the child chooses to play with easier toys or play materials (e.g., selects puzzles that have knobs on them and fit into pre-cut forms instead of a 25-piece puzzle; continuously traces from stencils instead of doing their own creative art work; consistently chooses to act out simple roles such as a cat or a crying baby in the home centre, etc.)

Selects challenging play tasks - the child selects more difficult choices within a play centre (e.g., plays with a difficult computer math game, successfully completes difficult puzzles, etc.)

Completes self-selected tasks - this refers to close-ended types of tasks where a finished product is usually made (e.g., finishes a painting, a piece of art work, a story booklet, a puzzle, etc.)

Perseverates in play activities, themes, or movements - repeats an action or activity many times for no apparent purpose (e.g., clicks a toy camera button fifteen times while staring into space; the child presses one letter on the computer keyboard repeatedly to fill up the entire screen, as she listens to the constant beeps; the child turns the lights on and off several times, etc.)

- this does not include repeating an activity to consolidate a skill
Reverses toy items or materials
- the child reverses toy items when playing with them (e.g., a child works on a puzzle that is upside down; the child reads a book upside down or backwards, etc.)
- this does not refer to the child who reverses a toy material purposely in order to make a project more interesting or challenging
- this does not include letter reversals (e.g., b/d, p/q), but does include whole word or name reversals (e.g., eizuS) when done consistently

Evidence of elaborated roles in fantasy play
- the child takes on a pretend role that is carried on for an extended period of time (e.g., the child pretends to be a “doctor”, he/she examines other children, gives needles, phones other patients, etc.)
- this would not include a child who plays the role of a dog and only barks, or a child who plays the role of a baby and cries “Waaa” all the time
- in addition, this refers to an elaborated role that the child has assigned to an object (e.g., a doll or dinosaur, etc.)

Plans play (organizes or structures carefully the play environment)
- the child shows evidence of setting up his play environment before the play actually begins (e.g., the child sets up all the signs, gas pumps, garages, etc. on the road carpet before any play starts; the child pulls out all the yellow blocks from the bin
of assorted blocks before building the house; the child sets out all the crayons, markers, scissors, and construction paper before creating any art work, etc.)

- this includes examples of problem-solving (e.g., the child places the box cover of a very difficult puzzle in front of him as a guide, etc.)

- there must be a clear example of this; otherwise check off N/A

Explores unfamiliar materials or play experiences (i.e., takes risks)

- the child’s initial response to novel items and experiences is to approach, engage, and manipulate

- the child appears to enjoy manipulating finger paints, magic mud, pudding, etc. with hands or feet

- if a new toy/book/nature item, etc. is introduced in class, the child shows curiosity in exploring it
Kindergarten Teacher Survey

Date: ________________________________
Name: ________________________________
School: ________________________________

1. Last year, how many kindergarten children did you teach? __________________________

2. How many kindergarten children participated in the following “academic” activities last year?

<table>
<thead>
<tr>
<th>Services/Programs</th>
<th>Total # of Children</th>
<th># of Play Study Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(include child’s name, program duration)</td>
</tr>
<tr>
<td>1. Occupational therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Speech therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Child development clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Summer school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Tutoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Summer camps with an academic focus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Last year, how many children participated in the following "recreational" programs?

<table>
<thead>
<tr>
<th>Program</th>
<th>Total # of Children</th>
<th># of Play Study Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>(include name, program duration)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Summer camp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Swimming lessons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Play-based programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Story groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Last year, did any of your kindergarten parents have serious concerns about their child's future success in grade one before you raised those concerns (parent identification)? ________ If so, how many parents? ________ Did any of the parents involved in the play study express concerns about their child's future academic performance in school before you did? ________ If so, list their names. ___________________________________________
Appendix G

Grade One Teacher Survey

Date: ____________

Teacher’s name: ________________________________

Student’s code name: __________________________

School: ________________________________

1. How would you rank the child’s gross motor/body coordination skills?
   
   Circle one – (poor, fair, average, good, very good)

   Comments ____________________________________________

2. How would you rank the child’s fine motor skills?
   
   Circle one – (poor, fair, average, good, very good)

   Comments ____________________________________________

3. Does the child listen attentively in class?

   Circle one – (never, rarely, sometimes, frequently, always)

   Comments ____________________________________________

4. Can the child accurately follow oral instructions?

   Circle one – (never, rarely, sometimes, frequently, always)

   Comments ____________________________________________

5. How would you rank the child’s expressive language skills?

   Circle one – (poor, fair, average, good, very good)

   Comments ____________________________________________

6. How often does the child participate in class?

   Circle one – (never, rarely, sometimes, frequently, always)

   Comments ____________________________________________
7. How would you rank the child's reading skills?
   Circle one – (poor, fair, average, good, very good)
   Comments

8. Overall, how would you rank the child’s writing skills?
   Circle one – (poor, fair, average, good, very good)
   Comments

   Have you ever noticed any sequencing errors, letter reversals, or doubling of letters in the child’s writing?
   Circle one – (never, rarely, sometimes, frequently, always)
   Comments (specify which problem)

   Describe the child’s level of written productivity.

9. How readily does the child grasp new concepts that are presented in class?
   Circle one – (very slow, slow, moderate, fast, very fast)
   Comments

10. How would you rate the child’s emotional state?
    Circle one – (very fragile, fragile, stable, healthy, very healthy)
    Please describe any problems (i.e., excessive crying, insecurity, phobias, etc.)

11. How would you rate the child’s interactions with peers?
    Circle one – (poor, fair, average, good, very good)
    Comments
12. How would you rate the child’s overall behaviour in class?
   Circle one – (poor, fair, average, good, very good)
   Comments

13. How would you describe the child’s pace of work?
   Circle one – (very slow, slow, moderate, fast, very fast)
   Please describe (i.e., rushes to finish, fast and efficient, etc.)

14. Is the child able to organize effectively his/her personal belongings (i.e., knapsack, desk, homework, etc.)?
   Circle one – (never, rarely, sometimes, frequently, always)
   Comments

15. Is the child able to focus for an appropriate length of time on assigned tasks?
   Circle one – (never, rarely, sometimes, frequently, always)
   Comments

16. Does the child follow class routines?
   Circle one – (never, rarely, sometimes, frequently, always)
   Comments

17. Can the child work independently in class?
   Circle one – (never, rarely, sometimes, frequently, always)
   Comments

18. How would you rate the child’s problem-solving skills?
   Circle one – (poor, fair, average, good, very good)
   Comments
19. Would you consider this child to be a “risk-taker”?  
   Circle one – (never, rarely, sometimes, frequently, always)  
   Comments ____________________________________________________________

20. Have lates or absences been a problem during the school year?  
   Circle one – (never, rarely, sometimes, frequently, always)  
   Comments (specify if referring to tardiness or absenteeism)  
   ________________________________________________________________

21. Has the child ever been referred to any specialist or agency for additional support or services  
    (e.g., school team, Communications, IPRC, occupational therapist, speech services, Reading  
    Recovery program, tutoring, etc.)? ________ If so, please describe the type and duration of  
    the intervention. ____________________________________________________  
    ________________________________________________________________

22. In your professional opinion, do you believe that this child is educationally at risk for  
    future learning problems? ________ Why or why not? ____________________  
    ________________________________________________________________
List of References for the Grade One Teacher Survey

The reader is provided with a list of references used to support the inclusion of questions in the grade one teacher survey pertaining to:


- listens attentively (Lerner, 1989)

- follows oral instructions (Cowgill et al., 1973; Learning Disabilities Association of Canada, 1990)


- class participation (Cowgill et al., 1973; Keogh et al., 1974)


overall classroom behaviour (Keogh et al., 1974; Saxby & Morgan, 1993; Toro et al., 1990; Vaughn et al., 1993)

organizational skills (Irwin & Frank, 1977; Lerner, 1989; McCarthy, 1989; Wender, 1981)

ability to focus on tasks (Association for Children with Learning Disabilities, 1981; Learning Disabilities Association of Canada, 1990; Lerner et al., 1987; Saxby & Morgan, 1993; Wender, 1981)

work independently (Bryan et al., 1981; Keogh et al., 1974; Kirk, 1987; Lerner, 1989; Lerner et al., 1987; Wender, 1981)

problem-solving skills (Toro, Weissberg, Guare, & Liebenstein, 1990)

risk-taker (Learning Disabilities Association of Canada, 1990; Rigby et al., 1993; Schaaf, 1990; Young, 1991)
Appendix H

Sample Observations From Daily Field Notes

April 1, 1997

School #1 (1:15 p.m. – 1:50 p.m.)

Today was the first day back from a four-day Easter holiday weekend. There were many children away today, so the class was much smaller than normal. When I arrived at the school, the children were already at free play.

First, I watched #38 as he played at the small wooden train track/block centre. He was there with another boy, but did not seem totally engaged in the activity. Each boy was building his own track. Number 38 never actually completed his track (i.e., closed it in), and there was no real evidence of extension of the play activity. The other boy was leading the play, but #38 didn’t interact appropriately with his peer. He pulled up his friend’s track and broke it. He yelled, “Hey, that was mine!” and grabbed a car from the other boy’s track. He was also trying to grab the track from the other boy. He didn’t use the track in an appropriate manner, as he hit the train off the track using a track block. The train track seemed to have little organization as pieces were all over the carpet, and most were never attached. For a while, #38 did manipulate the tiny clock on the mini gas tank that went along with the train set.

Next, I watched #7 who was at the cut and paste centre by herself. She had already been there for a while. She made one picture of cut-out people using construction paper. She glued a blue piece of paper at the bottom of her page, and a brown piece of paper in the middle. She added eyes, noses, mouths, arms, hair, legs, and a sun to the cut-out figures, using an orange marker. Once finished, she put her work on the “Going home” pile. Next, she stopped to watch her friends at the house centre. Then she went back to the cut and paste centre. She cut out two square pieces, a round circle, and a wavy piece of construction paper. She glued all these pieces onto black construction paper. She said it was “Animals swimming under water”. Again, she put
her finished work on the “Going home” pile. Next, she walked by the home centre and watched her friends play, before going back to the arts and craft table. There she took another piece of orange construction paper and glued shapes on it. When asked what it was, she said she didn’t know.

Finally, I watched #35, who was playing cooperatively with a peer using the small wooden track blocks. These two children were no longer working on their own separate projects. They were not really building a train track anymore, but were zooming wagons around on top of a wooden piece of track. Number 35 seemed happy and contented as he lay on the carpet stretched out. He did lead the play. The play activity had been extended, as they had lots of pretend play going on (e.g., dinosaurs, friends, bridges) – “We have to make up names.”, “Your name is ______.”, “My name is ______.”, “I ate a cake.”, “I’m camping here.”, “Pretend you can’t hear me.”, “Pretended one of the guys got dead, but I saved him.”. He also used a high-pitched voice when he said some of these things. He had created a more complex series of make-believe characters, even without the figurines. However, his thoughts seemed to jump all over, so no real planning of the play setting was noted.

**School #2** (2:15 p.m. – 3:00 p.m.)

Again, today was the first day back after the four-day Easter holiday. I first watched #25, who was at the large blocks initially with two girls and one other boy. He was doing most of the construction and was creating a tunnel. It slowly became a more complex structure with an entrance, and later was blocked off at one end. There was also a little “house” built off to one side. After a couple of minutes, he left the large block centre to see the new magic mud at the playdough centre, as he had never tried it before (i.e., exploring new materials). He said his hands felt “all sticky”. However, the teacher didn’t want the kids playing with that today, so he had them leave the centre fairly quickly. Number 25 went back to the large block centre and did
engage in some inappropriate behaviour. For example, he called a girl a “fat bum”; he used a block as a gun (made shooting noises) and then tattled on two other boys who were making guns; he grabbed a block structure from another boy and broke it (as supposedly the boy had made a gun). At one point he even screamed, “It’s my house!” into another girl’s ear. He didn’t seem very engaged in the play activity, but did lead the play at the big block centre, as he was telling children what to do. Then he was wandering a bit. He watched one girl put stickers in her book (onlooker behaviour), and then returned back to the big block centre. There was a lot of movement around the room. Even though another boy had told him, “No guns.”, he was using a long wooden block as a gun. At one point, when the teacher told a girl that her blocks were stacked too high, #25 said that he had kept telling her this, but she didn’t listen (almost tattling).

Next, I watched #9, who also was wandering around the room. This child was really not engaged in the play activity. He started out at the small blocks (Lasy table) and had already been there for a while. There were four boys in total at this centre. He left and then briefly looked at the covers of a couple of science books, but didn’t open them up. Then he watched the girls in the home centre. He tried to enter the play situation by putting his hand in one of the girl’s hair (sign of poor entry). Then he engaged in unoccupied behaviour for a while. Next, he went back to the small block centre, but didn’t actually build anything with the blocks. He took the grey narrow rubber strips from the Lasy table and tied them around his wrist. Then he tied them around his friend’s wrist, and finally around the Lasy table legs. Towards the end of the 10-minute observation session, he had made a chain of attached rubber rings, connected to the table leg. Also, during this time, he talked to the teacher for a while. His behaviour with his peers was often not appropriate. He was acting very silly – making faces, dancing around the carpet, etc. He did hang on to the grey bands for most of the 10-minute session though.