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Social Behaviour During the Preschool Years

In Relation to:

**Theory of Mind, Future-Oriented Thinking
and Language**

by

Maria Angelopoulos

**Submitted in partial fulfillment of the requirements for the
degree of Doctor of Philosophy**

at

Dalhousie University

Halifax, Nova Scotia

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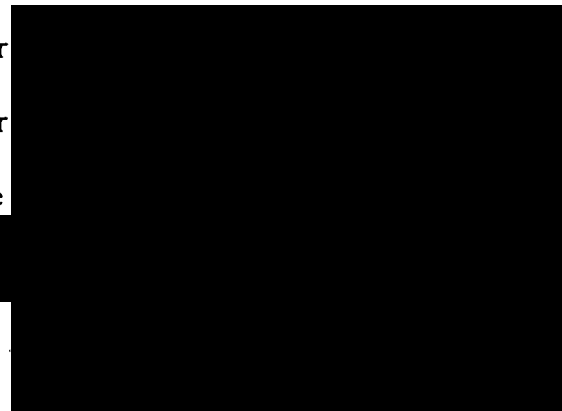
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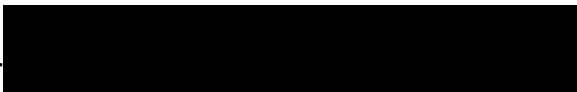
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Dedication

This thesis is dedicated to my children, Paul, Teena, and Jaime. From the moment they were born they have filled my life with joy, laughter, love, and contentment. They inspired me to pursue my dream and this led me on an unforgettable journey. They taught me the importance of priorities in my life. They nourish my soul. My love for them is infinite.

"sas agapo poli"

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Abstract

The present study examined the relationship between peer social behaviours in naturalistic settings and lab-based measures of social understanding. A sample of 120 3- and 4-year-old children were presented with tasks assessing theory of mind, future-oriented self-control and sharing, peer-rated likability and empathic concern. They were also given a standard measure of general language ability. Children were also videotaped during a 10-minute naturalistic peer play session. Parents and teachers completed questionnaires rating children's global social skills, problem behaviours, and mental state concepts. It was hypothesized that older children would perform more successfully on lab-based measures and that their peer social behaviours would be more sophisticated. Results indicated that most of the lab measures, questionnaires, and naturalistic observations discriminated between the 3- and 4-year-olds in the expected direction. Compared to the 3-year-olds, the 4-year-olds achieved higher scores on lab-based measures of social understanding and these abilities enabled them to interact in meaningfully different ways with others. Four-year-olds interactive abilities were also seen as more sophisticated than 3-year-olds by peers, parents, and teachers. Three-year-olds used their restricted abilities in an indiscriminate fashion and were periodically successful in their interactions. In contrast, 4-year-olds showed more purposeful social behaviour. The patterns of data provide evidence of clear developmental differences between age-groups. These findings are discussed in terms of their implications for children's social development.

List of Abbreviations

ANOVA	Analysis of variance
AR	Appearance Reality
CB	Cooperative Behaviours
CDS	Children's Delay Strategies
EB	Empathic Behaviours
EE	Engaging the Experimenter
FB	False Belief
HB	Helping Behaviours
IP	Interactive Play
PC	Parent Conventional
PDS	Parent's Delay Strategies
PI	Parent Intentional
PP	Parallel Play
PPBS	Parent Problem Behaviours Scale
PPSS	Parent Prosocial Skills Scale
PT	Prudence Total
PPQ	Parent Prudence Questionnaire
RC	Representational Change
RCP	Reciprocal and Complementary Play
RVSS	Revised Vineland Socialization Scale
SIPP	Simple Interactive Parallel Play

SSRS	Social Skills Rating Scale
TC	Teacher Conventional
TELD-2	Test of Early Language Development-2
TI	Teacher Intentional
ToM	Theory of Mind
TPBS	Teacher Problem Behaviour Scale
TPSS	Teacher Prosocial Skills Scale
NB	Nonsocial Behaviours
1SN/2SL	1 self now/2 self later (delay of self-gratification)
1SN/2OL	1 self now/2 other later (delay of other-gratification)
1SN/1EN	1 self now/1 each now (shared gratification without cost)
1SN/1EL	1 self now/1 each later (delay of shared-gratification)

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Chapter One

Introduction

Overview

Preschooler's social understanding or social cognition has been the focus of a great deal of attention in the developmental psychology literature in recent years. The potential contributions of social understanding to preschoolers' ability to make sense of their social world and behave in a skilled, prosocial manner in their interactions with others, especially their peers, are relatively unexplored. What has largely been ignored in the developmental literature is how experimentally-based social-cognitive measures, such as theory of mind and future-oriented, self-control and sharing, relate to social behaviour in naturalistic settings. The present work examines several behavioural correlates that might be associated with social understanding in the preschool years. Because young children's responses to social situations require them to employ a repertoire of increasingly complex social behaviours, it would not be appropriate to draw conclusions about children's social understanding based on just one aspect of their behaviour. The present work includes several dimensions of social behaviour that may be influenced by the children's level of social understanding. Because different social contexts may evoke diverse interpretations of children's social behaviour, peer ratings of children's interactions skills were evaluated as well as parent and teacher ratings of children's social competencies.

The primary aim of the present study was to examine the behavioural correlates of preschoolers' social understanding, in a more comprehensive and multidimensional manner than has previously been undertaken in the literature. In the sections that follow, each of the abovementioned variables of interest will be described, and the principal findings of the

literatures germane to the present work will be reviewed. This review begins with theory of mind, which in recent years has emerged as a most useful, and prolific approach to studying early child development. Indeed, much of the work on social understanding has been dominated by theory of mind research. The theory of mind review highlights the important contributions this area of research has made to the field of developmental psychology.

Theory of Mind

Theory of mind involves the understanding that people's behaviour is governed by internal mental states such as desires, hopes, plans, intentions, and beliefs (Wimmer & Perner, 1983). Internal mental representations about the environment provide individuals with a basis for action. However, representations, or beliefs about the world are sometimes false. Nevertheless, such misrepresentation will still determine action. The question posed by many developmentalists is whether young children understand the representational capacity of the mind. A central issue for developmental psychologists is whether young children can or cannot attribute false beliefs to another. The ability to understand the representational capacity of the mind will permit children to recognize that all aspects of reality can be mentally represented in a multitude of different ways by self and others as a result of differing experiences, and that these mental representations do not necessarily reflect reality. In this manner, children can begin to use their mentalistic awareness to explain, predict, support or thwart others' behaviour simply because they understand that the actions of self and others are the result of these complex, ever-changing and interconnected mental entities. The present work focuses on examining the

social behaviour of children with and without an awareness of mentalistic concepts.

Young children's ability to perform successfully on experimental tasks that tap their awareness of false belief is taken as evidence of their understanding of the representational capacities of the mind. The most well-known false belief paradigm was developed by Wimmer and Perner (1983). Over the years, variations of this original false belief paradigm have been used by developmentalists to investigate the acquisition of mental state concepts in young children (Gopnik, & Astington, 1988; Hogrefe, Wimmer, & Perner, 1986).

The original false belief paradigm (e.g., Wimmer and Perner, 1983) uses a story that is acted out with dolls and toys. In this story a boy puts some chocolate in location A and leaves this location. In his absence the chocolate is moved to location B. When he returns, the boy wants the chocolate. Children are asked where the boy will look for the chocolate. The majority of 3-year-olds predict that the boy will look in location B: the real location of the chocolate. It is not until children are four and five years old that they predict the child will look in location A, the original location. Three-year-olds do not seem to grasp the idea that the boy will look in the original location, where he thinks the chocolate will be. Around age four, children exhibit successful performance on false belief tasks and are credited with understanding the representational capacity of the mind. At this age, children become aware that mental states such as beliefs and desires cause people to behave in certain ways; actions are mediated by the intentional aspects of these mental representations. Children's ability to understand the representational capacity of the mind around age four, is a much-replicated and highly robust research finding (e.g., Astington

& Gopnik, 1991; Astington, Harris, & Olson, 1988; Frye & Moore, 1991; Perner, 1991; Wellman, 1990).

Theory of mind competency is widely considered to be an important social-cognitive skill because it is typically assumed that the most powerful function of a theory of mind is to facilitate social interaction (e.g., Moore & Frye, 1991). However, a few researchers have turned their attention to the naturalistic behaviours associated with theory of mind abilities, as will be discussed next.

Theory of Mind in the Social World

Social Interactions Within the Family. To date, research in theory of mind development has been conducted almost exclusively within the confines of the laboratory setting. Although these investigations have made significant theoretical contributions to our understanding of children's social-cognitive development, they provide little information about how theory of mind relates to children's social behaviour in naturalistic settings. There appears to be a clear neglect in the literature on the functional implications of theory of mind development in children's everyday lives. It has been suggested that the ability to infer other's intentions and to predict other's behaviour is the foundation of effective, purposeful social interaction (Moore & Frye, 1991).

Researchers began to broaden the database of theory of mind development by including in their examinations potential individual difference factors that may facilitate the ability to infer others' intentions. A large amount of developmental research suggests that children's social environments may influence children's social competencies (e.g., Dunn, Brown, & Beardsall, 1991; Gnepp, 1983; Pettit, Harrist, Bates, & Dodge, 1991; Strayer &

Roberts, 1989). For example, several studies have investigated how children's burgeoning theory of mind abilities may be related to social interactions within the family unit. Dunn, Brown, Slomkowski, Tesla, and Youngblade (1991) observed 33-month-old children in interactions with their mothers and an older sibling. These authors found that family conversations about feeling states and talk about the causal components of these feeling states, were predictive of children's false belief understanding seven months later. More recent work by Perner, Ruffman, and Leekam (1994) reported yet another interesting aspect about the familial environment and its effect on false belief understanding. They found that the child-sibling relationship, or more specifically the number of children in the family (birth order was not a factor), was strongly associated with false belief understanding. Three- and 4-year-old children with two or more siblings, were twice as likely to pass false belief tasks than were children who did not have any siblings. The authors suggested that siblings provide more opportunities for children to engage in joint pretense, which in turn may foster their theory of mind development. Jenkins and Astington (1996) also found that family size was a significant predictor of false belief understanding, even after the effects of age and language ability were partialled out.

Other investigators (i.e., Lewis, Freeman, Kyriakidou, Maridaki-Kassotaki, & Berridge, 1996; Ruffman, Perner, Naito, Parkin, & Clements, 1998) showed that birth order was indeed advantageous in promoting false belief understanding; older siblings provided a facilitative effect on false belief understanding. Ruffman et al., (1998) found that the number of older siblings a child had provided a linear increase in younger children's false belief understanding. The facilitative older sibling effect was not helpful to

children younger than three years two months. Moreover, younger siblings did not provide a facilitative effect on false belief understanding at any age. The fact that the older sibling effect was not only in North American children, but also found in Japanese children (Ruffman et al., 1998), as well as Greek children (Lewis et al., 1996) suggests that the influence of children's social world on their social-cognitive development is a trans-cultural phenomenon.

Interestingly, in non-Western cultures, in which extended families are common, daily contact with adult relatives and older child relatives was also found to enhance children's performance on false belief tasks. Lewis and colleagues (Lewis et al., 1996) proposed the term "apprenticeship hypothesis" to account for their finding that older members of a child's immediate social environment influence the development of greater mental state understanding, rather than a more specific sibling effect.

Dunn and colleagues (Dunn, 1994; Dunn, Brown, Slomkowski, et al., 1991; Brown, Donelan-McCall, & Dunn, 1996) suggest that during young children's interactions with family members, young children are repeatedly confronted with conflicting information about reality in their family-related activities (e.g., family discussions about affective perspective-taking, sibling disputes). According to Dunn, Brown, Slomkowski et al., (1991), as children go about negotiating these conflicting social activities, they learn that the mind can process and integrate multiple realities of a single phenomenon, and as a result they begin to understand false belief. Collectively, these findings suggest that various familial and social factors, facilitate the development of theory of mind acquisition, and highlight the importance of examining the potential underpinnings of false belief

understanding in children's natural environments.

Social Interactions. Among the first to investigate the behavioural correlates of theory of mind development in children's social interactions were Astington and Jenkins (1995a). The Astington and Jenkins' study (1995a) is unique primarily because they were among the first researchers to investigate the consequences of sophisticated social understanding using observational methods. In addition, Astington and Jenkins (1995a) explored children's false belief understanding and its influence on peer relations rather than the family unit. Finally, pretend play was selected as a potential behavioural correlate in theory of mind development. Since pretend play involves the ability to generate mental representations of the world that do not exist, it has emerged as an important variable in the development of social cognition (e.g., Brown et al., 1996; Ruffman et al., 1998; Taylor & Carlson, 1997).

In the Astington and Jenkins (1995a) study, 3- to 5-year-old children were videotaped in a 10-minute, free-play session with three or four of their peers. The children's playtime conversations were coded for the presence of pretense, and each pretend utterance was coded for joint proposals (e.g. "Let's make cookies"), and role assignment (e.g., "You be the mommy"). Astington and Jenkins (1995a) found that children who demonstrated false belief understanding on lab-based measures were more likely to make joint proposals in pretend play situations, and were also more likely to assign an explicit role for themselves or their playmate during playtime. However, the overall amount of pretend play that children engaged in was not associated with false belief understanding. Based on this information, the authors concluded that false belief

understanding is associated with children's behaviour in their daily lives.

Despite Astington and Jenkins' (1995a) groundbreaking research, the study had several limitations. First, the sample size was relatively small (30 children, 3- to 5-years-old) in relation to the number of measures used to assess the children, and this may have reduced their statistical power. Second, the study did not provide sufficient information about individual difference factors that may have contributed to the social sophistication demonstrated in the children's pretend play. Third, naturalistic observations of children's pretend play were not corroborated with collateral informant information (i.e., teacher and/or parent ratings of children's social skills). Thus, apart from the one-time 10-minute videotaped play segment, Astington and Jenkins (1995a) provided little information about how children were perceived socially by others.

Brown et al., (1996) employed a longitudinal design to investigate whether false belief understanding influenced secondborn children's use of mental state terms in differing social contexts. Children's false belief understanding was assessed at 40 months, and again at 47 months. In contrast to Astington and Jenkins' (1995a) one-time brief play session, Brown and colleagues observed children on two occasions when they were 47 months. Children were observed for one hour in conversation with their older sibling(s) and their mothers, and children were also observed for 45 minutes with their best friend. Results showed a positive relationship between children's false belief measures at 40 and 47 months, and their use of mental state terms. Moreover, children used mental state terms more often in their conversations with friends and siblings, and less often in conversations with their mothers. Children who were engaged in cooperative play in

sibling or friend dyads were more likely to use mental state terms in reference to each other's mentalistic concepts. Brown et al. (1996) concluded that children's social worlds, particularly their interactions with other children, play a prominent role in children's social-cognitive development.

Another longitudinal study conducted by Slomkowski and Dunn (1996) examined the link between children's lab-based social understanding and the connectedness of communication (average length of connected speech, average length of play sequence, and average length of pretend episodes) with their friends (average length of friendship was 24 months). Thirty-eight secondborn children were administered false belief tasks at 40 months. At 47 months, children were audiotaped during a 45-minute play session with one friend. Results indicated that during the play session, about 62% of the conversation turns between friends consisted of connected speech, and that this connected communication was linked to successful performance on lab-based false belief understanding. Slomkowski and Dunn (1996) suggested that lab-based social understanding tasks are useful tools in predicting children's social interaction skills.

A recent study by Hughes and Dunn (1997) explored the association between children's understanding of false belief and their social interactions with their friends. Fifty children (25 pairs of friends, age range 3;3 to 4;7) were presented with two false belief prediction tasks, two false belief explanation tasks, and two deception tasks. In addition, each pair of friends was videotaped during a 20-minute free-play session. Hughes and Dunn (1997) assessed children's use of mental-state terms and pretense in conversation with their friends. Results showed that children who performed more successfully on false

belief tasks engaged in a greater frequency of pretend play, attended to their friend's mental-state talk, and they were also more likely to use more mental-state terms in response to their friends. Children with a higher frequency of mental-state talk tended to use such talk more during pretend utterances than non-pretend utterances.

There were two limitations present in the studies conducted by Brown et al. (1996), Slomkowski and Dunn (1996), and Hughes and Dunn (1997). First, in each of these studies the authors confined their evaluation of the behavioural correlates of children's social understanding to dyadic interactions with friends in private surroundings with no disruptions by others (the Brown et al. study also included mother/sibling interaction). Although such settings yield information about children's social-cognitive abilities in an intimate environment, they are limited in generating information about children's social interactions with peers in broader social contexts. Second, each of these studies also failed to include parent and/or teacher ratings of children's social competency skills that would help to inform us about how children were perceived socially by others.

In terms of the types of social competency skills that may be related to children's social understanding, Lalonde and Chandler (1995) constructed a novel 40-item questionnaire (questionnaire items were derived from a number of existing child socialization rating scales, several items were author-compiled), that could assess two distinct aspects of children's social competencies: intentionality and conventionality. The 20 "Intentional" items assess children's understanding of mental states. The "Intentional" items reflect a child's ability to consider the intentional aspects of their own and other's

behaviour during playtime. In contrast, the 20 "Conventional" items assess as a child's grasp of social convention and do not involve an intentional component. Children's social competency ratings were provided by their preschool teachers. Finally, 3-year-olds were also given six measures of false belief understanding to complete (e.g., two variations of the 'unexpected contents' measures; two 'unexpected change' measures; and two 'unexpected change' measures intended to 'trick' a second experimenter during her absence). Interestingly, children's performance on false belief tasks was positively correlated with teachers' ratings of "Intentional" scale items only. Since this newly-devised measure can distinguish between various aspects of children's social-cognitive development, based on their existing theory of mind abilities, it would appear to be a useful measure in future studies aimed at uncovering the relations between theory of mind development and peer social interaction.

Clearly, one limitation of the Lalonde and Chandler (1995) study was their failure to include naturalistic observations of the types of social activities these 3-year-olds engaged in. Also, the psychometric properties of this newly-developed scale are somewhat questionable. Nevertheless, it is important to stress that the theory of mind field has just recently started to explore the behavioural correlates associated with lab-based measures of social understanding. Consequently, the availability of psychometrically sound instruments is scarce. Finally, given that half of these 3-year-olds (out of a total of 40) passed four out of the six false belief measures, it would have been useful for Lalonde and Chandler to have included individual difference factors which could have explained their proficiency at this early age.

In summary, it appears that although only a small number of researchers have examined how theory of mind abilities may relate to social behaviour in naturalistic settings, in each of the aforementioned studies, investigators have identified some behaviours that are associated with sophisticated social understanding. Taken together, these studies suggest that different social contexts, in particular situations involving peer interactions, provide fertile ground for the expression of social competency skills that are related to experimentally-based social understanding. This previous work also underscores the fact that the social skills demonstrated by those with a keen awareness of mental states, leads to a distinct pattern of social competency skills that differs considerably from children who are less sophisticated in their social cognition.

Linguistic Development. In addition to the documented age four transition in children's understanding of metarepresentation, another consistent finding in the literature is that theory of mind abilities are strongly associated with language competency; some degree of linguistic ability is required for successful performance on theory of mind tasks. The relationship between theory of mind and language has been investigated along a number of different lines. For example, some investigators have argued that theory of mind tasks may require a certain level of language ability which may be too difficult for younger children (Chandler, Fritz, & Hala, 1989; Lewis & Osborne, 1990; Siegal & Beattie, 1991). Siegal & Beattie (1991) argued that since younger children are inexperienced conversationalists compared to adults, they may be unable to discern the intended purpose of an experimenter's questions and consequently fail to demonstrate their mentalizing abilities. They found that 3- and 4-year-old children performed equally well on

false belief tasks when the linguistic demands of the test questions were reduced. On a similar note, Lewis and Osborne (1990) demonstrated that temporally specific test questions improved the performance of 3-year-olds on false belief tasks.

Other researchers have examined which particular aspects of language enable theory of mind development. In an elegant series of studies, Moore and colleagues (Moore, Pure, & Furrow, 1990; Moore, Furrow, Chiasson, & Patriquin, 1994; Moore, Gilbert, & Sapp, 1995) examined young children's comprehension and use of mental state terms. For example, Moore et al. (1990) presented 4-year-olds with a set of theory of mind tasks plus a certainty task (requiring them to guess in which of two locations they would find a hidden object). Children's understanding of speaker certainty was tested by having two puppets present them with contrasting pairs of modal (i.e., *must-might*), and mental (i.e., *know-think*) terms as cues to the location of the hidden object. Results showed that 4-year-olds understand the mental states of speaker certainty, and this finding was associated with theory of mind competency. Moore et al. (1994) used a longitudinal approach to examine children's use of mental terms, including both belief and desire terms, in conversations with their mothers. The authors found that children's use of desire terms at age two was related to their use of belief terms at age three, and their comprehension of belief terms at age four. In a similar vein, Brown et al., (1996), found that 47-month-olds' use of these terms was related to false belief understanding. These findings highlight the important role the early conversational environment has in children's productive vocabularies and their acquisition of theory of mind.

In other recent work, children's general language abilities (assessed with various

standardized language measures) have been shown to be related to false belief understanding and certain aspects of social behaviour in naturalistic settings. Astington and Jenkins (1995a) found that general language ability (assessed with the Test of Early Language Development [TELD]; Hresko, Reid, & Hammill, 1981) was associated with false belief understanding in addition to children's joint proposals and role assignments in pretend play. These effects were still apparent even after the effects of age were taken into account. In fact, during pretend play, children demonstrating greater use of such cognitive verbs such as *think*, *know*, *guess*, and *remember* performed better on theory of mind tasks (Astington & Jenkins, 1995b). Furthermore, Astington and Jenkins (1995b) showed that language abilities (assessed at an earlier point in time with the TELD) were predictive of later theory of mind development, but the reverse pattern was not found. Overall, the authors concluded that children require a certain level of linguistic ability in order to pass false belief tasks and that "theory of mind development and language development are fundamentally related and interdependent" (Jenkins & Astington, 1996, pg. 76). These findings highlight the importance of assessing language skills when conducting theory of mind research.

Age of Onset. The present work focuses on two distinct ages: 3-year-olds and 4-year-olds. These ages were selected because they reflect the generally accepted view that the period between three and five years of age marks a transition in children's social-cognitive development. Many researchers agree that 4-year-olds understand the distinctiveness between self and other's mental states and the intentional aspects of human behaviour (Flavell, 1988; Moore & Frye, 1991; Perner, 1988). On the other hand, some

investigators contend that even 3-year-olds understand that people possess an array of mentalistic constructs which cause them to engage in certain external actions in order to fulfil their desires (Chandler et al., 1989; Baron-Cohen, 1994). Consequently, there has been considerable debate about the age at which we can attribute various theory of mind abilities to children, with most of the focus centering on 3- and 4-year-olds.

The view that 3-year-olds possess an advanced level of social understanding stems in part from the social competency skills exhibited by very young children. By the end of the first year of life infants engage in various social activities that have lead some researchers (i.e., Bretherton, 1991; Bretherton & Beeghly, 1982; Tomasello, 1995) to argue that infants' ability to communicate with others indicates that they have a theory of mind, albeit an "implicit" theory of mind. At this age, infants can participate in bouts of joint attention via gaze following (Corkum & Moore, 1995; Scaife & Bruner, 1975), can use pointing as a means to direct another's attention to objects (Bates, 1979), and are able to use adult's emotional expressions as a reference for their own emotional responses to novel or ambiguous stimuli (Klennert, Campos, Sorce, Emde, & Svejda, 1983). Children aged 18-24 months are able to engage in pretend play with others (Leslie, 1988) and they start to talk about internal mental states as evidenced by their use of such terms as *see*, *look*, *happy*, *surprised*, *remember*, and *pretend* (Bretherton & Beeghly, 1982). Additionally, 3-year-olds do specify that an individual will be either pleased if desires are achieved or sad if desires fail to be achieved (Yuill, 1984).

The alternative perspective (i.e., Astington et al., 1988; Moore & Corkum, 1994; Perner, 1991) argues that although infants and toddlers may display many social interactive

abilities, this does not imply that infants and toddlers understand belief and intention in self and others. This latter perspective has suggested that participation in social interactions enables young children to accumulate the experience necessary to develop an understanding of the psychological nature of relationships.

Despite the fact that 3-year-olds cannot perform on experimental tasks with the same competency exhibited by 4- and 5-year-olds, numerous studies have simplified task demands in an attempt to demonstrate that 3-year-olds understand the representational capacity of the mind. Task demands have been simplified in a number of ways including: reducing the linguistic complexity (Lewis & Osborne, 1990; Siegal & Beattie, 1991), making the false belief task into a film so that the features are more salient (Moses & Flavell, 1990), enhancing youngsters' narrative grasp of false belief by making the story into a book that can be retold (Lewis, Freeman, Hagestadt, & Douglas, 1994); and by having young children actually deceive another, as opposed to predicting the actions of a person who holds a false belief (Chandler et al., 1989; Rice, Koinis, Sullivan, Tager-Flusberg, & Winner, 1997). Although all of the above studies reported that 3-year-olds' performance improved when such modifications were made, the fact that optimal conditions must exist in order for 3-year-olds to demonstrate a grasp of false belief suggests that their abilities are inferior to those of 4-year-olds (Lewis & Osborne, 1990). Sodian, Taylor, Harris, and Perner (1991) contend that since 3-year-olds' performance is so easily influenced by task manipulation, this suggests that they have a weak understanding of false belief.

Based on these findings, many investigators remain reasonably confident that false

belief understanding is beyond the conceptual capacity of 3-year-olds, particularly in view of the fact that 3-year-olds also fail on other theory of mind tasks such as appearance-reality distinction (Flavell, 1988; Moore et al., 1990), and representational change (Gopnik & Astington, 1988), whereas 4-year-olds succeed on all these tasks. These findings suggest that there is a distinct social-cognitive disparity between 3- and 4-year-olds, with the latter age group demonstrating a much keener awareness of the mind. This lends support to the notion that well-developed theory of mind abilities may also translate to certain features in children's everyday social behaviour.

To summarize thus far, one of the predominant goals in the developmental literature over the past decade has been to document the age of onset of theory of mind abilities. Prior to Astington and Jenkins' (1995a) work, researchers did not integrate children's lab-based social understanding abilities and their patterns of social interaction, assessed via naturalistic observations, which may have been influenced by their understanding of others' minds. According to Astington and Jenkins (1995a) the quality of pretend play, exhibited by children with a well-developed theory of mind, indicates that these children are aware that others may have differing beliefs about the world and as a result they make their pretend world more clear to their playmates. Given Astington and Jenkins' (1995a) suggestion that children's cognitive development is related to certain social behaviours, it would seem, then, that the best way to understand this relationship is to include both lab-based investigations and naturalistic observations in research protocols. In light of Astington and Jenkins' (1995a) finding, it stands to reason that theory of mind abilities may be related to other, as yet, untapped aspects of children's social behaviour. If

indeed the quality of children's social interactions are shaped by their understanding of mentalistic concepts in others, then a greater emphasis should be placed on examining these issues.

Prudence and Altruism

Prudence refers to the ability to forego immediate self-gratification in order to receive a greater future reward. Children's capacity for prudence has been studied extensively as "delay of gratification" by Mischel and colleagues (e.g., Mischel, 1974; Mischel & Mischel, 1983; Mischel, Shoda, & Rodriguez, 1989). Children's capacity to act in favour of another's desires is referred to as altruism. The following section will be devoted to discussing the emergence and expression of prudent and altruistic skills in the preschool years and providing empirical evidence in support of the relatedness between theory of mind skills and prudent and altruistic abilities.

Past research has shown that when young children encounter others in distress they display a constellation of social behaviours (i.e., helping, sharing, comforting, hugging) intended to convey caring and concern for others (Zahn-Waxler & Radke-Yarrow, & King, 1979; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). According to Mussen and Eisenberg-Berg (1977). These diverse voluntary, positive responses are referred to as prosocial behaviours "actions that are intended to aid or benefit another person or groups of people without the actor's anticipation of external rewards" (pg. 3). Altruism is one specific type of prosocial behaviour that refers to actions that are intended to benefit another, without regard for personal well-being (Eisenberg & Mussen, 1989). Research suggests that spontaneously occurring prosocial and altruistic behaviours emerge

during the second year of life (Radke-Yarrow & Zahn-Waxler, 1984; Zahn-Waxler, Radke-Yarrow et al., 1992), and increase during the preschool years (Strayer, 1981; Zahn-Waxler & Radke-Yarrow, 1982).

Whereas the abovementioned studies provide support for preschooler's ability to behave altruistically in situations involving current emotional states, successful social interactions require individuals to consider the outcomes and/or consequences of their intended actions, as these actions may affect either the current or future well-being of self and others. Thus, while young children may altruistically give up a desired toy to comfort a distressed peer in a current situation, they may inevitably come to learn that such an act will seem undesirable at a later point in time when the toy has not been returned. This scenario highlights the importance of considering future-oriented outcomes when encountering conflict situations between current and future desires, as children's choices will invariably influence the well-being of self and/or others.

Much literature attests to young children's capacity to postpone immediate self-gratification in favour of future-oriented desired outcomes. Mischel and colleagues (Mischel, 1974; Mischel & Mischel, 1983; Mischel et al., 1989) developed a "delay of gratification" paradigm which places individuals in a conflict situation in which they must choose between receiving a lesser reward immediately or waiting for a greater reward at a later point in time. The ability to delay gratification has been demonstrated in both preschoolers and school-aged children. Mischel and colleagues contend that the ability to delay behaviour (to mentally consider both the costs and benefits of current and future desires of the self) reflects the child's ability to generate effective self-regulatory strategies

in response to competing environmental demands which is an essential component of prosocial behaviour. In fact, a longitudinal study by Mischel, Shoda, and Peake (1988) showed that 4-year-olds who demonstrated longer periods of self-imposed delay of gratification were judged by their parents 10 years later as more socially sophisticated in peer interactions. Similarly, the ability to demonstrate greater delay-of-gratification during the preschool years has been associated with numerous academic and cognitive competencies in adolescence (Shoda, Mischel, & Peake, 1990).

Researchers examining future-oriented self-control postulate that various situational, cognitive and individual factors mediate the expression of self-imposed delay (Miller & Karniol, 1976). Studies with preschoolers suggest that delay of gratification tends to increase with age (Mischel & Mischel, 1983), and preschool-aged boys have greater difficulty waiting for delayed reinforcers than do girls (Logue & Chavarro, 1992). Preschool-aged boys who were rated by their teachers as having more behaviour problems showed greater impulsivity on delay of gratification paradigms while girls with a preference for immediate self-gratification showed more motor impulsivity (Olson & Hoza, 1993). Logue and Chavarro (1992) suggested that socialization practices may account for the gender differences in delay of gratification, while other investigators (i.e., Shoda et al., 1990) propose that individual differences in the early years are likely antecedents to self-regulatory competencies in later life.

Research examining the conditions that facilitate children's ability to delay gratification suggests that young children are able to exercise self-control and wait for a future reward if they: (1) use cognitive distractions to shift their attention away from the

reward; (2) attend to other environmental stimuli; (3) cover or hide the reward from view; (4) think about the abstract instead of the consummatory properties of the reward; and (5) are presented with shorter delay intervals (Mischel & Ebbesen, 1970; Mischel & Mischel, 1983; Schwarz, Schrage, & Lyons, 1983). More importantly, these studies suggest that it is not until about the second half of the fourth year that children are able to effectively use delay-enhancing strategies. According to Mischel and Mischel (1983), preschoolers in the first half of their fourth year are unable to form abstract mental representations of the desired reward or use, strategies that have been shown to aid distraction and enhance their ability to delay. Instead they chose the delay-defeating strategy of having the reward in sight while waiting. Presently, little is known about the cognitive sophistication required to understand and effectively engage in self-regulation. However, Mischel and Mischel's (1983) suggestion is very much in keeping with the significant and profound social-cognitive changes that occur around the age four transition.

Research has also examined the role parents may have on children's delay abilities. For example, Silverman and Ippolito (1995) used a longitudinal design to investigate the link between maternal interactional behaviour and children's development of delay behaviour (defined by Silverman & Ippolito, 1995 as the ability to delay an act on request). At Time 1, 16- to 19-month-old children and their mothers were assessed in free play and in a teaching-learning context. Mothers were assessed in terms of the extent to which they permitted and encouraged initiative-taking in their children. At Time 2, children's delay ability and overall developmental level were evaluated. Results showed that children with high delay abilities had mothers who were low in directiveness during free play and

provided positive feedback about their children's responses in the teaching-learning situation.

Hom and Knight (1996) conducted a study investigating parents' knowledge of delay strategies. Mothers of children ranging in age from four to six years were asked to complete a questionnaire about delay techniques. Mothers were provided with four delay-of-gratification techniques: (1) distraction (children were instructed not to think about the reward); (2) thinking (children were asked to think about the reward); (3) tasting (children were given a taste of the reward); and (4) control (no specific instructions were provided). Mothers were asked to estimate the effectiveness of the delay techniques. Results showed that mothers rated tasting as the most effective delay technique, followed by thinking, then distraction, and finally control. As mentioned, the tasting technique has been shown to decrease delay behaviour because it is a delay-defeating strategy (e.g., Karniol & Miller, 1981). In explaining their findings, Hom and Knight (1996) suggested that mothers may feel that children learn to develop delay strategies by exposing them to tempting situations. Hom and Knight further contend that although mothers may have limited understanding of specific efficacious delay strategies, they reason that children's delay-of-gratification skills are acquired through self-discovery.

Recently, Thompson, Barresi, and Moore (1997) extended the work of Mischel and colleagues. Using a modified delay of gratification paradigm, they investigated the developmental trajectory of delay of self-gratification (although Thompson et al., 1997 referred to it as "prudence"), as well as the child's capacity to act in favour of other's future desires; in other words, "altruism". These investigators presented 3- to 5-year-olds

with a series of stickers and asked them to make choices involving the stickers. Children decided who received the stickers (self or the female confederate), how many stickers each received (one or two), and when the stickers were to be received (immediate or delay). The authors found that across all ages, children chose to share in the no delay conditions. However, in the two delay conditions, 4- and 5-year-olds, but not 3-year-olds, tended to opt for the delay choices. Four- and 5-year-olds were able to delay self-gratification (prudence), and they could also act altruistically. Interestingly, Thompson et al. (1997) suggested that the child's ability to handle future-oriented desire states is very much in-line with the development of a theory of mind, an ability which many suggest reflects a young child's understanding of current and future-based mentalistic concepts in self and other (Perner, 1992). Moreover, Thompson et al. (1997) argued that 3-year-olds' inability to hold current mental representations on-line while at the same time processing conflicting noncurrent mental states hinders their ability to make appropriate future-oriented desires, and likely involves executive functioning. This notion coincides with Mischel and Mischel's (1983) contention that 3-year-olds over-focus on the consummatory properties of objects, reflecting their inability to conjure up "symbolic representations" of objects.

The view that executive functions are implicated in the social-cognitive changes that occur around age four has been endorsed by other theory of mind researchers (i.e., Frye, Zelazo, & Palfai, 1995; Russell, Jarrold, & Potel, 1994; Russell, Mauthner, Sharpe, & Tidswell, 1991; Zelazo, Reznick, & Pinon, 1995). For example, Russell and colleagues have argued that standard theory of mind tasks have a strong executive function element. In these tasks children are asked to predict an action (for either self or other) while

simultaneously considering two conflicting pieces of information. Children must override their current knowledge that an object is in location B, so that they can respond on the basis that the object is in location A. Four-year-olds have consistently shown that they can exert inhibitory control over these conflicting current and noncurrent mental states. In a similar vein, Thompson et al. (1997) have argued that 4-year-olds' ability to behave in a future-oriented prudent and altruistic manner is possible because children can simultaneously think about the future interests of self and other while they are also considering current conflicting desires. The similar age-related changes in theory of mind and prudence and altruism tasks suggests that the ability to gain greater inhibitory control of mentalizing abilities underlies the developmental changes observed in the age-four transition. This contention is consistent with the views of developmental neuropsychologists who suggest that since the frontal lobes (the "executor" of the brain) continue to mature until the adolescent years, executive function abilities develop in a multistage fashion throughout childhood, with few specific abilities documented in the early preschool years (Welsh & Pennington, 1988).

Work by Moore, Barresi, and Thompson (1998) nicely addressed the issue of the role executive functioning may have in the much-replicated age-four transition. They presented 3- and 4-year-old children with: (1) several theory of mind tasks typical of those used in the literature, (2) a number of prudence and altruism choice types adopted from Thompson et al. (1997), and (3) Russell et al.'s (1991) executive function task, referred to as the 'windows' task. Moore et al. (1998) found that for younger children, (those between 3;6-4;0) there was no relationship between theory of mind scores and

choice type scores, whereas for older children (those between 4;1-4;6) there was a significant relationship between choice type (in particular, delay of shared gratification) and theory of mind scores. In terms of the relationship between executive function and choice type, Moore et al. (1998) found no associations between these tasks for children more than 3;6. However, for younger children (those between 3;0-3;5), performance on the 'windows' task was significantly related to delay of shared gratification as well as delay of self-gratification. That is, younger children who showed poor performance on the 'windows' task also selected immediate rewards. The authors interpreted their findings as suggesting a clear link between children's future-oriented behaviours, executive functioning, and an understanding of the mental states of both self and other. They further suggested that these distinct changes in cognitive development likely coincide with a growing sophistication in prosocial behaviour in naturalistic settings.

In summary, it appears that both theory of mind abilities and prudence and altruism skills develop during the age-four transition and that both of these skills require children to mentally consider two conflicting pieces of information at the same time. The similar age transition suggests that these abilities are developmentally linked and likely depend on similar underlying changes in cognitive development. According to Olson (1989), the social-cognitive changes that occur around age four (this encompasses both theory of mind changes and future-oriented thinking) are made possible because of the concurrent changes in the maturation of the brain which appear to occur around the same age. This association between social understanding and cognitive development serves to highlight the important contributions that can be made by investigating the typical expressions of

social understanding in children's social world.

The work reviewed on preschoolers' future-oriented behaviours bears one obvious similarity to the literature on children's theory of mind research; both lines of research have been studied primarily in the artificial environment of the laboratory. Thus far, little is known about preschoolers' responses to situations involving a conflict between current and future desires in naturalistic settings. Specifically, there is little information regarding how children who demonstrate prudent and altruistic skills on lab-based measures interact in peer social situations. Such information would help to delineate whether the social judgements and behavioural responses of children with such prosocial skills differs from children who do not possess similar skills.

In view of the fact that previous research has shown that parents may be limited in their knowledge of children's delay strategies, the present study was designed to overcome this limitation by including parental assessment of children's prudent behaviours in naturalistic settings. Since adult informants can provide a rich database of unique information about children's social behaviours in their daily lives (Henshaw, Han, Erhardt, & Huber, 1992), an author-compiled questionnaire, specifically designed for the present study, was used to assess parents' perspectives of their child's ability to forego current desires in favour of greater future rewards.

Social Behaviour in the Preschool Years

The following section will be devoted to reviewing the social behaviours displayed by preschoolers and the typical methods used to assess children's social skills. The emotional and cognitive skills that underlie children's social competencies will also be

discussed.

From birth, children are exposed to a broad range of complex social situations. According to Dunn (1988), there are numerous social-cognitive skills that children must acquire in order to develop an awareness of their sense of self in relation to their social world, and for them to function effectively in their relationships with others. Research suggests that there are numerous important determinants in the development of these social competencies. For example, such individual differences as the child's temperament (Farver & Branstetter, 1994; Robinson, Zahn-Waxler, & Emde, 1994), family interaction style (Pettit et al., 1991), peer status (Denham & Holt, 1993; Denham, McKinley, Couchoud, & Holt, 1990; Rizzo & Corsaro, 1995), and maternal warmth (Robinson et al., 1994) have all been found to influence children's social interaction skills.

Studies also suggest that there are important links between children's understanding of emotions and their social behaviour with others (Denham, Cook, & Zoller, 1992; Dunn, Brown, & Beardsall, 1991). Past research has shown that young children are able to accurately label peers' emotions (Denham 1986; Gnepp, 1983). The ability to understand and accurately appraise another's emotions increases the likelihood of responding in a reparative fashion, if it is required. Thus, a young child's altruistic act of giving up a favourite toy to comfort a distressed peer, is widely reported to have its origins in empathy -- an emotional response that is congruent with the emotional experience of another (Eisenberg & Fabes, 1990; Strayer & Roberts, 1989). Research suggests that children high in empathy display greater comforting and sharing behaviours (Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992), whereas those low in empathy may

encounter difficulties developing successful peer relations (Robinson et al., 1994). These findings suggest that young children who are able to demonstrate empathic identification with another are more likely to exhibit social skills that would facilitate ease of entry into the peer group and the development of friendships. Clearly, empathic concern for others motivates prosocial behaviour. Based on this information, it is reasonable to conclude that children require some understanding of another's mental state in order to accurately appraise another's emotional experience.

Howes (1988) suggested that children's social competence skills develop in tandem with changes in underlying cognitive capabilities. That is, children must possess a more sophisticated level of cognitive development before they are able to display skilled social behaviour with their peers. Research has shown that children with a higher level of cognitive skills displayed more complex social skills in their interactions. As previously mentioned, children with higher levels of false belief understanding generated more joint proposals and role assignments in their social pretend play with peers (i.e., Astington & Jenkins, 1995a). Children achieving higher scores on lab-based theory of mind measures displayed more connected conversation in their interactions with their friends and a more coordinated style of play (Slomkowski & Dunn, 1996). Mischel and associates (Mischel et al., 1988; Shoda et al., 1990) have shown that preschoolers who displayed delay of gratification abilities were rated as more socially competent, cooperative, and helpful in their adolescent years by their parents. Finally, Knight, Bohlmeier, Schneider, and Harris (1993) found that preschoolers with limited temporal monitoring abilities were less likely to share a desirable object with others. Taken together, these findings suggest that it is

important to examine the cognitive skills that may be required to engage in certain social behaviours.

The two most widely used methods of assessing preschool-aged children's social behaviours are ratings from parents and/or teachers and behavioural observations. Each approach has its own unique set of strengths and limitations. For example, parent and teacher behavioural rating scales such as the Social Skills Rating System (SSRS; Gresham & Elliot, 1990) are an economical and time-efficient method of sampling a wide range of children's behaviours (i.e., prosocial skills, problem behaviours) from individuals who are very familiar with the child's behavioural repertoire (Merrell, 1995). However, according to Ladd and Mars (1986), adult informants may be biased in their assessment of children's behaviours because they may either favour or dislike the child, and because they are likely evaluating children's social competencies from an adult perspective. Furthermore, there are relatively few psychometrically sound rating instruments available for use with preschool-aged children (Merrell, 1995).

With regard to behavioural observations, Ladd and Mars (1986) suggested that the most appealing aspect is the greater face validity that it confers because the observers are in close proximity "to the phenomena of interest and, thus, its greater face validity" (pg. 17). In contrast to behaviour rating scales, direct observation methods are neither cost- nor time-efficient (Ladd & Mars, 1986). Another drawback of the behavioural observation method is that other intangible factors, such as cognition and affect, may play a role in the expression of certain behaviours; however, such abstract factors cannot be assessed via direct observation. Given the drawbacks of each method, a common practice among

researchers has been to include both assessment procedures. Since each method provides a unique perspective of the child, the inclusion of both methods yields data that would facilitate a more accurate, and comprehensive analysis of the behaviours being investigated.

There are numerous exemplars of social, nonsocial, and problem behaviours that have been investigated for their inter-rater correspondence. Overall, research indicates that there is a good deal of correspondence between direct observations and parent ratings (Strayer & Roberts, 1989; Weidman & Strayhorn, 1992), and direct observations and teacher ratings (Ladd & Mars, 1986; Pettit et al., 1991). Researchers (i.e., Achenbach, McConaughy, & Howell, 1987; Hinshaw et al., 1992) have suggested that even though multiple informants may experience and appraise children differently (because of different situational contexts), it is important to collect potentially divergent interpretations of children's behaviour because this provides a wealth of valuable information.

To date, surprisingly little is known about how parents and/or teachers ratings of children's social competencies would compare to their laboratory-based theory of mind and delay of gratification abilities. As mentioned, Lalonde and Chandler (1995) found that children with well-developed false belief understanding were rated by their teachers as more socially skilled than their peers. This finding suggests that it would be useful to examine the relationship between ratings of children's social behaviour and their performance on lab-based measures of social understanding, based on the evaluation of the most knowledgeable and familiar individuals in a child's life; their parents. Thus far, no study has assessed this relationship.

Given the newness of the Lalonde and Chandler's questionnaire, and because social competency with peers involves a wide array of social skills, the position taken in the present work was to also include a more widely-used and well-normed measure to assess more general aspects of children's social abilities. The Social Skills Rating System (SSRS; Gresham & Elliot, 1990) has been shown to have good psychometric properties, and is viewed as one of the best behaviour rating scales available for preschool-aged children; therefore, it was selected for use in the present study.

As noted earlier, past research examining the behavioural correlates of children's social understanding revealed that children who perform well on false belief understanding display a different quality of pretend play with peers (Astington & Jenkins, 1995a); a greater degree of connected communication with peers (Slomkowski & Dunn, 1996); more frequent use of mental state terms in conversations with others (Brown et al., 1996); and higher rates of both pretend play and the use of mental state talk in play with their friends (Hughes & Dunn, 1997). However, little is known about other more general kinds of social behaviours that may be associated with laboratory-based measures of social understanding. For example, the type, frequency and quality of children's naturally occurring prosocial behaviours (e.g., helping, comforting, empathic; Strayer, 1981) and the complexity of their peer social interactions (e.g., parallel, reciprocal, complementary; Howes, 1983; 1988) have not been investigated. If these aspects of social interaction are shown to be associated with children's understanding of the psychological causes of behaviour, then presumably, it will influence the nature and development of their preschool social relationships. Empirical evidence suggests that young children's social behaviours

play an important role in peer acceptance and the development of friendships. In the next section, some of the implications of peer status will be reviewed briefly.

Peer Status

There is a well-developed literature to support the premise that children's social behaviours play an important role in peer acceptance, the development of friendships, as well as how they are rated by others. The following section will review these issues.

Much literature attests to the fact that peer status, that is, the degree to which individuals are liked or disliked by members of their peer group, influences children's socio-emotional responses to peers. The peer social culture provides young children with the opportunity to learn social competency skills, and it is during their peer social interactions that their reputation, or likability status, emerges. Children who are more successful in their social functioning with peers are considered more popular (Farver & Branstetter, 1994), whereas children who have difficulty discerning the appropriate response in peer situations are generally disliked by their peers (Denham et al., 1990). The importance of examining peer social status, or likability, is highlighted by the early work of Cowen, Pederson, Babian, Izzo, and Trost (1973) who found that negative peer status during the childhood years was associated with more interpersonal problems in later life.

Research examining the behavioural correlates of peer social status suggests that popular or accepted children tend to display a prosocial and cooperative interactive style (Strayer, 1981), receive positive responses to their play initiations (Howes, 1983), understand emotional situations (Denham et al., 1990), are more empathic (Zahn-Waxler et al., 1992), are more nurturing (Denham et al., 1990), and are more cognitively mature

(Rubin & Daniels-Beirness, 1983). In contrast, rejected or neglected peers exhibit more aggressive and negative peer interactional behaviours such as physical and verbal aggression (Ladd & Mars, 1986; Rubin & Daniels-Beirness, 1983), an external locus of control (Rizzo, 1988), disruptive classroom behaviours (Hartup, 1983), are temperamentally difficult (Farver & Bransteter, 1994), and tend to perform less well academically (Bonney, 1971). According to Rizzo (1988), rejected peers tend to be younger whereas their preferred counterparts are older. Rejected peers usually have at least one friend, and they spend the same amount of time playing with their friends as do the more popular peers. However, the play style of rejected peers differs from that of popular peers. The results of Rizzo's (1988) study showed that rejected peers spend more time in adjacent play with their friends

Traditionally, peer status has been assessed via peer nomination procedures. Although peer nominations were a reliable sociometric technique for school-aged children, this procedure was found to be unreliable with preschool children (Asher, Singleton, Tinsley, & Hymel, 1979). As a result, a sociometric measure, Likert-type rating scale was developed by Asher et al. (1979) for preschool children. The rating scale enabled preschool children to rate each peer on a 3-point scale. This modification of the measure for use with preschool children has yielded moderate to strong correlations between peer status and peer assessment of peers' classroom behaviours (Ladd & Mars, 1986); behavioural measures of social interactions (Johnson, Ironsmith, Whitchner, Poteat, Snow, & Mumford, 1997; Rizzo, 1988); and the ability to understand and react in a prosocial manner to the emotional aspects of situations (Denham et al., 1990). It is also the case

that peer status is stable over time (Ladd & Mars, 1986; Johnson et al., 1997; Rubin & Daniels-Beirness, 1983). Indeed, peer status was more important than prosocial behaviour in subsequent judgements of likability by 3- and 4-year-olds (Denham & Holt, 1993). Two independent studies found that preschool children (aged 27 to 62 months) accurately reported their friends in sociometric evaluations, and that peer status was based upon the fact that children liked one another and spent time playing together (i.e., Field, Miller, & Field, 1994; Rizzo, 1988). In Field et al's. (1994) study, children's self-reports of their best friend were consistent with teacher ratings and play-time observations. According to Howes (1983), the development of friendships enables children to acquire greater social competency skills. Also, Howes (1983) found that friends spent more time in reciprocal and complementary play, were more successful in their play initiations, and displayed positive affect in their social interactions.

A study conducted by MacDonald and Cohen (1995) assessed children's (i.e., grades one through six) awareness of the same-sex peers who liked or disliked them. The authors found that children's sociometric status was associated with their awareness of their own popularity. Rejected peers were the least accurate in their predictions. MacDonald and Cohen (1995) contend that since rejected peers are unaware of their status, they may continue to display faulty, negative social skills. For example, rejected peers may be inattentive to others' cues that they are disliked, which further hinders their ability to become socially competent. Work by Denham, Bouril, and Belouad (1994) reports that preschool-aged children who selected sadness (over happy, angry or neutral) as their affective response in challenging peer situations, also tended to choose a prosocial

behavioural (instead of aggressive, manipulative, or avoidant behaviours) solution for these conflictual peer situations. The children who chose prosocial choices were rated as more popular by their peers, and were rated as less aggressive and fearful by their teachers. In contrast, children who were inaccurate in their selection of an appropriate affective response, tended to select behavioural options that further exacerbated the problematic peer situation.

The greater social competencies displayed by accepted peers, that is, their effective problem-solving abilities, appropriate affective responses and perspective-taking abilities, are highly valued and reinforced by teachers (i.e., Rubin and Daniels-Beirness, 1988), which likely further serves to reinforce positive peer status. Indeed, a strong significant relation was found between peer reputation and teacher ratings of children's prosocial behaviour (Denham & Holt, 1993; Farver & Branstetter, 1994). Moreover, teachers rated girls as more prosocial (Denham et al., 1990).

There is empirical evidence indicating other determinants of overall peer reputation or likability. For example, Ladd and Mars (1986) found that contextual and environmental factors hampered children's ability to become acquainted with their peers, and influenced children's perceptions of peers. Ladd and Mars (1986) reported that an open, unrestricted environment led children to spend more time in solitary play, presented children with fewer opportunities to interact with peers, and led to impaired judgements of peers. In contrast, in a setting where children spent more time in structured play activities and were regrouped during play, they became more familiar with their peers. As a result, the peer familiarity contributed to more valid peer ratings.

Pettit et al. (1991) reported that family environment also influences children's social competence with peers. In the Pettit et al. (1991) study, naturalistic observations of parent-child interactions were collected prior to the children's entry into school. During the latter half of the school year, the parent-child interactions were evaluated against children's peer social interactions (as assessed by teacher ratings) and children's social-cognitive abilities (as assessed by children's outcome ratings of various verbally presented peer conflictual social scenarios). Pettit et al. (1991) found that socially competent children came from families whose affective responses were positive, whereas children reared in coercive family environments were rated as more aggressive in peer interactions by teachers.

Collectively, the above-noted findings suggest that peer social behaviour and peer status play reciprocal roles in children's socio-cognitive development. Thus far, little is known about the relationship between experimentally-based measures of children's social understanding and their overall peer status. Although differences in friendship status have been shown to translate into variations in styles and roles in social interactions between rejected and popular peers, it is unclear whether these differences are associated with children's growing understanding of their social world.

Present Focus

Little emphasis has been placed on describing how children's understanding of others' minds, as evidenced by their proficiency on various theory of mind measures, relates to and influences social behaviour in naturalistic settings. By examining the behavioural correlates of a developed theory of mind, we can begin to understand what

particular aspects of children's social interactions, over and above those reported in the literature, are influenced by their awareness of other people's mental states. It is likely that lab-based social understanding may be associated with certain features of children's everyday social behaviour.

Several researchers (i.e., Astington & Jenkins, 1995a; Lalonde & Chandler, 1995) recommend the use of multiple false belief tasks (4 or more) when assessing theory of mind development. These authors contend that the use of multiple tasks permits younger children to demonstrate any existing skills, and is more likely to reveal that theory of mind development is a gradual process. In the past, research on theory of mind development has tended to include false belief tasks as the only measure of theory of mind development (i.e., Astington & Jenkins, 1995a; Brown et al., 1996; Lalonde & Chandler, 1995; Ruffman et al., 1998). In order to overcome this deficiency in the present study, theory of mind development was evaluated with three kinds of tasks often used in theory of mind literature: false belief, appearance-reality, and representational change. These three tasks have been shown to be highly correlated which suggests that they develop around the same time (Frye et al., 1995; Gopnik, & Astington, 1988; Moore et al., 1990). All three tasks reflect a child's ability to understand that all aspects of reality can be represented in a multitude of different ways.

Prudence and altruism abilities have been shown to be theoretically and empirically linked to theory of mind (e.g., Moore, Jarrold, Russell, Lumb, & Sapp, 1995). Like theory of mind, prudence and altruism abilities have also tended to be examined with experimental procedures. Given that children with a developed theory of mind exhibit

pretend play and use of mental state terms with others (Astington & Jenkins, 1995a; Brown et al., 1996; Slomkowski & Dunn, 1996; Hughes & Dunn, 1997), it seems likely that children who demonstrate prudent and altruistic abilities (in conflicting situations) on experimental measures, may also exhibit other behaviours in their social interactions that are reflective of their social-cognitive development. At this point it is unclear which particular aspects of children's social behaviour will be related to their lab-based prudent and altruistic skills. It may be that similar social behaviours will emerge for the prudent and altruistic tasks and the theory of mind tasks (given their theoretical connection). On the other hand, the behaviours may be independent of each other.

The present study examined developmental differences in patterns of social interactions between children who are just developing an awareness of mentalistic concepts (age 3), compared to those with a more sophisticated level of social understanding (age 4). It is likely that those who demonstrate proficiency on experimentally-based social understanding tasks may display different patterns of social interaction than those who fail on these tasks. This information will help us to gain a greater understanding of how children use their sophisticated social understanding to interact with their peers. Even among those children demonstrating proficiency on lab-based measures (i.e., the 4-year-old group, and perhaps a few older members in the younger age group), there will likely be some degree of variability. This variability may be influenced by individual differences. In an effort to examine these influences more precisely, several individual differences factors have been included for examination.

Information obtained from experimental investigations and naturalistic observations

can help provide a more integrated and comprehensive evaluation of how children's burgeoning social-cognitive knowledge influences social behaviour. To our knowledge, no study has systematically evaluated children's social understanding with such a comprehensive multidimensional approach. The need to conduct developmental research within a multidimensional framework has recently been suggested by several researchers (i.e., Dunn et al., 1991; Perner et al., 1994).

The present study also examined the effects of gender on the development of theory of mind and the expression of social abilities. While gender differences have been observed in the expression of empathy and altruism (see Robinson et al., 1994) and delay of gratification (Logue & Chavarro, 1992), there are inconsistencies in the literature regarding gender and prosocial behaviour (Denham et al., 1990; Farver & Branstetter, 1994), and there is little information in the theory of mind literature regarding gender effects. Given that past studies have included few subjects in their total sample (i.e., 30 subjects), and despite the fact that there was an equal distribution of boys and girls in these samples, overall sample sizes have precluded the gathering of meaningful information about gender and theory of mind acquisition. In order to overcome this deficiency, the present study included a larger sample of boys and girls in each age group.

To reiterate, the aim of the present study was to examine the relationship between experimentally-based measures of social understanding, such as theory of mind and prudence and altruism, and measures of children's social behaviour in real-world settings including naturalistic observations, adult ratings of children's behaviour and peer ratings. It was also important to investigate this relationship in children who have a more

sophisticated level of social understanding (age 4) compared to those who are just developing an awareness of mentalistic concepts (age 3).

The experimental hypotheses can be summarized as follows:

- (1) compared to 3-year-olds, 4-year-olds will perform more successfully on lab-based social-cognitive measures such as theory of mind and prudence and altruism;
- (2) compared to 3-year-olds, 4-year-olds will perform more successfully on measures of social behaviour in naturalistic settings including, sociometric ratings by peers, adult ratings of children's social competencies, and naturalistic observations;
- (3) the patterns of associations among the lab-based social-cognitive measures and the measures of social behaviour in naturalistic settings will be more abundant and clear-cut in 4-year-olds compared to 3-year-olds.

Chapter Two

Method

Participants.

One hundred and thirty-seven children were recruited from various preschool and daycare centres in the Halifax and Dartmouth area of Nova Scotia. Five children served as pilots, and their data were not included in the analysis. Four children did not complete the session. Three children were omitted because of experimental error. Another five children did not wish to participate. In total, 120 subjects (60 males and 60 females) participated in this study. Class sizes varied from 15 to 20, and testing did not commence until about 85% or more of the children's parents had consented. This constraint was implemented to permit the use of peer rating and nomination procedures that can only be used if most or all children in the classroom were able to participate. Across settings, children knew each other for a minimum period of six months, although some children had known each other for up to two years. All participants were English speaking and the majority of children were from white, middle-class families, although a few children were from working-class backgrounds. Approximately 10% of the total sample were children from minority groups, (i.e., African-Canadian, Chinese, and Greek). All minority group children were monolingual English speakers.

In order to investigate developmental issues two ages were examined. The 3-year-old group of children (30 females and 30 males) ranged from 3 years 3 months to 3 years 10 months ($M = 3$ years 6 months). The 4-year-old group of children (30 females and 30 males) ranged from 4 years 3 months to 4 years 10 months ($M = 4$ years 5 months).

Three-year-olds and 4-year-olds were chosen because much research attests to the fact that 4-year-olds understand the representational capacity of the mind. Four-year-olds have repeatedly demonstrated their proficiency on theory of mind tasks, whereas 3-year-olds have failed to demonstrate this advanced level of social-cognitive understanding. Thus, the differing mental abilities of these two ages will provide information about potentially differing levels of social interaction in naturalistic settings.

Procedure and Measures

Initially, daycare and preschool teachers were provided with a description of the study, including an outline of the study protocol. After teachers provided consent, a notice informing parents about the study was placed on bulletin boards (see Appendix A). A few days later, a brief description of the study (Appendix B), and informed consent forms (Appendix C) were sent home with the children. The study consisted of three phases. Phase one involved the administration of all the individual child measures. The second phase comprised the administration of questionnaires to teachers and parents. The administration of questionnaires occurred after all children in the setting had completed the individual session, usually within a 7-day period. Phase three occurred about one week following the individual test session, and involved recording of naturalistic observations. In phase three, groups of three to four children were videotaped during free playtime at their respective daycare settings.

For the administration of the experimental tasks, each child was individually tested in a quiet room off the main work/play area of the center. Children were tested by two experimenters, one who administered the tasks, the other scored the children's responses.

The experimenter scoring responses also served as a confederate for one of the tasks. Children were initially told, "We're going to play some games, and each time we play a new game I'll tell you exactly how the game is played so that you'll know what to do. Are you ready to start?" The individual test session included the administration of four measures: (1) four theory of mind tasks, (2) four prudence and altruism tasks, (3) two sociometric measures, and (4) the language measure. The testing session was approximately one hour in duration. The individual child measures were presented to participants in one of four predetermined orders.

Theory of Mind (ToM) Measures:

Four theory of mind task materials were used to evaluate children's ability to recognize that the mind is representational. The theory of mind administration protocol and test questions was modelled after Gopnik and Astington (1988).

Children were initially told, "We're going to play a game where I show you things and then ask you questions about them." Prior to the presentation of the theory of mind tasks, children received a practice trial which familiarized them with the task procedures. In the practice trial, children were shown a plain box with the lid on. They were told, "Here's the first thing I want to show you. Let's open it up to see what's inside." When the children opened the box they found it contained a pencil. The experimenter then removed the pencil, placed a button in the box and closed the lid. Children were then asked, "What's inside the box now?". After children provided a response, they were asked, "What was inside the box before we opened it -- a button or a pencil?" After securing a response to the practice trial, the children were presented with the theory of

mind objects described below. Theory of mind objects were presented in one of four predetermined orders. In each case, the children were presented with the object (initially all objects were placed far enough away from the child so that the child would not be able to handle them) in its deceptive form and were asked to identify it. Children were then instructed to handle the object as they wished, and were told the true identity of the object. The statements describing true object identity are presented below. Objects were returned to their deceptive state and placed away from the children before a series of test questions was presented.

ToM Object # 1 (Smarties): In this task children were shown a "Smarties" box, which has pictures of Smarties on it. Children were asked to identify what they believed the box contained. Children replied with either "Smarties", or "candies." Children were then asked to open the box, and discovered that it contained rocks. Participants were told, "These are rocks. There're not Smarties. These are rocks. You can't eat these can you?" The rocks were placed back into the Smarties box, and the lid was closed.

ToM Object # 2 (Flashlight): Participants were shown a red object, about four inches in length and ½ in diameter that had a metal clip on one side, and looked like a pen. Participants were asked, "What is it?" Children were then asked to handle the object, and asked again what the object was. Children provided a response and were told, "This is a flashlight. See? We press this clip to make the light shine. We can't write with this. This isn't a pen. This is a flashlight."

ToM Object # 3 (Ball): Children were shown a grey speckled, round, bumpy object which was about 1 ½ inches in diameter that looked like a rock. They were asked, "What

is it?" Children were then asked to handle the object, and asked what the object was. Children provided a response and were told, "This is a ball. See? It is not hard like a rock. It can bounce, see how it bounces. This isn't a rock. This is a ball."

ToM Object # 4 (Candle): Participants were presented with a candle that looks exactly like an apple. They were then asked, "What is it?". Participants were then asked to handle the object, and asked again what the objects was. Participants responded and were told, "This is a candle. See? This is the wick that we light with a match so the candle can burn. We can't eat this. This isn't an apple. This is a candle."

Following each object presentation, participants were asked three test questions, evaluating their understanding of representational change, false belief and appearance-reality (children had to respond correctly to both the appearance and the reality question in order to receive a score; see Appendix D). In order to control for the possible effects of order of presentation, the test questions were presented in one of four predetermined orders; the appearance and reality questions were always asked together. For all objects the test questions were the same, the only change was the substitution of the name of each object. For each test question children received a score of 1 (pass) if the question was answered correctly, or 0 (fail) for an incorrect response. For each object the maximum score a child could receive was 3, range 0-3. A composite theory of mind score was also calculated, total possible score was 12.

Prudence & Altruism Tasks:

In this task the research assistant served as a confederate. Children were told that they were going to play a game involving stickers, and that the research assistant would

play this game with them. This task assessed children's ability to forgo current desires in order to gratify their own future desires or the current and future desires of another, an ability which requires an understanding of metarepresentation.

The procedure for task administration was modelled after Thompson et al, (1997). Subjects were shown a series of stickers and were asked to make choices involving the stickers. Subjects decided who received the stickers (self or other), how many stickers were received, and when the stickers were to be received. Children were presented with 12 trials (3 each of 4 different trial types, presented in a counterbalanced order). The trial types assessed whether a subject chooses between current self and shared-gratification as well as assessing whether subjects choose delayed (future-oriented) self or shared, or other-gratification. The four trial types were:

Shared Gratification Without Cost (1SN/1EN)
(A) 1 sticker for self now or (B) 1 each now

Delay of Self-Gratification (1SN/2SL)
(A) 1 sticker for self now or (B) 2 for self later

Delay of Shared Gratification (1SN/1EL)
(A) 1 sticker for self now or (B) 1 each later

Delay of Other Gratification (1SN/2OL)
(A) 1 sticker for self now or (B) 2 other later

Trial Type 1 required children to choose between self- and shared-gratification in a current situation, no cost to the self was involved. In Trial Type 1, the child was not placed in a conflict situation. In Trial Type 2, children were asked to choose between forgoing current self-gratification in order to obtain a greater future reward for self. Trial Type 3 required children to choose whether they desired to forgo current self-gratification

in order to share gratification with the other in the future. In Trial Type 4, children were asked to give up their reward altogether, in order to benefit the other in the future.

If children chose immediate reward for self and other, the child and the RA received the stickers and placed them in their sticker book immediately. If a child chose delayed gratification for self and other the stickers were placed in the appropriate envelope(s) until the end of the game. At the end of the game, children and the RA were given any accumulated reward stickers found in their envelope(s). Children were permitted to take their sticker books, with all accumulated stickers home with them.

The prudence and altruism task began with each child receiving a practice trial. Children were shown two stickers and asked if they wanted one sticker now or two stickers now. The correct response for the practice trial was two stickers. Trial types and A/B alternatives were presented in a different randomized order for each subject. Each trial type was presented three times to each subject. As such, three presentation blocks were created, with the constraint that the last question of the block could not be the first question of the next block. In terms of the A/B alternatives, half the subjects were given alternative A first on all odd numbered trials, alternative B was given first on all the even numbered trials, for the other half of the subjects this procedure was reversed. Children choosing the A alternative received a score of 0, those choosing the B alternative received a score of 1. For each trial type scores ranged from 0-3, with a maximum score of 3 for each trial type. For each trial, children were presented with three stickers, in a manner which distinguished between 'one' and 'two'. For example, on the delay of self-gratification trial, the experimenter would place three stickers on the table in front of the children, and

the choice would be presented as follows:

Here are some stickers. If you want to, you can have one sticker right now, or you can wait until the end of the game and then you can have two stickers. So what will we do: give you one sticker to put into your sticker book right now or give you two stickers to put in this envelope and save them for you until the end of the game?

Sociometric Measures:

Children were administered two sociometric measures. A peer rating procedure was used to assess each child's overall friendship or likability status among peers, and a peer nomination procedure was used to evaluate children's empathic concern for others. The sociometric measures involved taking each child's picture. A Polaroid Instamatic camera was used by the principal investigator to take pictures of all participants. Children's pictures were taken prior to beginning the experimental test session. Picture-taking provided an opportunity for children to become familiar with the principal investigator.

Friendship Status: This sociometric rating procedure was used to evaluate each child's overall friendship status among peers. The present procedure is a modified version of the Asher and colleagues (1979) peer nomination task. This modified version is a widely used experimental procedure (i.e., Denham & Holt, 1993; Denham et al., 1990; Farver & Branstetter, 1994; Rubin & Daniels-Beirness, 1983). Children were asked to name colour Polaroid pictures of their classmates to ensure that they recognized each individual. They were then asked to place the pictures of their classmates into boxes with drawings of happy, sad and neutral faces. Children were instructed that photographs inserted into the happy-face box indicated they "liked the peer a lot, enjoyed playing with

the peer and considered the peer their friend"; in the neutral-face box if they "kinda like the peer, and thought the peer could be their friend"; and in the sad-face box if they "do not like the peer, did not enjoy playing with the peer and did not consider the peer their friend". In this manner, each child received either a positive (happy-face box), neutral (neutral-face box), or negative (sad-face box) rating by each class member. Based on Asher et al.'s (1979) scoring procedure, a positive rating was assigned a score of 3, a neutral rating was given a score of 2, and a negative rating was assigned a score of 1. A participant's friendship or likability status score was calculated by adding together the positive, negative and neutral ratings and dividing the sum by the number of participating classmates (see Denham & Holt, 1993; Rubin & Daniels-Beirness, 1983).

Empathy Status: Asher et al.'s (1979) peer nomination procedure was also adapted for use in the present study in order to evaluate empathic concern for others. This modified version was also used by Astington and Jenkins (1995a) to assess empathic concern for others. Children were again shown the same colour Polaroid photographs of their classmates, and asked to give each child's name. They were then asked to nominate three children who were kind or helpful when another person was upset or hurt. Each child received a total number of nominations. As the total of children in the different classes varied, the total number of nominations each child received was divided by the number of children giving nominations in each respective class.

Language Ability Measure:

The Test of Early Language Development-2 (TELD-2; Hresko, Reid, & Hammill, 1991) was used to evaluate children's general language abilities. This measure of language

comprehension ability was included as a control variable. In the TELD-2 children were asked to respond to pictorial and verbal information. This test assessed expressive and receptive language abilities, and was typically administered in 15 to 40 minutes, depending on the child's age and ability. The TELD-2 has demonstrated good test-retest reliability and internal consistency. This measure is designed for use with children between ages 2;0 through 7;11. Children received either one point for a correct response or zero for an incorrect response. Participants' raw scores were used in data analyses.

Social Competency Measures (Questionnaires):

Parental questionnaires were placed in envelopes, and were handed out by preschool teachers when parents arrived to collect their children. Teacher questionnaires were placed in a folder for each setting, and teachers were instructed that the teacher who had long-term familiarity with the child should complete the questionnaires. A small number of parents who failed to return the questionnaires after data collection was completed were prompted via telephone by the principal investigator to return completed questionnaires. For 3-year-olds, 88% to 92% of the parents and 92% of teachers returned the completed questionnaires. For 4-year-olds, 90% to 96% of the parents and 96% of teachers returned completed questionnaires.

Revised Vineland Socialization Scale: (RVSS; Lalonde & Chandler, 1995). This 40-item questionnaire was used to assess children's social-cognitive understanding. The first 20 items ("Intentional" subscale), evaluated children's understanding of mental concepts, the remaining 20 items ("Conventionality" subscale) were concerned mainly with gamesmanship and did not require an understanding of other minds. Item scores ranged

from 0 to 2, thus, the maximum subscale score was 40, and composite scores ranged from 0 to 80. This questionnaire was completed by both parents and teachers (see Appendix E).

Social Skills Rating System:(SSRS; Parent Form Preschool Level and Teacher From Preschool Level; Gresham & Elliot, 1990). The SSRS assessed parent and teacher ratings of children's prosocial skills. Ratings of problem behaviours were also identified. The parental questionnaire contained 39 items which assessed social skills, and was divided into four subscales: cooperation, assertion, responsibility and self-control. The problem behaviours subscale consisted of 10 items, divided into externalizing (i.e., temper tantrums, fidgets) subscales and internalizing (i.e., loneliness, anxiety) subscales. Total social skills scores and problem behaviours scores were calculated, and composite social skills and problems behaviours scores were used in the analyses.

The teacher questionnaire contained 30 social skills items, divided into three subscales: cooperation, assertion and self-control. The problem behaviour subscale contained 10 items and was also divided into externalizing and internalizing subscales. Total social skills scores and problem behaviours scores were also calculated, and composite social skills and problems behaviours scores were used in the analyses.

Parent Prudence Questionnaire: (PPQ; author-compiled): This measure, specifically designed for the present study, was used to evaluate parents' perception of their child's ability to forego current desires in favour of greater future rewards, that is, children's prudent behaviour in naturalistic situations. Parents were asked to respond to six scenarios using a 5-point Likert-type scale. The six scenarios described situations of daily living that may require parents to encourage their children to delay receiving a

particular future reward, if they completed a current behaviour. Scores ranged from 0 to 4, with a total possible score of 24. Parents were also asked to identify the total number of strategies (three strategies were provided) they encouraged their children to engage in in order to enable their child to wait for later rewards. Parents were also asked to report the number of strategies they feel their child uses independently in order to wait for future rewards (see Appendix F).

Naturalistic Observations

Children were videotaped in their respective daycare settings. Groups of three or four children were directed by the experimenter to a designated play area where such items as dress-up clothes, puzzles, toy household appliances (i.e., stoves, washers, dryers), tables, chairs, dishes, utensils, blocks, books, etc. were set-up. The experimenter began the play session by suggesting to the children, "Why don't you all play together with these toys? There's lots of things to do with all these toys. So, go ahead and play ..." Children were videotaped on one occasion, for approximately 10 minutes.

At the end of phase two, the experimenter made tentative arrangements with teachers regarding the four children who would be videotaped in a play session. As much as it was possible, it was decided to create a balance in the level of lab-based abilities each child brought to the play session. It was decided that whenever possible, to group two children from the 3-year-old group and two children from the 4-year-old group in each play session. It was also decided that, whenever possible, to include an equal number of boys and girls in each play group. However, children were at times unavailable for play sessions because of absences. During those times, the three available children were

videotaped if re-scheduling was not possible. Other times, there were an unequal number of boys and girls in each age-group in each respective setting. During those times, groups of three children were asked to play together.

One three-year-old child did not wish to participate in the play session and her naturalistic data could not be included in the analyses. The Style of Play data for four children (two from the younger age group and two from the older age group) were unavoidably destroyed by the video cassette recorder and were not available for the final analyses.

Prosocial Behaviours: A modified version of Strayer's (1980) Altruism Inventory was adopted for use in the present study. An event-sampling procedure was used to code the frequency of four categories of naturally-occurring prosocial behaviours, Helping, Cooperative, Empathic and Engaging the Experimenter. Each 10-minute videotaped play session was divided into 60 seconds intervals. Each 60 second interval was coded for the number of times the target child engaged in a particular prosocial behaviour. Examples of the types of prosocial behaviours in each of the categories is listed below.

Prosocial Behaviours:

(1) Helping Behaviours

- (i) **Offering** - an attempt to give an object that leads to explicit rejection, or an implicit refusal to acknowledge the potential gift.
- (ii) **Giving** - an object being transferred from one child to another.
- (iii) **Task help** - assisting another person to accomplish a certain goal, such as tying shoelaces, or putting on a piece of clothing.
- (iv) **Play help** - activities that occur during a play sequence (it is the behavioural activity of the helper that is scored in the category) such as covering someone in a wagon while playing horse.

(2) Cooperative Behaviours

- (i) Sharing - allowing another child to use personal objects.**
- (ii) Exchanging - the transfer of a single object between two individuals. When a single object is exchanged many times between two individuals, this is coded as a single episode of exchanging.**
- (iii) Trading - two different objects were simultaneously transferred between two children.**
- (iv) Task cooperation- mutual activity, carrying toys to a play area, or moving furniture in the playroom (these activities precede the start of play session).**

(3) Empathic Behaviours

- (i) Looking at upset peer - visual orientation toward a distressed peer.**
- (ii) Approaching upset peer - obtaining personal distance with a distressed peer.**
- (iii) Physical comfort - hugs, pats, kisses.**
- (iv) Verbal comfort - "Are you hurt?"**

(4) Engaging the Experimenter

- (i) Target child selects to show toys or objects to adult experimenter, attempts to engage the experimenter in verbal discourse about the ongoing play, or asks experimenter to assist in some manner with the ongoing activity.**

Nonsocial Behaviours: Although the frequency measure was appropriate for coding the rate of prosocial behaviours, it was not suitable for coding nonsocial behaviours such as solitary play, noninteractive play and onlooker. For example, if a child selected a toy and played alone with that toy for the entire session, the child would receive a score of one. Unfortunately, this score would not accurately reflect the degree of nonsocial interaction displayed by the child. Therefore, it was necessary to code the duration of nonsocial behaviours. To accomplish this task the coder measured the clear starting and

stopping points of nonsocial behaviours using a stopwatch. In order to determine the length of time children devoted to nonsocial behaviours compared to social behaviours, the duration of nonsocial behaviours was subtracted from the total session time, and the remainder was deemed as the duration of social behaviours. Three categories of nonsocial behaviours, Solitary, Bystander (Onlooker), and Noninteractive Parallel Play, were coded. These three nonsocial categories were designed so that most, if not all, of the nonsocial time could be accounted for during the play session. However, since the main focus of the present study was to evaluate children's prosocial tendencies, it was the total amount of time spent in nonsocial play that was of interest rather than each individual behaviour. Behavioural descriptions of nonsocial behaviours included in the present study are similar to those reported in earlier studies (Howes, 1980; Rizzo, 1988).

Nonsocial Behaviours:

(1) Solitary Play:

Target child selects a toy or object and chooses to play alone with this object. This can occur in close proximity with other children, or the child may choose to take the object to another part of the play area and proceed to engage in solitary activity.

(2) Bystander:

Target child does not participate in the on-going activity with other children, instead looks on as others are playing. Onlooker may also refuse others' efforts to include them in the ongoing activity.

(3) Noninteractive Parallel Play:

Target child is engaged in a similar activity with another child but does not engage in eye contact or in any form of social behaviour during the sequence, other than playing in close proximity with the other child.

Style of Peer Social Play: A modified version of Howes (1980)'s Peer Play Scale was adopted for use in the present study. Each 10-minute videotaped play session was again

divided into 60 second intervals. Each 60 second interval was coded for the number of times the target child engaged in a particular level or style of peer social play.

Style of Peer Social Play

(1) Parallel Play (Level 1):

Target child is engaged in the same or similar activity with another child and has eye contact, but does not speak to the other child during the play sequence.

(2) Simple Interactive Parallel Play (Level 2):

Target child has to direct a social behaviour such as a smile or a touch toward another child, but no vocalization occurs.

(3) Interactive Play (Level 3):

Target child is engaged in social play activity with another child and during these episode(s) the target child directs a vocalization to another child.

(3) Reciprocal and Complementary Play (Level 4):

Target child is engaged in social play with a turn-taking structure with another child and during these episode(s) they vocalize.

Coding: The coder was naive to the purpose and hypothesis of the study. The only information available to the coder was a description of the children's physical appearance and subject number, she was naive to the children's age and scores on all experimental measures. The coder was trained by the principal investigator, and level of agreement was 95% before data coding commenced. To minimize observer drift, we re-established criterion twice during data coding. To establish reliability for the behavioural observations, a second coder selected a random sample of 30% of the videotapes for scoring. Indices of interobserver reliability on the individual variables were computed using Pearson product-moment correlations. Reliability coefficients for Prosocial behaviours (i.e., frequency of the behaviours) were as follows: Helping Behaviours, $r = .79$, Cooperation Behaviours, $r = .80$, Empathic Behaviours, $r = .98$, and Engaging the

Experimenter, $r = .98$. For Style of Peer Play (i.e., frequency of the behaviours) the reliability coefficients were as follows: Parallel Play, $r = .78$, Simple Interactive Parallel Play, $r = .84$, Interactive Play, $r = .95$, and Complementary and Reciprocal Play, $r = .94$. The reliability coefficient for the total duration time spent in Nonsocial Behaviours (i.e., duration of the behaviours) was $r = .89$.

Statistical Procedures:

In this cross-sectional study, the two experimental measures were the theory of mind and prudence and altruism tasks. For these two experimental measures there were two between-subject variables, each with two levels: age-group (3-year-olds, 4-year-olds), and sex (females, males), and two within-subject repeated measures, theory of mind task type (three levels: appearance-reality, false belief, representational change), and prudence and altruism trial type (four levels: delay of self-gratification, delay of shared gratification, shared gratification without cost, delay of other gratification). All statistical procedures were run using SPSS for Windows, version 6.1. Main effects and contrasts were tested using an alpha level of .05. All comparisons were a priori, therefore, this eliminated the need for Bonferroni adjustments to alpha levels.

To ensure that there were no differences between the age-groups on the demographic variables (family size, birth order), these data were analysed with independent t-tests. Pearson product-moment correlations were used to investigate the relationship between language abilities (TELD-2 score) and several other measures: experimental measures (theory of mind (0-3 score), prudence and altruism (0-3 score), friendship status (0-3 score), and empathy concern (0-1 score); questionnaire data (RVSS

subscale scores, SSRS subscale scores, and PPQ subscale scores); and naturalistic data (Prosocial Behaviours, Style of Play Behaviours, and Nonsocial Behaviours). Partial correlation procedures were used to control for the possible effects of language ability on the experimental measures, questionnaires and naturalistic observations.

To determine if either age-group or sex had significant main effects, the statistical analyses of the theory of mind data were conducted using repeated measures analysis of variance (ANOVA). This analysis included Age-group (2 levels), Sex (2 levels), and Task type (3 levels) as factors. Significant main effects for the within-subject repeated measure variables were submitted to further analysis using orthogonal contrasts.

To determine if either age-group or sex had significant main effects, the statistical analysis of the prudence and altruism data were conducted using a repeated measures ANOVA and included Age-group (2 levels), Sex (2 levels), and Trial type (4 levels) as factors. Significant main effects for the within-subject repeated measure variable were submitted to further analysis using orthogonal contrasts. Significant interaction of between-subject variables were analysed using one-way ANOVAs.

The statistical analysis of the sociometric data (friendship status and empathy concern), naturalistic data (nine variables), and questionnaire data (parent and teacher scores on the RVSS subscales, parent and teacher scores on the SSRS subscales, and parent scores on the PPQ), were analysed using two-way ANOVAs. Between-subject factors were age-group (2 levels) and sex (2 levels) were included in these analyses.

Pearson product-moment correlations were used to investigate the relationship between subscales or components for each of the experimental measures, sociometric

measures, questionnaires, and naturalistic measures. These correlations were conducted separately for each age-group.

Pearson product-moment correlations were also used to investigate the relationships among: (1) experimental measures, (2) experimental measures and sociometric measures, (3) experimental measures and naturalistic observations, (4) experimental measures and questionnaires, (5) sociometric measures and questionnaires, (6) sociometric measures and naturalistic observations, and (7) naturalistic observations and questionnaires.

Hierarchical multiple regression analyses were used to investigate whether language skills, experimentally-based social-cognitive measures such as theory of mind and prudence and altruism, or age were significant predictors of social behaviours. Regression analyses were conducted for the entire sample and on each age-group.

Chapter Three

Results

Demographic Variables

Table 1 presents the means and (standard deviations) of the demographic characteristics for each age-group for family size, birth order, language ability, and age. Independent *t*-tests revealed that 3-year-olds and 4-year-olds did not differ with respect to family size ($t(118)=0.98$, n.s.) or birth order ($t(118)=2.26$, n.s.).

Language Ability. The TELD-2 was administered to measure language ability. Mean scores (and standard deviations) for the 3- and 4-year-olds are presented in Table 1. As expected, language ability differed between the two groups, ($t(118)=7.10$, $p \leq .01$), with 4-year-olds achieving higher language scores. TELD-2 scores for 3-year-olds ranged from 28 to 53 (equivalent to language ages of 3 years 4 months; and 5 years 4 months, respectively). TELD-2 scores for 4-year-olds ranged from 43 to 60 (equivalent to language ages of 5 years 5 months; and 6 years 6 months, respectively).

Language skills have been shown to be positively related to delay of gratification (Rodriguez, Mischel, & Shoda, 1989), children's sociometric status (Rubin & Daniels-Beirness, 1983), and false belief understanding (Jenkins & Astington, 1995). It was important to examine children's scores on the experimental measures, questionnaires, and naturalistic observations to see if they were dependent on language ability. Table 2 shows the Pearson product-moment correlations between the TELD-2 and the experimental measures for both age groups. For 3-year-olds, TELD-2 scores were related only to appearance-reality.

Table 1

Means and (Standard Deviations) of Age, Family Size, Birth Order, Language Ability for Both Age-Groups

	Age-Group	
	3-year-olds (n=60)	4-year-olds (n=60)
Family size	0.52(0.60)	0.55(0.50)
No Siblings(%)	52	45
One Sibling(%)	35	45
Two Siblings(%)	10	8
Three Siblings(%)	3	2
Birth order	1.43(0.72)	1.33(0.60)
First Born(%)	68	73
Second Born(%)	22	20
Third Born(%)	8	7
Fourth Born(%)	2	0
Language Ability (TELD-2)	40.88(5.87)	51.40(3.70)
Age (in months)	42.40(2.64)	53.38(2.33)

Note. Mean family size with n=1 for 1 child, n=2 for 2 children, n=3 for 3 children, and n=4 for 4 children.
Mean birth position with n=0 for 1st born, n=1 for 2nd born, n=2 for 3rd born, n=3 for 4th born.

TELD-2 scores were related to all experimental tasks in the 4-year-old group with the exception of friendship status, empathic concern for others and delay of other-gratification scores. Table 3 displays the correlations between the TELD-2 and the questionnaires for both age-groups. In both age-groups, TELD-2 scores were associated mostly with the RVSS subscales. The TELD-2 was significantly correlated with Parent Conventional, Parent Intentional, Teacher Conventional, and Teacher Intentional scores. The most significant association emerged for 3-year-olds. In the younger age-group, Teacher Prosocial Skills Scale scores were highly associated with TELD-2 scores ($r = .55, p \leq .005$). Table 4 presents the correlations between the TELD-2 and the naturalistic observations. For the 3-year-olds, Empathic Behaviours scores were marginally positively associated with TELD-2 scores. In the older age group, Nonsocial Behaviours scores were significantly negatively associated with TELD-2 scores, ($r = -.28, p \leq .05$).

In summary, 4-year-olds' language skills were associated with most of the experimental measures, whereas in the 3-year-old age-group language skills were only associated with AR scores. Parent and teacher ratings on the RVSS subscales were related to 3- and 4-year-olds' language abilities, whereas associations with the SSRS and the PPQ subscales were minimal in both age-groups. Associations between language abilities and naturalistic observations, and language and sociometric measures were also minimal in both age-groups.

Table 2

Pearson Correlations of the Experimental Measures and the TELD-2 for Both Age-Groups

Experimental Measures	Age-Group	
	3-year-olds (n=60)	4-year-olds (n=60)
AR	.25*	.52***
FB	.02	.45***
RC	.16	.41**
1SN/2SL	.02	.38**
1SN/2OL	.00	.20
1SN/1EL	.19	.40**
1SN/1EN	.17	.43**

Note. AC = Appearance Reality

FB = False Belief

RC = Representational Change

1SN/2SL = 1 self now/2 self later (delay of self gratification)

1SN/2OL = 1 self now/2 other later (delay of other gratification)

1SN/1EL = 1 self now/1 each later (delay of shared gratification)

1SN/1EN = 1 self now/1 each now (shared gratification without cost)

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

Table 3

Pearson Correlations of the Questionnaires and the TELD-2, and Correlations of the Sociometric Measures and the TELD-2 for Both Age-Groups

Questionnaires		3-year-olds	4-year-olds
RVSS	PC	.18	.39**
	PI	.29*	.49***
	TC	.52***	.18
	TI	.53***	.36**
SSRS	PPSS	.25+	.13
	PPBS	.07	-.16
	TPSS	.55***	.21
	TPBS	-.03	.03
PPQ	PT	.09	.19
	CDS	.15	.21
	PDS	.26+	.31*
Sociometric Measures	Friend	.09	.20
	Empathy	.00	.18

Note. PC = Parent Conventional
 PI = Parent Intentional
 TC = Teacher Conventional
 TI = Teacher Intentional
 PPSS = Parent Prosocial Skills Scale
 PPBS = Parent Problem Behaviours Scale
 TPSS = Teacher Prosocial Skills Scale
 TPBS = Teacher Problem Behaviour Scale
 PT = Prudence Total
 CDS = Children's Delay Strategies
 PDS = Parent's Delay Strategies
 + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

Table 4

Pearson Correlations of the Naturalistic Observations and the TELD-2 for Both Age-Groups

Naturalistic Observations	3-year-olds	4-year-olds
EB	.23+	.04
HB	.11	.16
CB	.04	.31
EE	.01	-.05
PP	-.13	-.16
SIPP	-.05	.03
IP	.21	.12
RCP	.12	.13
NB	-.07	-.28*

Note. EB = Empathic Behaviours
 HB = Helping Behaviours
 CB = Cooperative Behaviours
 EE = Engaging the Experimenter
 PP = Parallel Play
 SIPP = Simple Interactive Parallel Play
 IP = Interactive Play
 RCP = Reciprocal and Complementary Play
 NB = Nonsocial Behaviours
 + $p \leq .10$; * $p \leq .05$

Initial Results

For each of the experimental tasks¹ (with the exception of the TELD-2), questionnaires and naturalistic observations it was important to evaluate whether or not the expected age or sex differences were present. In order to accomplish this, all experimental measures, and naturalistic observations were subjected to multivariate and/or univariate analyses. In addition, for each of the experimental measures, questionnaires, and naturalistic observations correlational analyses were performed for the related subscales or components. Given the number of variables used in the present study, data reduction was undertaken in each group of related subscales or components, if correlations were large enough to permit reduction. Finally, partial correlational analyses were used to control for the possible effects of language ability on the experimental measures, questionnaires and naturalistic observations.

Direct comparisons were made of the correlations between 3- and 4-year-olds. These results indicated that differences did not exist between 3- and 4-year-olds. These findings indicate that sampling error or unequal variances were not present in the various measures completed by 3- and 4-year-olds suggesting that separate analyses could be undertaken for each age-group.

Theory of Mind

Theory of mind was assessed by three tasks: appearance reality (AR), false belief

¹ Effects of order were investigated in a series of one-way analyses of variance (ANOVAs). These analyses revealed that children's scores on the composite ToM measure, the four prudence and altruism trial types, friendship status, empathy concern, or language abilities were not affected by the order in which these tasks were presented.

Table 5

Means (Standard Deviations) and Correlations for the Theory of Mind Tasks for Both Age-Groups (Language-partialled correlations in parentheses)

Age	Task	Means (SD)	Correlations (Language-Partialled)	
			AR	FB
3 Years	AR	.63 (.92)	---	
	FB	1.32 (1.11)	.43** (.40**)	---
	RC	1.23 (1.23)	.36** (.32**)	.45*** (.46***)
4 Years	AR	1.57 (1.21)	---	
	FB	2.10 (1.36)	.45*** (.30*)	---
	RC	1.75 (1.43)	.39** (.32*)	.45*** (.39**)

Note. Maximum possible task score for each task = 3.

AC = Appearance Reality

FB = False Belief

RC = Representational Change

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

(FB), and representational change (RC). The mean scores (and standard deviations) for each of the theory of mind tasks broken down by age-group are shown in Table 5. In order to examine whether there were developmental and sex differences in theory of mind development, a 2 (age-group) x 2 (sex) x 3 (task type) repeated measures analysis of variance (ANOVA) was conducted with age-group and sex as the between-subject factors and task type (AR, FB and RC) as the within-subject factors. The ANOVA showed a significant age-group main effect ($F(1,118)=18.17, p \leq .005$), with 4-year-olds achieving significantly higher theory of mind scores than 3-year-olds. This was expected since false belief abilities have consistently been shown to be beyond the conceptual capabilities of 3-year-olds. The ANOVA revealed no sex main effects. The ANOVA also indicated a significant main effect of task type $F(2,236)=13.12, p \leq .005$. To follow-up the main effect of task type two orthogonal contrasts were calculated: The first compared AR with FB scores, and the second compared the average of the AR and FB scores with the RC scores. The contrast analyses revealed that AR scores were different from FB scores, with AR scores being lower ($F(1,118)=32.77, p \leq .005$). This implies that performance on the AR tasks was worse than performance on the FB tasks. The average of AR and FB scores was not different from the RC scores ($F(1,118)=0.80, n.s.$). There were no significant age-group by task interactions.

Table 5 also contains the intercorrelations of the three theory of mind tasks. These results revealed that for 3-year-olds, the three theory of mind task types were significantly correlated. Correlation results for 4-year-olds also revealed significant relationships among the three theory of mind task types.

It was important to determine whether the intercorrelations among the three tasks remained significant after removing the effects of linguistic abilities. Partial correlations for the scores on the three theory of mind tasks for both age-groups are also found in Table 5.

In light of the fact that the three theory of mind tasks remain significantly correlated even after taking into account the effects of language abilities, and given that past research (Gopnik & Astington, 1988; Moore et al., 1990) has shown that these theory of mind abilities are related, it was appropriate to use the composite score of the theory of mind tasks in subsequent analyses as an index of children's theory of mind abilities².

Prudence and Altruism

Prudence and altruism was assessed by four trial types: delay of self gratification (1SN/2SL), delay of shared gratification (1SN/1EL), delay of other gratification (1SN/2OL), and shared gratification without cost(1SN/1EN). Prudence refers to children's ability to forgo current self-gratification in order to obtain a more desirable reward for self in the future. Children's capacity to act in favour of other's future desires is referred to as altruism. Collectively, the four trial types assess whether children are more self- or other-oriented, and whether they will forgo current desires in order to obtain more desirable future rewards for self and other.

Mean scores (and standard deviations) for each of the prudence and altruism trial types broken down by age-group are found in Table 6. Prudence and altruism scores were

² Theory of mind scores were not standardized because the important information is captured by the absolute value of the score and by the sum of the absolute values.

Table 6

Means (Standard Deviations) and Correlations for the Prudence and Altruism Tasks for Both Age-Groups (Language-partialled correlations in parentheses)

Age	Tasks	Means (SD)	Correlations (Language-Partialled)		
			1SN/2SL	1SN/2OL	1SN/1EN
3 Years	1SN/2SL	.67 (.90)	----		
	1SN/2OL	.33 (.57)	.05 (.06)	----	
	1SN/1EN	.78 (1.01)	-.04 (.06)	.21+ (.22+)	----
	1SN/1EL	.20 (.58)	.26* (.27*)	-.15 (-.13)	.16 (.15)
4 Years	1SN/2SL	1.12 (1.15)	----		
	1SN/2OL	.63 (.96)	.21+ (.20)	----	
	1SN/1EN	1.52 (1.20)	.36** (.34**)	.40** (.41**)	----
	1SN/1EL	.75 (.97)	.57*** (.53***)	.34** (.31*)	.58*** (.49**)

Note. Maximum possible trial type score = 3.

1SN/2SL = 1 self now/2 self later (delay of self gratification)

1SN/2OL = 1 self now/2 other later (delay of other gratification)

1SN/1EL = 1 self now/1 each later (delay of shared gratification)

1SN/1EN = 1 self now/1 each now (shared gratification without cost)

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

submitted to 2 (age-group) x 2 (sex) x 4 (trial type) repeated measures ANOVA, with age-group and sex as the between-subject factors and trial types (4 levels) as the within-subject factors. The ANOVA revealed a significant main effect of age-group ($F(1,116)=18.74, p \leq .005$), with 4-year-olds achieving significantly higher scores on the prudence and altruism measures than 3-year-olds. This suggests that 4-year-olds possess greater sharing abilities in current situations and they can delay waiting in order to receive greater future rewards. A main effect of trial type was found $F(3,348)=21.09, p \leq .005$. A sex by trial type interaction was also revealed $F(3,348)=2.82, p \leq .05$. To investigate this interaction, follow-up one-way ANOVA's were undertaken on each trial type by sex. A significant difference was found only for the delay of self-gratification (1SN/2SL), with females ($M = 1.13, SD = 1.08$) achieving significantly higher scores than males ($M = 0.65, SD = 0.97$); $F(1,118)=6.64, p \leq .05$.

To follow-up the trial type main effect three orthogonal contrasts were conducted: The first contrast compared delay of other-gratification (1SN/2OL) scores with delay of self-gratification (1SN/2SL) scores. The second contrast compared delay of shared-gratification (1SN/1EL) scores with shared gratification without cost (1SN/1EN) scores. The third contrast compared delay of other-gratification (1SN/2OL) scores and delay of self-gratification (1SN/2SL) scores with delay of shared-gratification (1SN/1EL) scores and shared gratification without cost (1SN/1EN) scores. The contrast analyses revealed that 1SN/2SL scores were significantly higher than 1SN/2OL scores, ($F(1,116)=14.02, p \leq .01$). This implies that children will delay to benefit themselves more often than they will delay to benefit another. Contrast two revealed that 1SN/1EN scores were

significantly higher than 1SN/1EL scores ($F(1,116)=49.89, p \leq .005$). This implies that children are more likely to share in a current situation than when sharing requires a delay in receiving rewards. The 1SN/1EL scores and 1SN/1EN scores were marginally higher than 1SN/2OL scores and 1SN/2SL scores $F(1, 116)=3.01, p = .08$.

Table 6 also contains the intercorrelations of the four prudence and altruism trial types for both age groups. In the 3-year-old group, a significant correlation emerged between delay of self-gratification scores and delay of shared-gratification scores. This result is a replication of the Thompson et al. (1997) finding. A marginally significant association was found between 1SN/1EN scores and 1SN/2OL, ($r = .21, p = .09$). All remaining prudence and altruism trial types were not associated. For the 4-year-olds, the correlations between the four trial types were highly significant, with the exception of the correlation between 1SN/2SL scores and 1SN/2OL which were only marginally significantly correlated ($r = .21, p = .09$). Prudence and altruism trial types could not be reduced because correlations in the 3-year-olds were small, and in the older age-group one correlation was marginal.

Partial correlations controlling for linguistic ability did not change the pattern of correlations in both age-groups (see Table 6).

Sociometric Measures

Sociometric measures are evaluations of interpersonal attraction by peer group members. Children who obtained high scores on both these measures were rated by their peers as very popular and displaying high levels of empathic concern toward others.

Table 7

Means (Standard Deviations) and Correlations of Peer Ratings of Friendship Status and Empathy Concern for Both Age-Groups (Language-partialled correlations in parentheses)

Age		Peer Ratings	Correlations (Language-Partialled)
3 years		Means (SD)	Friend
	Friend ^a	2.23 (.42)	----
	Empathy ^b	.35 (.28)	.19 (.11)
4 years	Friend ^a	2.19 (.38)	----
	Empathy ^b	.35 (.21)	.29* (.26*)

Note. ^aMaximum possible score = 3.

^bMaximum possible score = 1.

* $p \leq .05$

Mean scores and (standard deviations) for both sociometric measures are shown in Table 7.

Friendship Status. A two-way ANOVA was used to test the hypothesis that children's popularity or friendship status, as rated by peers, may be influenced by the participants' age and sex. This analysis revealed no significant main effect of age-group ($F(1,116)=0.29$, n.s.). A marginally significant sex main effect ($F(1,116)=3.09$, $p = .08$) was found, with females achieving slightly higher friendship status scores than males. There was no interaction effect ($F(1,116)=0.80$, n.s.).

Empathy Status. In order to examine whether the empathic rating of concern toward others, as measured by peer nominations, was influenced by the participants' age-group and sex, a two-way ANOVA was conducted. There were no age-group $F(1,116)=.01$, n.s., or sex main effects $F(1,116)=.82$, n.s. revealed. The sex by age- group interaction was also not significant $F(1,116)=1.30$, n.s.

Also shown in Table 7 is the intercorrelation matrix between the sociometric measures. Friendship status and empathy concern scores were not correlated in the younger age-group. There was a significant correlation revealed between friendship and empathy status for the 4-year-old group, ($r = .29$, $p < .05$). Partial correlations controlling for language ability did not change the correlations for either age-group significantly (see Table 7).

Naturalistic Observations

To determine whether the participants' age and sex influenced their naturally-occurring social behaviours, a series of 2 x 2 (sex x age-group) ANOVAs were undertaken on each social behaviour: Empathic Behaviour, Helping Behaviour, Cooperative Behaviour, Engaging the Experimenter, Parallel Play, Simple Interactive Parallel Play, Interactive Play, and Reciprocal and Complementary Play, and Nonsocial Behaviours. Mean scores (and standard deviations) for each of the naturalistic behaviours broken down by age-group are found in Table 8. Analyses revealed a significant main effect for age-group for Helping Behaviours scores, ($F(1,115)=4.74, p \leq .05$), with 4-year-olds achieving higher scores than 3-year-olds. As expected, 4-year-olds achieved significantly higher Interactive Play scores than the younger age-group ($F(1,111)=4.32, p \leq .05$). A significant age-group main effect was also revealed for Reciprocal and Complementary Play ($F(1,111)=6.96, p \leq .05$) with 4-year-olds scoring significantly higher scores than 3-year-olds. Since 4-year-olds achieved higher Interactive Play and Reciprocal and Complementary Play scores, this implies that 4-year-olds displayed higher rates of more sophisticated social play than the younger age-group. As predicted, the younger age-group achieved slightly higher Parallel Play scores, implying a less sophisticated level of peer social play, ($F(1,111)=3.59, p = .06$). No other main effects or interactions were found for the other social behaviours.

Intercorrelations of the naturalistic observations for the 3-year-old group are presented in Table 9. Few correlations emerged for 3-year-olds. The strongest correlations were between Nonsocial Behaviours scores

Table 8

Means and (Standard Deviations) for the Naturalistic Observations for Both Age-Groups

Behavioural Categories	Age Group	
	3-year-olds	4-year-olds
Prosocial Behaviours		
EB ^{a,b}	.18 (.95)	.10 (.48)
HB ^{a,b}	.49 (.92)	1.02 (1.54)
CB ^{a,b}	.28 (.28)	.23 (.50)
EE ^{a,b}	1.93 (2.28)	1.78 (5.90)
Style of Play		
PP ^{c,d}	2.68 (2.72)	1.86 (1.79)
SIPP ^{c,d}	1.29 (3.75)	.65 (1.33)
IP ^{c,d}	12.68 (12.22)	17.90 (14.53)
RCP ^{c,d}	.05 (.29)	.36 (.83)
Nonsocial Behaviours^e	6.10 (1.38)	5.24 (2.22)

Note. ^an=59 for 3-year-olds

^bn=60 for 4-year-olds

^cn=57 for 3-year-olds

^dn=58 for 4-year-olds

^eNumbers shown are duration of time in minutes and seconds.

EB = Empathic Behaviours

HB = Helping Behaviours

CB = Cooperative Behaviours

EE = Engaging the Experimenter

PP = Parallel Play

SIPP = Simple Interactive Parallel Play

IP = Interactive Play

RCP = Reciprocal and Complementary Play

NB = Nonsocial Behaviours

and Interactive Play scores ($r = -.58, p \leq .01$) and Nonsocial Behaviours scores and Helping Behaviours scores ($r = -.32, p \leq .05$). Three-year-olds who spend more time helping their peers and directing vocalizations towards their peers spend much less time in nonsocial activities. A significant positive association was revealed between Helping Behaviours scores and Empathic Behaviours scores ($r = .32, p \leq .05$). Younger children who exhibit helping behaviours also tend to display Empathic Behaviours in peer social interactions. The marginally positive correlation between Nonsocial Behaviours scores and Cooperative Behaviours scores ($r = .23$) was not in the expected direction. All other significant correlations were in the expected direction. The intercorrelation matrices of the naturalistic behaviours for both age-groups revealed that data reduction was not possible because correlations were small.

Table 10 displays the intercorrelation matrix of the naturalistic observations for the older age-group. In this age-group, the significant correlations were numerous and all were in the expected direction. Five significant correlations emerged between prosocial behaviours and Style of Play, the most significant correlation was between Simple Interactive Parallel Play scores and Empathic Behaviour scores ($r = .52, p \leq .005$). Four-year-olds who exhibit empathic behaviours when others are in distress tend to also exhibit eye gazing, touching, and smiling behaviours during their peer interactions. A number of significant negative correlations also emerged between Nonsocial Behaviours and style of play. The strongest correlation was between Nonsocial Behaviour scores and Interactive Play scores ($r = -.75, p \leq .005$). Children who direct vocalizations toward their peers spend little time engaged in nonsocial activities.

Table 9

Correlation Matrix for the Naturalistic Observations for the 3-year-olds (Language-partialled correlations in parentheses)

Behav	Correlations (Language-Partialled)							
	EB	HB	CB	EE	PP	SIPP	IP	RCP
HB	.32* (.31*)	---						
CB	-.10 (-.11)	-.01 (-.02)	---					
EE	.24+ (.24+)	-.03 (-.04)	-.13 (-.14)	---				
PP	.06 (.09)	.23+ (.25+)	.16 (.16)	-.18 (-.18)	---			
SIPP	.09 (.10)	.12 (.13)	.17 (.17)	-.06 (-.06)	-.07 (-.08)	---		
IP	-.09 (-.14)	.25* (.24+)	.06 (.06)	.00 (.01)	.01 (.06)	-.19 (-.19)	---	
RCP	-.04 (-.07)	-.03 (-.05)	.01 (.01)	-.05 (-.05)	.04 (.06)	.00 (.01)	.05 (.03)	
NB	-.15 (-.14)	-.32* (-.31*)	.23+ (.21+)	-.31* (-.31*)	-.01 (-.02)	.03 (.02)	-.58*** (-.58***)	.06 (.07)

Note. EB = Empathic Behaviours
 HB = Helping Behaviours
 CB = Cooperative Behaviours
 EE = Engaging the Experimenter
 PP = Parallel Play
 SIPP = Simple Interactive Parallel Play
 IP = Interactive Play
 RCP = Reciprocal and Complementary Play
 NB = Nonsocial Behaviours
 + $p \leq .10$; * $p \leq .05$; *** $p \leq .005$

Table 10

Table 10

Correlation Matrix for the Naturalistic Observations for the 4-year-olds (Language-partialled correlations in parentheses)

Behav	Correlations (Language-Partialled)							
	EB	HB	CB	EE	PP	SIPP	IP	RCP
HB	.04 (.04)	---						
CB	-.10 (-.12)	.36** (.30*)	---					
EE	-.04 (-.04)	-.07 (-.06)	-.08 (-.07)	---				
PP	.10 (.11)	-.03 (.00)	-.06 (-.01)	.12 (.11)	---			
SIPP	.52*** (.52***)	.15 (.13)	.31* (.31*)	-.08 (-.08)	.30* (.31*)	---		
IP	.08 (.08)	.26* (.20)	.24+ (.22)	-.09 (-.09)	-.06 (-.04)	.17 (.17)	---	
RCP	.04 (.03)	.18 (.15)	.37** (.35**)	-.05 (-.04)	.07 (.09)	.34* (.33*)	.29* (.28*)	---
NB	-.19 (-.21)	-.28* (-.24*)	-.33** (-.31*)	-.03 (-.05)	-.07 (-.11)	-.25* (-.24+)	-.75*** (-.74***)	-.48*** (-.46***)

Note. EB = Empathic Behaviours
 HB = Helping Behaviours
 CB = Cooperative Behaviours
 EE = Engaging the Experimenter
 PP = Parallel Play
 SIPP = Simple Interactive Parallel Play
 IP = Interactive Play
 RCP = Reciprocal and Complementary Play
 NB = Nonsocial Behaviours
 + $p \leq .10$; * $p \leq .05$; *** $p \leq .005$

Two significant correlations emerged between Nonsocial Behaviours scores and prosocial behaviours, the most significant was a negative association between Nonsocial Behaviours scores and Cooperative Behaviour scores ($r = -.33, p \leq .01$). Children who exhibit cooperative actions toward their peers spend little time in nonsocial behaviours. For prosocial behaviours, a significant correlation emerged between Helping Behaviours scores and Cooperative Behaviour scores ($r = .36, p \leq .01$). For Styles of Play, the most significant association was between Simple Interactive Parallel Play scores and Reciprocal and Complementary Play scores ($r = .34, p \leq .05$)(see Table 10).

Language-partialled correlations conducted within each age-group did not alter the pattern of correlations (see Tables 9 and 10, respectively).

Questionnaires

Revised Vineland Socialization Scale (RVSS). The RVSS questionnaire was used to assess parent and teacher ratings of children's intentional (understanding of mental states) and conventional (understanding of social rules) abilities. Means and (standard deviations) for each subscale of the RVSS broken down by age-group are found in Table 11. A 2 x 2 ANOVA (sex x age-group) was performed on each individual RVSS subscale. As hypothesized, a significant age-group main effect was revealed for Parent Intentional scores, 4-year-olds were rated by parents as having greater understanding of mental states, ($F(1,108)=3.90, p \leq .05$). A significant sex main effect was also found for Parent Intentional scores, females were rated as exhibiting greater understanding of mental states by their parents ($F(1,108)=12.30, p \leq .001$). A marginally significant sex by age-group interaction was also revealed for Parent Intentional scores,

Table 11

Means (Standard Deviations) and Correlations for the Revised Vineland Socialization Scale for Both Age-Groups (Language-partialled correlations in parentheses)

Age	Sub-scales	Means (SD)	Correlations (Language-Partialled)		
			PI	PC	TI
3 Years	PI (n=53)	25.09 (5.42)	---		
	PC (n=53)	26.38 (7.84)	.74*** (.75***)	---	
	TI (n=55)	23.64 (6.93)	.24+ (.21)	.16 (.16)	---
	TC (n=55)	26.38 (7.94)	.28* (.25+)	.21 (.16)	.83*** (.73***)
4 Years	PI (n=54)	27.41 (6.34)	---		
	PC (n=54)	27.75 (5.59)	.81*** (.74***)	---	
	TI (n=58)	27.03 (5.99)	.70*** (.57***)	.62*** (.45**)	---
	TC (n=58)	28.03 (6.02)	.51*** (.44**)	.55*** (.43**)	.67*** (.60***)

Note. Maximum possible subscale score for all subscales = 40.

PI = Parent Intentional

PC = Parent Conventional

TI = Teacher Intentional

TC = Teacher Conventional

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

$(F(1,108)=3.02, p = .08)$.

A marginally significant age-group main effect was also found for Parent Conventional scores, $(F(1,108)=2.92, p=.09)$, with 4-year-olds receiving higher ratings than 3-year-olds. There was no sex main effect revealed for Parent Conventional scores, $(F(1,108)=2.20, n.s.)$. A significant sex by age-group interaction was revealed for Parent Conventional scores, $F(1,108)=6.09, p \leq .01$. As predicted, a significant age-group main effect was revealed for the Teacher Intentional subscale, $F(1,112)=6.24, p \leq .05$, with 4-year-olds receiving higher scores than their younger counterparts. Four-year-olds were rated by their teachers as having greater understanding of mental states. A significant sex main effect was shown for Teacher Intentional scores $(F(1,112)=4.61, p < .05)$. Overall teachers rated females as having a greater understanding of mental states than males. The age-group by sex interaction for Teacher Intentional scores was not significant $(F(1,112)=.03, n.s.)$.

There was no age-group main effect found for Teacher Conventional scores, $(F(1,112)=.36, n.s.)$. A significant sex main effect was shown for Teacher Conventional scores, $(F(1,112)=4.55, p \leq .05)$. Overall, teachers rated females as having greater understanding of social rules than males. The age-group by sex interaction for Teacher Conventional scores was not significant $(F(1,112)=.15, n.s.)$.

Pearson correlations were used to examine the relationship between parent and teacher ratings of children's intentional and conventional abilities. The intercorrelational matrices of the RVSS subscales for both age-groups are presented in Table 11. For 3-year-olds, the most significant correlation was between Teacher Conventional and Teacher Intentional scores ($r = .83, p \leq .005$). The lowest significant correlation was between Parent Intentional and Teacher Intentional scores, $r = .24, p < .10$. The correlations between Parent Conventional scores, Teacher Intentional scores, and Teacher Conventional scores were not significant. If one considers the parents and teachers as providing two independent ratings of the same behaviour, then these correlations reflect marginal inter-rater reliability for the younger age-group. For 4-year-olds, all RVSS subscale scores were highly significant. The most significant association was between Parent Intentional scores and Parent Conventional scores ($r = .81, p \leq .005$). Teacher Conventional scores were highly associated with Teacher Intentional scores ($r = .67, p \leq .005$). In terms of inter-rater correlations, the most significant association was between Teacher Intentional scores and Parent Intentional scores ($r = .70, p \leq .005$). Parent Conventional scores and Teacher Conventional scores were also significantly correlated ($r = .55, p \leq .005$). These associations reflect good inter-rater reliability for the older age-group.

Partial correlations were used to examine whether the above reported intercorrelations would remain the same after controlling for language effects. In neither group, was there large changes in the correlations. Partial correlations for both age-groups are presented in Table 11.

Social Skills Rating System (SSRS). The SSRS assessed parent and teacher ratings of children's prosocial skills scores (cooperation, assertiveness, responsibility, and self-control) and problem behaviours (externalizing problem behaviours-temper tantrums, fidgets, etc. and internalizing problem behaviours-loneliness, anxiety, etc). Means and (standard deviations) for each parent and teacher SSRS subscale scores broken down by age-group are found in Table 12. A 2 x 2 ANOVA (sex x age-group) was conducted on all SSRS subscales. As expected, this analysis revealed a significant age-group main effect for Parent Prosocial Skills Scale scores, with 4-year-olds receiving higher prosocial scores than 3-year-olds, ($F(1,108)=4.27, p \leq .05$). There were no sex main effects ($F(1,108)=.64, n.s.$), found for Parent Prosocial Skills Scale scores. The sex by age-group interaction was also not significant ($F(1,108)=2.60, n.s.$) for Parent Prosocial Skills Scale scores. No effects were revealed for Parent Problem Behaviour Scale scores.

A marginally significant age-group main effect was shown for Teacher Prosocial Skills Scale scores, with 4-year-olds achieving slightly higher scores, ($F(1,109)=2.89, p=.09$). A significant sex main effect was found for Teacher Prosocial Skills Scale scores, teachers rated females as possessing greater prosocial abilities than males, ($F(1,109)=13.99, p \leq .005$). The sex by age-group interaction was not significant for Teacher Prosocial Skills Scale scores ($F(1,109)=.49, n.s.$). Only a significant sex main effect was found for Teacher Problem Behaviour Scale scores, teachers rated males as displaying more problem behaviours than females, ($F(1,110)=9.11, p \leq .01$).

Table 12 also depicts the intercorrelation matrices of the SSRS subscales for both

Table 12

Means (Standard Deviations) and Correlations for the Social Skills Rating System for Both Age-Groups (Language-partialled correlations in parentheses)

Age	Sub-scales	Means (SD)	Correlations (Language-Partialled)		
			PPSS	PPBS	TPSS
3 Years	PPSS ^a (n=54)	49.44 (9.11)	---		
	PPBS ^b (n=54)	5.92 (2.52)	-.26+ (-.24+)	---	
	TPSS ^c (n=55)	37.05 (9.76)	.17 (.01)	-.12 (-.21)	---
	TPBS ^b (n=55)	4.11 (3.11)	.01 (.08)	.31* (.37**)	-.38** (-.37**)
4 Years	PPSS ^a (n=54)	52.01 (9.65)	---		
	PPBS ^b (n=54)	5.70 (2.97)	-.40** (-.39**)	---	
	TPSS ^c (n=57)	40.91 (8.18)	.47*** (.42**)	-.41** (-.38**)	---
	TPBS ^b (n=57)	5.05 (3.61)	-.37** (-.40**)	.45** (.41**)	-.70*** (-.73***)

Note. ^aMaximum possible score = 80.

^bMaximum possible score = 60.

^cMaximum possible score = 20.

PPSS = Parent Prosocial Skills Scale

PPBS = Parent Problem Behaviours Scale

TPSS = Teacher Prosocial Skills Scale

TPBS = Teacher Problem Behaviour Scale

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

age-groups. For 3-year-olds, only three significant correlations emerged. The most significant association was a negative relationship between Teacher Problem Behaviour Scale scores and Teacher Prosocial Skills Scale scores ($r = -.38, p \leq .01$). A significant association was found between Parent Problem Behaviour Scale scores and Teacher Problem Behaviour Scale scores ($r = .31, p \leq .05$), parents and teachers were consistent in their ratings of children's problem behaviours. A marginally negative correlated was found between Parent Prosocial Skills Scale scores and Parent Problem Behaviour Scale scores ($r = -0.26, p \leq .10$). For 4-year-olds, all SSRS subscale scores were highly associated. The most significant association was found between Teacher Problem Behaviour Scale scores and Teacher Prosocial Skills Scale scores ($r = -.70, p \leq .005$). Parent Prosocial Skills Scale scores showed a significant negative association with Parent Problem Behaviour Scale scores ($r = -0.40, p \leq .005$). In the older age-group there was good inter-rater correspondence with regards to problem behaviours as well as prosocial behaviours (see Table 12). Note that the correlational matrices for the two age-groups are quite similar in pattern: only the magnitudes differ.

Table 12 also displays the partial correlations for both age-groups. When language abilities were taken into account, all previous correlations in both age-groups remained essentially the same.

Parent Prudence Questionnaire (PPQ). The PPQ measured parent's ratings of their children's ability to act in a prudent manner in daily activities (as assessed by the six scenarios of daily living presented to parents). Means and (standard deviations) for each age-group are shown in Table 13. The Prudence Total scores were submitted to a

Table 13

Means (Standard Deviations) and Correlations for the Parent Prudence Questionnaire for both Age-Groups (Language-partialled correlations in parentheses)

Age	Sub-scales	Means (SD)	Correlations (Language-Partialled)	
			PT	CDS
3 Years	PT ^a (n=54)	12.59 (4.23)	---	
	CDS ^b (n=54)	1.14 (.68)	.31* (.29*)	---
	PDS ^b (n=54)	1.59 (.85)	-.02 (-.08)	.59*** (.53***)
4 Years	PT ^a (n=54)	12.46 (3.70)	---	
	CDS ^b (n=54)	1.16 (.86)	.32* (.33*)	---
	PDS ^b (n=54)	1.57 (1.00)	.01 (-.02)	.54*** (.54***)

Note. ^aMaximum possible score = 24.

^bMaximum possible score = 3.

PT = Prudence Total

CDS = Children's Delay Strategies

PDS = Parent's Delay Strategies

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

2 x 2 ANOVA (sex x age-group). This analyses revealed no age-group ($F(1,103)=.02$, n.s.), sex ($F(1,103)=.02$, n.s.), or interaction ($F(1,103)=.34$, n.s.) effects.

Intercorrelational analyses for the both age-groups are shown in Table 13. For 3-year-olds, there was no association between Parent's Delay Strategies scores and Prudence Total scores. All other PPQ subscale scores were positively associated. The most significant association was between Parent's Delay Strategies scores and Children's Delay Strategies scores ($r = .59, p \leq .005$). There was a good deal of correspondence between the delay strategies parents encouraged their children to use to wait for future rewards and the delay strategies children used independently to wait for future rewards. The same correlational pattern was also found for the 4-year-olds.

Partial correlational analyses used to take into account language abilities did not alter the correlational matrix substantially.

Relationships Among Questionnaires

Table 14 displays the intercorrelation matrix for the three questionnaires for 3-year-olds. Numerous significant correlations emerged between the RVSS subscales and the SSRS subscales, all were in the expected direction. Parent Prosocial Skills Scale scores were associated with all four RVSS subscales, the most significant of these associations was between Parent Prosocial Skills Scale scores and Parent Conventional scores ($r = .77, p \leq .005$). Parents who rate their children as having good social skills also view their children as possessing a good understanding of social rules. In contrast, Parent Problem Behaviour Scale scores were not associated with any of the RVSS subscale scores. Teacher Prosocial Skills Scale scores were not associated with Parent

Table 14. Correlational Matrix of the Questionnaires for 3-year-olds

Questionnaires										
	PC	PI	TC	TU	PPSS	PPBS	TPSS	TPBS	PT	CDS
PI	.74***	---								
TC	.21	.28*	---							
TI	.16	.24	.83***	---						
PPSS	.77***	.68***	.31*	.26*	---					
PPBS	-.21	-.22	-.15	-.14	-.26	---				
TPSS	.25	.22	.76***	.75***	.17	-.12	---			
TPBS	-.21	-.06	-.35**	-.34*	.01	.31*	-.38**	---		
PT	.62***	.46***	-.02	-.02	.55***	-.22	.04	-.10	---	
CDS	.12	.22	.06	.12	.25+	.18	.05	.00	.31*	---
PDS	.09	.17	.21	.30*	.17	.33*	.08	.07	.00	.59***

Note. PI = Parent Intentional; PC = Parent Conventional; TI = Teacher Intentional;

TC = Teacher Conventional; PPSS = Parent Prosocial Skills Scale; PPBS = Parent Problem

Behaviours Scale; TPSS = Teacher Prosocial Skills Scale; TPBS = Teacher Problem Behaviour Scale;

PT = Prudence Total; CDS = Children's Delay Strategies; PDS = Parent's Delay Strategies.

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

Intentional scores, but were associated with all remaining RVSS subscale scores. Teacher Problem Behaviour Scale scores were significantly negatively associated with Teacher Conventional scores and Teacher Intentional scores. Teachers who rate children as displaying problem behaviours also view these children as neither understanding mental states nor an understanding of social rules.

There were few significant correlations between the PPQ subscale scores and the RVSS subscale scores. The most significant was between Prudence Total scores and Parent Conventional scores, ($r = .62, p \leq .005$), parents who rate their children as displaying prudent behaviours in daily activities also view their children as possessing an understanding of social rules. Also, few associations emerged between PPQ subscale scores and SSRS subscale scores. The most significant correlation was between Prudence Total scores and Parent Prosocial Skills Scale scores, ($r = .55, p \leq .005$); parents who rate their children as possessing prudent behaviours in their daily lives also rated their children as possessing good social abilities.

Table 15 depicts the intercorrelational matrix of the same three questionnaires for the 4-year-olds. This analysis revealed that RVSS subscale scores were highly correlated the SSRS subscale scores, and all correlations were in the expected direction. The most significant association was between Teacher Prosocial Skills Scale scores and Teacher Conventional scores ($r = .80, p \leq .005$). Teachers who rated children as possessing good social skills also rated these children as having a good understanding of social rules. Only two associations emerged as non-significant, Parent Problem Behaviour Scale scores were not associated with Parent Conventional scores, and Teacher Problem

Table 15. Correlational Matrix Of the Questionnaires for 4-year-olds

Questionnaires										
	PC	PI	TC	TI	PPSS	PPBS	TPSS	TPBS	PT	CDS
PI	.81***	---								
TC	.55***	.51***	---							
TI	.62***	.70***	.67***	---						
PPSS	.66***	.56***	.41**	.33*	---					
PPBS	-.22	-.30*	-.28*	-.29*	-.40**	---				
TPSS	.42**	.55***	.80***	.64***	.47***	-.41**	---			
TPBS	-.22	-.36**	-.52***	-.29*	-.37**	.45**	-.70***	---		
PT	.11	.24+	.17	.00	.53***	-.24+	.10	-.13	---	
CDS	.38**	.33*	.01	.16	.35*	-.08	.01	.07	.32*	---
PDS	.09	.08	-.03	.09	.12	-.01	.11	-.12	.01	.54***

Note. PI = Parent Intentional; PC = Parent Conventional; TI = Teacher Intentional;

TC = Teacher Conventional; PPSS = Parent Prosocial Skills Scale; PPBS = Parent Problem

Behaviours Scale; TPSS = Teacher Prosocial Skills Scale; TPBS = Teacher Problem Behaviour Scale;

PT = Prudence Total; CDS = Children's Delay Strategies; PDS = Parent's Delay Strategies.

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

Behaviour Scale scores were not associated with Parent Conventional scores. Few associations emerged between PPQ subscale scores and RVSS subscale scores for the older age-group. Only three correlations emerged between the PPQ subscale scores and RVSS subscale scores, the most significant association was between Children's Delay Strategies scores and Parent Conventional scores ($r = .38, p \leq .05$). Children who can make independent use of delay strategies are viewed by their parents as possessing a good understanding of social rules. Three correlations emerged between PPQ subscale scores and SSRS subscale scores, the most significant was between Prudence Total scores and Parent Prosocial Skills Scale scores ($r = .53, p \leq .005$). Parents who rate their children as possessing prudent abilities in daily life also view their children as possessing good social abilities.

Main Analyses

The main goal of this dissertation was to examine the behavioural correlates of lab-based measures of social understanding from a developmental perspective. If developmental differences were present, additional goals were to examine how these differences would be expressed, and how others would evaluate the behaviours expressed by different age-groups. Therefore, the initial analysis were undertaken to replicate existing findings in the developmental literature with respect to the variables of interest. The initial findings confirmed existing literature, highlighting the presence of developmental differences. To address these developmental differences, separate correlational analyses were conducted for each age-group. Given the large number of correlational analysis undertaken in the present work, a more stringent alpha level could have been adopted. However, the important issue in the present work was the magnitude of the relationship between variables that was of interest; whether these relationships were significantly different from zero.

Relationships Between Experimental Measures

In order to determine the relationship between the experimental measures (theory of mind, and prudence and altruism) separate Pearson product-moment correlations were computed for each age-group. Table 16 displays the correlational matrix of the experimental measures for both age groups. For 3-year-olds, none of the experimental measures were correlated with each other. The composite theory of mind scores for 4-year-olds showed significant associations with three prudence and altruism trial types and a marginally significant association with the fourth.

Table 16

Correlation Matrix of the Experimental Measures for Both Age-Groups

		Theory of Mind
3 Years	1SN/2SL	-.11
	1SN/2OL	.09
	1SN/1EN	-.17
	1SN/1EL	-.01
4 years	1SN/2SL	.23+
	1SN/2OL	.26*
	1SN/1EN	.41**
	1SN/1EL	.29*

Note. 1SN/2SL = 1 self now/2 self later (delay of self gratification)
 1SN/2OL = 1 self now/2 other later (delay of other gratification)
 1SN/1EL = 1 self now/1 each later (delay of shared gratification)
 1SN/1EN = 1 self now/1 each now (shared gratification without cost)
 + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

Relationships Between Sociometric Measures and Experimental Measures

Of note in the 3-year-old age-group, friendship status and empathy concern were not associated with any of the experimental measures (see Table 17). In the 4-year-old age-group, friendship status was correlated with all experimental measures. Also, in the 4-year-olds empathy concern was significantly correlated with only one of the four prudence and altruism trial types, that involving delay of other gratification (see Table 17).

Relationships Between Naturalistic Observations and Experimental Measures

In order to determine the relationship between the experimental measures (theory of mind, and prudence and altruism) and the naturalistic observations separate Pearson product-moment correlations were computed for each age-group. Table 18 displays the correlations between the experimental measures and naturalistic observations for both age-groups. For the 3-year-old group few correlations emerged. Theory of mind scores were positively associated with Cooperative Behaviours ($r = .28, p < .05$).

There were few associations between experimental measures and naturalistic observations for the older age-group. Most of the emerging correlations involved theory of mind abilities. The most significant was a negative correlation between theory of mind abilities and Parallel Play scores (the least sophisticated level of play) ($r = -.36, p \leq .01$). Theory of mind scores were also negatively associated with Engaging the Experimenter scores and Nonsocial Behaviours scores. Shared gratification without cost (1SN/1EN) scores were significantly negatively associated with Nonsocial Behaviours scores ($r = -.29, p \leq .05$) (see Table 18).

Table 17

Correlation Matrix of the Sociometric Measures and the Experimental Measures for Both Age-Groups

Experimental Tasks	3-year-olds		4-year-olds	
	Friend	Empathy	Friend	Empathy
ToM	.09	.17	.31*	.26*
1SN/2SL	-.11	-.10	.41**	.06
1SN/2OL	.09	.17	.25*	.32*
1SN/1EL	-.01	-.03	.38*	-.11
1SN/1EN	-.17	.03	.26*	.07

Note. ToM = Theory of Mind

1SN/2SL = 1 self now/2 self later (delay of self gratification)

1SN/2OL = 1 self now/2 other later (delay of other gratification)

1SN/1EL = 1 self now/1 each later (delay of shared gratification)

1SN/1EN = 1 self now/1 each now (shared gratification without cost)

* $p \leq .05$; ** $p \leq .01$

Table 18. Correlational Matrix Of the Experimental Measures and Naturalistic Observations for Both Age-Groups

Age	Experimental Measures	Naturalistic Behaviours									
		EB	CB	HB	EE	PP	SIPP	IP	RCP	NB	
3 years	ToM	.12	.28*	.08	.06	.18	-.11	.07	.09	.06	
	1SN/2SL	-.10	.10	-.19	-.15	.10	.00	-.16	.08	.27*	
	1SN/2OL	-.10	.02	.13	.06	.04	.12	-.07	.06	.04	
	1SN/1EN	.03	.14	.00	.06	-.07	.10	.08	.10	-.04	
	1SN/1EL	-.10	.10	.00	.09	-.02	-.10	.10	-.10	.05	
4 Years	ToM	-.10	.21	.18	-.22+	-.36**	-.10	.07	.07	-.24+	
	1SN/2SL	-.18	.08	-.18	.18	-.06	-.19	.00	.06	-.06	
	1SN/2OL	-.12	.04	-.10	-.10	.04	.00	.07	-.10	.06	
	1SN/1EN	-.14	.12	.13	.06	-.07	.05	.18	.03	-.29*	
	1SN/1EL	-.15	.17	-.15	.00	.02	.02	.16	.00	-.12	

Note. ToM = Theory of Mind; 1SN/2SL = 1 self now/2 self later (delay of self gratification); 1SN/2OL = 1 self now/2 other later (delay of other gratification); 1SN/1EN = 1 self now/1 each later (delay of shared gratification); 1SN/1EL = 1 self now/1 each now (shared gratification without cost); EB = Empathic Behaviours; HB = Helping Behaviours; CB = Cooperative Behaviours; EE = Engaging the Experimenter; PP = Parallel Play; SIPP = Simple Interactive Parallel Play; IP = Interactive Play; RCP = Reciprocal and Complementary Play; NB = Nonsocial Behaviours; + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$.

In summary, in both age-groups, very few significant correlations emerged between the experimental measures and the naturalistic observations.

Relationships Between Sociometric Measures and Naturalistic Observations

In the 3-year-old age-group, empathy concern was significantly positively associated with Interactive Play. However, several correlations emerged in the 3-year-old group that were in the unexpected direction. For example, Nonsocial Behaviours were significantly positively associated with friendship status scores. Also, friendship status was marginally negatively associated with Interactive Play. Three-year-olds who spend more time in Interactive Play, a more sophisticated level of peer play that involves directing vocalizations toward peers, were not rated as popular by their peers (see Table 19).

In the older age-group, a marginal negative significant correlation emerged between empathy concern for others and Parallel Play. Four-year-olds rated by their peers as empathic spend little time in less sophisticated levels of play (see Table 19).

Relationships Between Naturalistic Observations and Questionnaires

Revised Vineland Socialization Scale (RVSS). Interestingly, for 3-year-olds, RVSS subscale scores were marginally, negatively associated with the naturalistic observations. Parent Conventional scores were marginally negatively associated with Engaging the Experimenter scores ($r = -.25, p < .10$). Children who are rated by their parents as possessing an understanding of social rules do not spend a great deal of time seeking adult attention (see Table 20). For the 4-year-olds, several significant correlations emerged. The most significant association was between Simple Interactive Parallel Play

Table 19

Correlation Matrix of the Sociometric Measures and the Naturalistic Observations for Both Age-Groups

Naturalistic Observations	3-year-olds		4-year-olds	
	Friend	Empathy	Friend	Empathy
Empathic Behaviours	.11	-.15	-.10	.19
Cooperative Behaviours	.20	.27*	.00	-.10
Helping Behaviours	-.10	-.20	-.10	.00
Engaging Experimenter	.03	-.18	-.14	-.19
Parallel Play	.07	.07	-.04	-.23+
Simple Interactive Parallel Play	-.10	.08	.00	.02
Interactive Play	-.23+	.33*	.13	.01
Reciprocal and Complementary Play	.01	-.10	-.10	-.16
Nonsocial Behaviours	.42**	.09	.09	.06

Note. + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

scores and Parent Conventional scores ($r = .36, p \leq .01$). Parent Intentional scores were also significantly associated with Cooperative Behaviours ($r = .31, p \leq .05$), children who were rated by their parents as having an understanding of mental states also engage in cooperative behaviours with peers. Interestingly, Teacher Conventional scores and Teacher Intentional scores were both negatively associated with Engaging the Experimenter scores. Children who are rated by their teachers as possessing an understanding of mental states and an understanding of social rules do not repeatedly seek adult attention (see Table 21).

In summary, correlations between the naturalistic observations and the RVSS subscales for the 3-year-old age-group were all marginal and not in the expected direction. For the 4-year-old age-group, correlations were modest and in the expected direction.

Social Skills Rating System (SSRS): For the younger age-group, the correlational analyses revealed only two associations between SSRS subscale scores and naturalistic behaviours. Parent Prosocial Skills Scale scores were significantly associated with Interactive Play scores ($r = .28, p \leq .05$). Children with high parental social skill ratings spend more time directing vocalizations toward their peers. Teacher Problem Behaviour Scale scores were marginally negatively associated with Cooperative Behaviours scores ($r = .24, p \leq .10$) (see Table 20).

The correlational analyses for the older age-group revealed that all four SSRS subscales were associated with Engaging the Experimenter scores. These scores were all in the expected direction. For example, the most significant correlation was between

Table 20. Correlational Matrix of the Questionnaires and Naturalistic Observations for 3-year-olds

Questionnaires	Naturalistic Behaviours									
	EB	CB	HB	EE	PP	SIPP	IP	RCP	NB	
RVSS	PC	-.20	-.14	.06	-.25+	.18	.00	.23	.13	-.07
	PI	-.21	-.25+	.03	-.16	.02	-.12	.17	.20	-.09
	TC	.08	-.10	.09	-.17	.01	-.25+	.12	.17	.12
	TI	.02	.00	.17	-.10	.00	.00	.07	.14	.10
SSRS	PPSS	-.20	-.10	.10	-.21	.10	-.10	.28*	.06	-.03
	PPBS	-.13	-.10	-.11	-.03	-.18	-.21	-.06	.12	-.06
	TPSS	.07	.00	.06	-.18	-.22	-.16	.20	.06	.07
	TPBS	-.13	-.24+	-.13	-.03	-.18	-.21	-.06	.12	-.06
PPQ	PT	-.11	-.10	.28*	-.33*	.05	.09	.32*	-.22	-.17
	CDS	.08	.03	.24+	-.01	-.13	.08	.19	-.26*	-.09
	PDS	-.10	.00	-.03	-.04	-.10	-.15	-.07	.23	.22

Note. EB = Empathic Behaviours; HB = Helping Behaviours; CB = Cooperative Behaviours;

EE = Engaging the Experimenter; PP = Parallel Play; SIPP = Simple Interactive Parallel Play;

IP = Interactive Play; RCP = Reciprocal and Complementary Play; NB = Nonsocial Behaviours;

PI = Parent Intentional; PC = Parent Conventional; TI = Teacher Intentional; TC = Teacher Conventional;

PPSS = Parent Prosocial Skills Scale; PPBS = Parent Problem Behaviour Scale; TPSS = Teacher Prosocial

Skills Scale; TPBS = Teacher Problem Behaviour Scale; PT = Prudence Total; CDS = Children's Delay Strategies;

PDS = Parent's Delay Strategies.

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

Table 21. Correlational Matrix of the Questionnaires and Naturalistic Observations for 4-year-olds

Questionnaires	Naturalistic Behaviours									
	EB	CB	HB	EE	PP	SIPP	IP	RCP	NB	
RVSS	PC	-.14	.30*	.04	-.05	-.17	.26*	.13	.01	-.11
	PI	.00	.31*	.10	-.21	-.08	.36**	.16	.05	-.11
	TC	-.15	.10	-.10	-.31*	-.11	.02	.00	-.02	.15
	TI	.01	.27*	.19	-.23+	-.11	.21	.11	.07	-.03
SSRS	PPSS	.01	.11	.03	-.25+	.04	.21	.13	-.03	-.12
	PPBS	.04	-.11	-.10	.36**	-.01	.02	.24+	.09	-.16
	TPSS	-.15	.00	-.10	-.27*	-.03	.07	.07	-.05	.03
	TPBS	.03	.15	.07	.35**	-.01	.02	.24+	.09	-.16
PPQ	PT	.27*	-.10	.00	-.15	.16	.13	-.02	-.03	-.07
	CDS	.05	.22	.12	.03	-.15	.06	.27*	.02	-.08
	PDS	.06	.21	.17	-.12	-.14	.05	.15	-.03	.01

Note. EB = Empathic Behaviours; HB = Helping Behaviours; CB = Cooperative Behaviours; EE = Engaging the Experimenter; PP = Parallel Play; SIPP = Simple Interactive Parallel Play; IP = Interactive Play; RCP = Reciprocal and Complementary Play; NB = Nonsocial Behaviours; PI = Parent Intentional; PC = Parent Conventional; TI = Teacher Intentional; TC = Teacher Conventional; PPSS = Parent Prosocial Skills Scale; PPBS = Parent Problem Behaviour Scale; TPSS = Teacher Prosocial Skills Scale; TPBS = Teacher Problem Behaviour Scale; PT = Prudence Total; CDS = Children's Delay Strategies; PDS = Parent's Delay Strategies.
 + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

Parent Problem Behaviour Scale scores and Engaging the Experimenter scores ($r = .36, p \leq .01$), children who are rated by their parents as displaying problem behaviour also repeatedly seeking out adult attention in the classroom. Teacher Problem Behaviour Scale scores were also highly correlated with Engaging the Experimenter scores. That is, children who are rated by their teachers as displaying problem behaviours also spend a good deal of time seeking adult attention. Parent Problem Behaviour Scale scores and Teacher Problem Behaviour Scale scores were both marginally positively associated with Interactive Play scores. Children who are rated by their parents and teachers as displaying problem behaviours also spend a great deal of time directing vocalizations towards their peers, that is, these children are likely viewed as talkative (see Table 21).

In summary, correlations between the naturalistic observations and the SSRS subscales for the 3-year-old age-group was virtually non-existent. In the 4-year-old age-group, SSRS subscale scores were correlated mainly with two naturalistic behaviours: Engaging the Experimenter and Interactive Play.

Parent Prudence Questionnaire (PPQ). For the age-three group, five correlations emerged between PPQ subscale scores and naturalistic behaviours. The most significant was a negative correlation between Prudence Total scores and Engaging the Experimenter scores, ($r = -.33, p \leq .05$). Children who were rated by their parents as exhibiting few prudent behaviours in daily life also spend more time seeking out adult attention. Prudence Total scores were also positively associated with Helping Behaviour scores and Interactive Play scores. A marginally significant positive association was found between Children's Delay Strategies scores and Helping Behaviour scores ($r = .24, p \leq .10$).

Interestingly, a negative correlation emerged between Children's Delay Strategies scores and Reciprocal and Complementary Play scores ($r = -.26, p \leq .05$), children who use delay strategies independently spend less time in the most sophisticated style of play (see Table 20).

For 4-year-olds, only two significant correlations emerged. Prudence Total scores were significantly positively correlated with Empathic Behaviour scores ($r = .27, p \leq .05$). Children who are rated by their parents as possessing prudent skills in daily life also spend display more empathic behaviours toward their peers. Children's Delay Strategies scores were significantly positively associated with Interactive Play scores ($r=.27, p \leq .05$). Children who use delay strategies independently also direct more vocalizations toward their peers (see Table 21).

In summary, more modestly significant correlations emerged between the PPQ subscales and naturalistic observations for the 3-year-old age-group than the 4-year-old age-group.

Relationships Between Experimental Measures and Questionnaires

The purpose of examining the relationship between the experimental measures and the questionnaires items was twofold. First, such an analyses enabled further exploration of individual differences variables and the influences of these variables on children's understanding of mental representation. Second, it permitted children to be evaluated in terms of their social-cognitive development by multiple sources.

Revised Vineland Socialization Scale. There were no reported correlations between theory of mind abilities, and either teacher or parent ratings of children's

Table 22

Correlational Matrix of the Revised Vineland Socialization Scale and the Experimental Measures for Both Age-Groups

Age	Experimental Measures	Revised Vineland Socialization Scale			
		PC	PI	TC	TI
3 years	ToM	.07	.03	.00	.09
	1SN/2SL	-.14	.07	.02	.12
	1SN/2OL	.01	-.02	.00	-.03
	1SN/1EN	-.24	-.18	.05	.07
	1SN/1EL	-.06	.19	.13	.04
4 Years	ToM	.29*	.25+	.10	.15
	1SN/2SL	.40**	.51***	.43**	.39**
	1SN/2OL	-.05	.11	.10	-.02
	1SN/1EN	.29*	.38**	.24+	.28*
	1SN/1EL	.38**	.45**	.33*	.35**

Note ToM = Theory of Mind

1SN/2SL = 1 self now/2 self later (delay of self gratification)

1SN/2OL = 1 self now/2 other later (delay of other gratification)

1SN/1EL = 1 self now/1 each later (delay of shared gratification)

1SN/1EN = 1 self now/1 each now (shared gratification without cost)

PI = Parent Intentional

PC = Parent Conventional

TI = Teacher Intentional

TC = Teacher Conventional

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

intentional or conventional behaviours for the 3-year-old group. This same pattern of results for the 3-year-old group was found between the prudence and altruism trial type scores and the RVSS subscale scores (see Table 22).

Table 22 also displays the correlations between the experimental measures and the RVSS subscale scores for the 4-year-olds. There were numerous significant associations revealed for the older age group. A significant positive association was found between theory of mind abilities and Parent Conventional scores ($r = .29, p \leq .05$). With respect to the prudence and altruism trial types, three trial types showed significant or marginally significant associations with the RVSS subscales, only one trial type was not associated with a of the RVSS subscales. The most significant association was between delay of self-gratification (1SN/2SL) scores and Parent Intentional scores ($r = .51, p \leq .005$). Children who are able to delay self-gratification were rated by their parents as having an understanding of mental states.

Social Skills Rating System. Table 23 presents the correlations between the SSRS subscale scores and the experimental measures for 3-year-olds. There were no reported correlations between theory of mind abilities and any of the SSRS subscales. Similarly, there were no reported correlations between any of the prudence and altruism trial types and either parent or teacher SSRS subscales.

For 4-year-olds, theory of mind abilities were significantly positively correlated only with Parent Problem Skills Scale scores ($r = .28, p \leq .05$) and no other SSRS subscale scores. Several significant correlations were found between the SSRS subscale scores and the prudence and altruism scores. The most significant correlation was

Table 23

Correlational Matrix of the Social Skills Rating System and the Experimental Measures for Both Age-Groups

Age	Experimental Measures	Social Skills Rating Scale			
		PPSS	PPBS	TPSS	TPBS
3 years	ToM	-.10	.11	-.08	.00
	1SN/2SL	-.17	-.19	.08	.10
	1SN/2OL	-.10	.00	-.01	.13
	1SN/1EN	-.14	-.13	.11	-.22
	1SN/1EL	.06	-.17	.09	.00
4 Years	ToM	.28*	-.15	.13	.00
	1SN/2SL	.30*	-.13	.39**	-.01
	1SN/2OL	-.14	-.18	.03	.00
	1SN/1EN	.12	-.21	.21*	-.14
	1SN/1EL	.20	-.26*	.37**	-.22+

Note. ToM = Theory of Mind

1SN/2SL = 1 self now/2 self later (delay of self gratification)

1SN/2OL = 1 self now/2 other later (delay of other gratification)

1SN/1EL = 1 self now/1 each later (delay of shared gratification)

1SN/1EN = 1 self now/1 each now (shared gratification without cost)

PPSS = Parent Prosocial Skills Scale

PPBS = Parent Problem Behaviour Scale

TPSS = Teacher Prosocial Skills Scale

TPBS = Teacher Problem Behaviour Scale

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

between 1SN/2SL scores and Teacher Prosocial Skills Scale scores ($r = .39, p \leq .01$). Delay of shared-gratification (1SN/1EL) scores were highly positively associated with Teacher Prosocial Skills Scale scores ($r = .37, p \leq .01$). Children who are rated by their teachers as possessing social skills can also delay gratification for self and others in the future. A marginally negative association was found between 1SN/1EL scores and Teacher Problem Behaviour Scale scores (see Table 23).

Parent Prudence Questionnaire. Table 24 displays the correlations between the PPQ subscale scores and the experimental measures for both age-groups. Theory of mind abilities were not correlated with any PPQ subscale scores for the 3-year-old group. Two significant correlations were found between prudence and altruism scores and the PPQ subscale scores. Delay of shared-gratification scores were positively associated with Children's Delay Strategies scores ($r = .30, p \leq .05$). In the 4-year-olds, none of the prudence and altruism trial types were associated with any of the PPQ subscale scores. Theory of mind scores were significantly positively associated with Children's Delay Strategies ($r = .45, p \leq .01$), and also positively correlated with Parent's Delay Strategies, ($r = .31, p \leq .05$) (see Table 24).

Table 24

Correlational Matrix of the Parent Prudence Questionnaire and the Experimental Measures for Both Age-Groups

Age	Experimental Measures	Parent Prudence Questionnaire		
		PT	CDS	PDS
3 years	ToM	-.12	-.11	.11
	1SN/2SL	-.07	-.16	-.04
	1SN/2OL	-.15	-.27*	-.13
	1SN/1EN	-.20	.00	.00
	1SN/1EL	.09	.30*	.05
4 Years	ToM	.25+	.45**	.31*
	1SN/2SL	.00	.11	.00
	1SN/2OL	-.07	-.07	-.11
	1SN/1EN	-.08	.14	.09
	1SN/1EL	-.09	.13	.07

Note. ToM = Theory of Mind

1SN/2SL = 1 self now/2 self later (delay of self gratification)

1SN/2OL = 1 self now/2 other later (delay of other gratification)

1SN/1EL = 1 self now/1 each later (delay of shared gratification)

1SN/1EN = 1 self now/1 each now (shared gratification without cost)

PT = Prudence Total

CDS = Children's Delay Strategies

PDS = Parent's Delay Strategies

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

Delay of other-gratification scores were significantly negatively correlated with Children's Delay Strategies scores ($r = -.27, p \leq .05$). Children who use delay strategies independently do not altruistically give up rewards for others. For the 4-year-olds, theory of mind scores were associated with all PPQ subscale scores, the most significant associated was between theory of mind abilities and Children's Delay Strategies scores ($r = .45, p \leq .01$). Children with a keen understanding of mental states are also able to use delay strategies independently.

Relationships Between Sociometric Measures and Questionnaires

Revised Vineland Socialization Scale. For 3-year-olds, the most significant associations were between friendship status and Parent Intentional scores ($r = -.40, p \leq .01$), and friendship status and Parent Conventional scores ($r = -.35, p \leq .05$). Interestingly, these correlations were not in the expected direction. Children who are rated by their parents as having an understanding of mental states, and possess an understanding of social rules are rated as less popular by their peers. Empathy concern scores were significantly positively associated with Teacher Intentional scores ($r = .40, p \leq .01$). Children who display empathy toward distressed peers are viewed by their teachers as possessing an understanding of mental states. (see Table 25). In the 4-year-olds, friendship status scores were not associated with Parent Conventional scores, but were significantly associated with all other RVSS subscale scores. Empathy concern scores were marginally positively associated with Teacher Conventional scores, but were not associated with any other RVSS subscale scores (see Table 25).

Social Skills Rating System. Three-year-olds' empathy status was significantly

Table 25. Correlational Matrix of the Sociometric Measures and Questionnaires for Both Age-Groups

Age	Questionnaires	Friend	Empathy
3 years	Parent Intentional	-.40**	.01
	Parent Conventional	-.35*	.22
	Teacher Intentional	.17	.40**
	Teacher Conventional	.21	.24+
	Parent Prosocial Skills Scale	-.32*	.17
	Parent Problem Behaviour Scale	-.04	-.13
	Teacher Prosocial Skills Scale	.21	.33*
	Teacher Problem Behaviour Scale	-.21	-.11
	Prudence Total	-.37**	.15
	Children's Delay Strategies	-.22	-.07
	Parent's Delay Strategies	.11	.06
4 Years	Parent Intentional	.33**	.19
	Parent Conventional	.17	.11
	Teacher Intentional	.38**	.11
	Teacher Conventional	.53***	.22+
	Parent Prosocial Skills Scale	.19	.13
	Parent Problem Behaviour Scale	-.12	-.16
	Teacher Prosocial Skills Scale	.55***	.27*
	Teacher Problem Behaviour Scale	-.25*	.00
	Prudence Total	.16	.14
	Children's Delay Strategies	.11	.24+
	Parent's Delay Strategies	-.04	.12

Note. + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

positively correlated with Teacher Prosocial Skills Scale scores ($r = .33, p \leq .05$).

Unexpectedly, friendship status scores were significantly negatively correlated with Parent Prosocial Skills Scale scores ($r = -.32, p \leq .05$). Children rated by their parents as possessing social abilities are rated as less popular by their peers (see Table 25).

In the 4-years, a highly significant positive correlation was found between friendship status scores and Teacher Prosocial Skills Scale scores ($r = .55, p \leq .005$). Children who are rated by their teachers as possessing keen social abilities are also rated as more popular by their peers. Empathy concern scores were positively correlated with Teacher Prosocial Skills Scale scores ($r = .27, p \leq .05$), children who exhibit empathic responses toward distress peers as rated by their teachers as possessing keen social skills (see Table 25).

Parent Prudence Questionnaire. In the 3-year-olds, friendship status scores were unexpectedly significantly negatively correlated with Prudence Total scores ($r = -.37, p \leq .01$). Children who were rated by their parents as possessing prudent skills in daily living are rated as less popular by their peers. Empathy status scores were not associated with PPQ subscale scores. Empathy concern scores were marginally positively associated with Children's Delay Strategies scores ($r = .24, p \leq .10$). Friendship status scores were not associated with PPQ scores (see Table 25).

Hierarchical Multiple Regression Analyses

A series of hierarchical multiple regressions were performed to examine which, if any, of the lab-based social-cognitive measures, language abilities, or age were significant predictors of children's social behaviours in a naturalistic settings including naturalistic observations, adults ratings of children's social competencies, and peer ratings. These analyses were conducted for the entire sample as well as for each age-group. In each regression, the language comprehension scores were entered on the first step. A consistent finding in the literature, and in the present study, is that language is correlated with theory of mind and often with prudence and altruism. Therefore, language was included as a control variable in the regression analysis. The most conservative approach was taken such that language was entered first in the regression. In the second step the composite theory of mind scores were entered. All four prudence and altruism trial types were entered on the third step. Age-group was entered as the final predictor variable in order to see if there was any variance in each criterion variable that could be explained by age, but was not explained by language, theory of mind, or the prudence and altruism scores. This would suggest the need for more research into other possibly new variables.

Multiple Regression Analyses Predicting Naturalistic Observations for the Entire Sample

Nine separate regression analyses were conducted with the nine behavioural categories serving as criterion variables (i.e., Empathic Behaviours, Helping Behaviours, Cooperative Behaviours, Engaging the Experimenter, Style of Play (four levels), and Nonsocial Behaviours). Table 26 presents the results for the entire sample.

Table 26. Multiple Regression Analyses Predicting Naturalistic Observations for the Entire Sample

Criterion	Predictors	Total Sample	
		R ²	F
Cooperative Behaviours	TELD-2	.00	.33
	ToM	.03	3.58+
	P/A	.05	1.62
	Age-group	.02	2.58
Helping Behaviours	TELD-2	.05	6.43*
	ToM	.01	1.29
	P/A	.07	2.21+
	Age-group	.00	.27
Empathic Behaviours	TELD-2	.00	.75
	ToM	.00	.00
	P/A	.03	.96
	Age-group	.03	3.07+
Engaging Experimenter	TELD-2	.00	.10
	ToM	.03	3.43+
	P/A	.03	1.11
	Age	.00	.03
Parallel Play	TELD-2	.05	5.91*
	ToM	.00	.66
	P/A	.01	.35
	Age-group	.00	.00
Reciprocal and Complementary Play	TELD-2	.06	7.06**
	ToM	.00	.01
	P/A	.01	.28
	Age-group	.01	.99
Nonsocial Behaviours	TELD-2	.04	4.05*
	ToM	.00	.27
	P/A	.03	1.03
	Age-group	.00	.38

Note. ToM = Theory of Mind; P/A = Prudence and Altruism

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

The regression analyses revealed that for the entire sample, language abilities, experimental variables and age-group were significant predictors for seven of the naturalistic behaviours. Only those criterion variables for which the TELD-2 was not a significant predictor after step one will be outlined.

For the criterion variable Cooperative Behaviours, after step one TELD-2 scores did not add anything to the prediction of these behaviours, $R^2=.00$, ($F(1, 117) = .33$, n.s.). After step two, there was a marginally significant increase in R^2 of 3%, ($F(2, 116) = 3.58$, $p = .06$). There was no significant increase in R^2 after steps three and four.

For the criterion variable Empathic Behaviours, neither TELD-2 scores nor any of the lab-based measures of social understanding added anything to the prediction of these behaviours. After the addition of age-group in step four there was a marginally significant increase in R^2 of 3%, ($F(7, 111) = 3.07$, $p = .08$).

For the criterion variable Engaging the Experimenter, after step one TELD-2 scores did not add anything to the prediction of these behaviours, $R^2= .00$, ($F(1, 117) = .10$, n.s.). After theory of mind abilities were added in step two there was a marginally significant increase in R^2 of 3%, ($F(2, 116) = 3.43$, $p = .06$). There was no change in R^2 after steps three and four (see Table 26).

Multiple Regression Analyses Predicting Peer Ratings for the Entire Sample

Regression analyses were also conducted to examine whether language skills, experimentally-based social-cognitive measures, or age were significant predictors of how children would be rated by their peers. Peer ratings and/or nominations provide information about how children are performing socially with others. In this analysis, the

predictor variables were entered in the same manner as with the naturalistic observations. Similar to previously reported findings for the entire sample, the results predicting peer ratings also revealed an inconsistent pattern of results, neither language nor the lab-based social-cognitive measures consistently predicted children's naturalistic behaviours. Only those criterion variables for which the TELD-2 was not significant after step one will be outlined.

This analysis revealed that after step one, TELD-2 scores were not significant predictors of friendship scores, $R^2 = .00$, ($F(1, 118) = .00$, n.s.). There was an incremental change in R^2 after theory of mind abilities were entered in step two, accounting for 4% of the variance in the prediction of friendship scores, ($F(2, 117) = 4.59$, $p < .05$). There was no change in R^2 after steps three and four.

Multiple Regression Analyses Predicting Parent and Teacher Ratings for the Entire Sample

A final series of regression analyses were conducted to determine whether language skills, experimentally-based social-cognitive measures, or age-group were significant predictors of parent and teacher ratings of children's prosocial skills and problem behaviours. Again, these ratings provide information about how children are performing socially with others. In this analysis, the predictor variables were entered in the same manner as with the naturalistic observations and peer ratings. The results predicting parent and teacher ratings revealed that language abilities more consistently

Table 27. Multiple Regression Analyses Predicting Parent and Teacher Ratings for the Entire Sample

Criterion	Predictors	Total Sample	
		R ²	F
Parent Intentional	TELD-2	.14	17.49***
	ToM	.02	2.96+
	P/A	.02	.73
	Age-group	.03	3.97*
Parent Conventional	TELD-2	.08	9.89**
	ToM	.02	2.54
	P/A	.02	.80
	Age-Group	.01	1.65
Teacher Intentional	TELD-2	.21	30.36***
	ToM	.00	.00
	P/A	.01	.60
	Age-group	.04	6.61*
Teacher Conventional	TELD-2	.08	10.84**
	ToM	.00	.22
	P/A	.03	.96
	Age-group	.07	8.67**
Teacher Prosocial Skills	TELD-2	.15	18.66***
	ToM	.00	.22
	P/A	.01	.58
	Age-group	.04	5.84*
Parent Prosocial Skills	TELD-2	.07	8.62**
	ToM	.01	1.26
	P/A	.01	.45
	Age-group	.00	.24
Parent Problem Behaviours	TELD-2	.01	1.96
	ToM	.00	.55
	P/A	.07	2.06+
	Age-group	.00	.53

Note ToM = Theory of Mind

P/A = Prudence and Altruism

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

predicted adults ratings than did the remaining predictor variables. There was only one criterion variable for which the TELD-2 scores were not significant after step one.

For the criterion variable Parent Problem Behaviour Scale scores, TELD-2 scores and theory of mind scores were not significant predictors. After prudence and altruism scores were entered in step three there was a marginally significant increase in R^2 of 7%, ($F(6, 102) = 2.06, p = .09$). There was no change in R^2 after step four.

Multiple Regression Analyses Predicting Naturalistic Observations for 3-year-olds

These analyses revealed that for 3-year-olds, language abilities, lab-based social-cognitive measures, and age did not consistently predict naturalistic behaviours. Only those criterion variables for which the TELD-2 was not significant after step one will be outlined (see Table 28).

For the criterion variable Cooperative Behaviours, after step one TELD-2 scores did not add anything to the prediction of these behaviours, $R^2 = .00$, ($F(1,57) = .77$, n.s.). After the addition of theory of mind abilities in step two, R^2 change = .04, ($F(2,56) = .14$, n.s.). When prudence and altruism scores were entered in step three, there was an incremental increase in R^2 of 15%, which was significant ($F(6,52) = 2.52, p \leq .05$). When age was entered in step four there was an incremental increase in R^2 of 7%, which was significant ($F(7,51) = 5.16, p \leq .05$).

After step one, TELD-2 scores were not significant predictors of Parallel Play behaviours, $R^2 = .02$, ($F(1,55) = .33$, n.s.). When theory of mind abilities were entered in step two, there was an incremental increase in R^2 of 15%, which was significant, ($F(2,54) = 9.69, p \leq .01$). There was no significant increase in R^2 after steps three and four.

Table 28

Multiple Regression Analyses Predicting Naturalistic Observations for 3-year-olds

3-year-olds			
Criterion	Predictors	R ²	F
Cooperative Behaviours	TELD-2	.00	.08
	ToM	.04	2.18
	P/A	.15	2.51*
	Age	.07	5.16*
Parallel Play	TELD-2	.02	.95
	ToM	.15	9.69**
	P/A	.05	.85
	Age	.00	.24
Empathic Behaviours	TELD-2	.05	3.08+
	ToM	.02	1.11
	P/A	.02	.35
	Age	.08	4.67*

Note. ToM = Theory of Mind
P/A = Prudence and Altruism
+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

After step one, TELD-2 scores were marginally significant predictors of Empathic Behaviours accounting for 5% of the variance, ($F(1,57)=3.08, p=.08$). The addition of theory of mind abilities in step two did not add to the prediction of Empathic Behaviours, $R^2=.02, (F(2,56)=1.10, n.s.)$. When prudence and altruism scores were added in step three there was no indication that these were reliable predictors of Empathic Behaviours, $R^2=.02, (F(6,52)=.83, n.s.)$. When age was entered in step four, there was incremental increase in R^2 of 8%, ($F(7,51)=4.67, p \leq .05$ (see Table).

Multiple Regression Analyses Predicting Peer Ratings for 3-year-olds

Regression analyses were also conducted to examine whether language skills, experimentally-based social-cognitive measures, or age were significant predictors of how children would be rated by their peers. Peer ratings and/or nominations provide information about how children are performing socially with others. In this analysis, the predictor variables were entered in the same manner as with the naturalistic observations. Only those criterion variables for which the TELD-2 was not significant after step one will be outlined.

This analysis revealed that for 3-year-olds, after step one, TELD-2 scores were not significant predictors of empathy concern for others, $R^2=.01, (F(1,58)=.46, n.s.)$. When theory of mind scores were added in step two there was no indication that these were reliable predictors of empathy concern for others, $R^2=.00, (F(2,7)=.86, n.s.)$. After prudence and altruism scores were added in step three there was an insignificant increase in R^2 of 11%, ($F(6,53)=.14, n.s.)$. When age was entered in step four there was an incremental increase in R^2 of 11%, which was significant, ($F(7,52)=7.25, p \leq .01$),

implying that some other developmental variable is at work here.

Multiple Regression Analyses Predicting Parent and Teacher Ratings for 3-year-olds

A final series of regression analyses were conducted to determine whether language skills, lab-based social-cognitive measures, or age were significant predictors of parent and teacher ratings of children's prosocial skills and problem behaviours. Again, these ratings provide information about how children are performing socially with others. In this analysis, the predictor variables were entered in the same manner as with the naturalistic observations and peer ratings. Only those criterion variables for which the TELD-2 was not significant after step one will be outlined (see Table 29).

When TELD-2 scores were entered in the first step, these scores were marginally significant predictors of Parent Prosocial Skills Scale scores, ($F(1,5)=3.61$, $p = .06$, accounting for 6% of the variance in these scores. There was no change in R^2 with the addition of the remaining predictor variables.

Multiple Regression Analyses Predicting Naturalistic Observations for 4-year-olds

A similar set of regression analyses were conducted with the 4-year-old age-group. In this analysis, the predictor variables were entered in the same order as those entered for 3-year-olds. Only those criterion variables for which the TELD-2 was not significant after step one will be outlined (see Table 30).

After step one, TELD-2 scores were not significant predictors of Parallel Play scores, $R^2 = .03$, ($F(1,56)=1.45$, n.s.). When theory of mind scores were added in step two there was an incremental increase in R^2 of 9%, which was significant, ($F(2,55)=5.33$, $p < .05$). There was no change in R^2 with the addition of the remaining predictor

Table 29

Multiple Regression Analyses Predicting Parent and Teacher Ratings for 3-year-olds

3-year-olds			
Criterion		R ²	F
Parent Intentional	TELD-2	.08	4.77*
	ToM	.00	.16
	P/A	.02	.26
	Age	.00	.00
Teacher Conventional	TELD-2	.27	19.40***
	ToM	.02	1.26
	P/A	.08	1.57
	Age	.05	3.61+
Teacher Prosocial Skills	TELD-2	.30	22.32***
	ToM	.10	8.71**
	P/A	.07	1.53
	Age	.02	1.42
Parent Prosocial Skills	TELD-2	.06	3.61+
	ToM	.00	.16
	P/A	.04	.52
	Age	.02	.93

Note. ToM = Theory of Mind

P/A = Prudence and Altruism

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

variables.

After step one, TELD-2 scores were not significant predictors of Simple Interactive Parallel Play scores, $R^2 = .00$, ($F(1,56)=.07$, n.s.). When theory of mind scores were added in step two these scores did not reliably improve R^2 , ($F(2,55)=.04$, n.s.). When prudence and altruism scores were added in step three there was an incremental increase in R^2 of 15% which was marginally significant, ($F(6,51)=2.36$, $p = .06$). There was no change in R^2 after step four.

After step one, TELD-2 scores were not significant predictors of Engaging the Experimenter Scores, $R^2 = .00$, ($F(1,58)=.16$, n.s.). When theory of mind scores were entered in step two there was an increase in R^2 of 6%, which was marginally significant, ($F(2,57)=3.48$, $p = .06$). There was no change in R^2 after the addition of the remaining predictor variables.

Multiple Regression Analyses Predicting Peer Ratings for 4-year-olds

Regression analyses were also conducted to examine whether language abilities, the experimental measures, or age were significant predictors of how children would be rated by their peers.

This analysis revealed that TELD-2 scores were not significant predictors of children's popularity or friendship status, $R^2 = .03$, ($F(1,58)=1.88$, n.s.). When theory of mind abilities were entered in step two there was an incremental change in R^2 , accounting for 10% of the variance in children's friendship status scores, and this was significant, ($F(2,57)=6.68$, $p \leq .01$). There was no change in R^2 after the addition of the remaining predictor variables (see Table 31).

Table 30

Multiple Regression Analyses Predicting Naturalistic Observations for 4-year-olds

4-year-olds			
Criterion	Predictors	R ²	F
Cooperative Behaviours	TELD-2	.10	6.38*
	ToM	.01	.38
	P/A	.02	.26
	Age	.00	.18
Parallel Play	TELD-2	.03	1.45
	ToM	.09	5.33*
	P/A	.02	.26
	Age	.00	.00
Simple Interactive Parallel Play	TELD-2	.00	.06
	ToM	.02	.04
	P/A	.15	2.36+
	Age	.00	.38
Engaging Experimenter	TELD-2	.00	.16
	ToM	.06	3.48+
	P/A	.08	1.25
	Age	.01	.31
Nonsocial Behaviours	TELD-2	.08	4.83*
	ToM	.00	.01
	P/A	.06	.87
	Age	.00	.13

Note. ToM = Theory of Mind
P/A = Prudence and Altruism
+ $p \leq .10$; * $p \leq .05$

Table 31

Multiple Regression Analyses Predicting Peer Ratings for 4-year-olds

4-year-olds			
Criterion	Predictors	R ²	F
Friend	TELD-2	.03	NS
	ToM	.08	6.68**
	P/A	.05	.74
	Age	.00	.04
Empathy	TELD-2	.04	.11
	ToM	.04	2.22
	P/A	.17	3.04*
	Age	.00	.04

Note. ToM = Theory of Mind
P/A = Prudence and Altruism
+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

After step one, TELD-2 scores were not significant predictors of empathy concern for others scores, $R^2 = .04$, ($F(1,58)=2.27$, n.s.). After step two, theory of mind abilities did not reliably improve $R^2 = .04$, ($F(2,57)=2.22$, n.s.). When the prudence and altruism scores were added in step three there was an incremental increase in R^2 , accounting for 17% of the variance in empathy concern for others scores, and this was significant, ($F(6,53)=3.04$, $p \leq .05$). There was no change in R^2 after step four.

Multiple Regression Analysis Predicting Parent and Teacher Ratings for 4-year-olds

Finally, regression analyses were conducted to determine whether language skills, experimentally-based measures of social understanding, or age were significant predictors of parent and teacher ratings of children's prosocial skills and problem behaviours. In this analysis, only TELD-2 scores emerged as a significant predictor for any of the criterion variables. The findings revealed that after step one, TELD-2 scores accounted for 24% of the variability in Parent Intentional scores, ($F(1,53)=17.16$, $p < .005$). When theory of mind scores were entered in step two there was an increase in R^2 of 4%, which was marginally significant, ($F(2,52)=3.15$, $p = .08$). There was no change in R^2 after the addition of the remaining predictor variables.

In summary, the regression analysis revealed an inconsistent pattern of results, neither language abilities nor the lab-based social-cognitive measures consistently predicted children's naturalistic behaviours. Theory of mind emerged as a unique predictor above and beyond what was accounted for by language abilities more often in the 4-year-olds.

Exploratory Analysis

Relationship Among the Experimental Measures, Questionnaires, Naturalistic Observations, Family Size and Birth Order. ToM abilities have been associated with family size (Jenkins & Astington, 1995; Perner et al., 1994) and birth order (Lewis et al., 1996; Ruffman et al., 1998). The family environment also modifies children's social abilities (Pettit et al., 1991), and parents play a role in children's delay abilities (Silverman & Ippolito 1995). For these reasons, it was important to determine whether family size and birth order were associated with any of the experimental measures, questionnaires or naturalistic observations in the present study. Pearson product-moment correlations were computed to examine these relationships³.

Theory of Mind. For 3-year-olds, there was a marginally significant association between family size and theory of mind abilities, $r = 0.2445$, $p = .060$. Three-year-olds with more siblings showed higher levels of theory of mind abilities. Birth order was not associated with theory of mind abilities for 3-year-olds. For 4-year-olds, there was no relationship between theory of mind abilities, family size and birth order. Note that other studies have reported effects of these variables. However, approximately 48% of the children in the present work were only children compared to 29% in Perner et al.'s (1994) study and 32% in the Astington and Jenkins (1995) study. For this reason, it was decided to combine the data of children with siblings, and create a dichotomous family size

³ Because previous research has shown a linear increase in false belief understanding with the number of older siblings (i.e., Ruffman et al., 1998) the family size and birth order variables can be considered at least ordinal data. As such, correlational analyses were deemed appropriate.

category: those with siblings and those without⁴. A *t*-test comparing theory of mind scores of children with no siblings ($M = 4.08$, $SD = 3.08$) with scores of children with siblings ($M = 4.50$, $SD = 3.06$), indicated that there were no performance differences based on family size, $t(118) = .15$, n.s.

Prudence and Altruism. For 3-year-olds, there was only one significant positive correlation between birth order and a prudence and altruism trial type and that was with shared gratification without cost $r = 0.27$, $p \leq .05$. There were no associations between family size and any other prudence and altruism trial types for the younger age-group. For 4-year-olds, there was a significant positive association between shared gratification without cost and family size $r = 0.31$, $p \leq .05$, and a marginally significant association between shared gratification without cost and birth order $r = 0.22$, $p = .08$.

Sociometric Measures. For both age groups there were no associations between empathy status, friendship status, and either family size or birth order.

Naturalistic Observations. For 3-year-olds, there were no associations between any of the naturalistic observations and either family size or birth order. For 4-year-olds, there was a marginally significant negative association between interactive play and birth order $r = -0.23$, $p = .08$. There were no other associations between the naturalistic observations and either family size or birth order.

Revised Vineland Socialization Scale. There were no associations between the RVSS (neither parent nor teacher subscales), family size and birth order for the 3-year-old

⁴ Visual inspection of the scatterplot with family size versus theory of mind scores revealed that there were no linear or non-linear relationships.

group. This same pattern of results was also found for the 4-year-old group.

Social Skills Rating System. A marginally significant negative correlation was found between family size and parent ratings of children's prosocial skills for the 3-year-old group. All other correlations between SSRS subscales, family size, and birth order for this age group were not associated. For the 4-year-olds, family size was significantly negatively associated with teacher ratings of children's problem behaviours ($r = -0.36, p \leq .01$), and significantly positively associated with teacher ratings of children's prosocial skills ($r = 0.24, p \leq .05$). Parent scores were not correlated with family size. Teacher ratings of children's problem behaviours were negatively correlated with birth order ($r = -0.25, p \leq .05$). Birth order was not associated with any other parent or teacher subscale scores for the age-four group.

Parent Prudence Questionnaire. For 3-year-olds the number of strategies children used to delay was marginally correlated with family size ($r = 0.24, p = .08$). Parent delay strategies and total prudence scores were not correlated with family size for the age-three group. In addition, birth order was not correlated with any of the PPQ subscales for 3-year-olds. There were no correlations reported between family size, birth order and PPQ subscales for the 4-year-old group.

Chapter Four

Discussion

The main goal of the present work was to explore the behavioural correlates of various lab-based measures of social understanding in preschool-aged children. In the following sections the role that children's social understanding had on each of the social behaviours that were investigated will be discussed. The main findings will be integrated and conclusions will be drawn with respect to children's social understanding during the preschool years. Finally, the limitations of the present study will be discussed and directions for future research will be highlighted.

Theory of Mind

The results of the theory of mind tasks confirmed the much-replicated findings seen in children's theory of mind literature (i.e., Astington & Gopnik, 1991; Perner, 1991). In the present study, 4-year-olds achieved significantly higher theory of mind scores, in comparison to 3-year-olds. One of the unique features of the present study was that, in contrast to most previous studies in theory of mind research that have used relatively small samples, the present study was conducted with a large sample of 3- and 4-year-old children (n=120). Also, each age group consisted of an equal number of boys and girls. Given that no gender differences were found on theory of mind tasks, these results indicate that gender does not play a role in the acquisition of mental state understanding.

The present finding that performance on the appearance-reality task was worse than performance on the false belief task is inconsistent with previous work. For example, Gopnik and Astington (1988) found that performance on the representational change task

was worse than performance on the false belief task. Frye et al., (1995) also found that performance on the representational change task was worse than performance on the false belief task. In contrast, Moore et al., (1990) found that performance on the false belief task was worse than performance on the representational change task. Wimmer and Hartl (1990) found no differences in difficulty between tasks. If we consider these previous findings and the results of the present work, it appears that all three outcomes are possible. Given the significant intercorrelations among these tasks in the present work, this suggests that these abilities are tapping children's knowledge that the mind is representational. As previously mentioned, past research has shown that all three abilities develop at the same time; around age four. It may be that task characteristics account for the differences in outcomes reported in studies.

It would appear that a more general, underlying, cognitive ability accounts for the age-four transition observed in children. These findings are consistent with the interpretation posited by researchers who contend that theory of mind development is linked to the age-related changes that occur in executive functioning in the preschool years (e.g., Davis & Pratt, 1995; Frye et al., 1995; Hughes, 1998; Moore, Jarrold et al, 1995; Russel et al, 1991; Zelazo et al., 1995). Children can perform successfully on theory of mind tasks if they are able to mentally process or manipulate incoming information while holding "on-line" conflicting concurrent information. For instance, in the original false belief paradigm, children must simultaneously consider two conflicting pieces of information. They are asked to override their current knowledge that an object is in location B, so that they can respond on the basis of another's conflicting false belief that

the object is in location A. This suggests that what appears to develop around age-four is the ability to gain greater inhibitory control of mentalizing abilities so that children can deal with two conflicting pieces of information at the same time. The original information is inhibited while the new information is considered. One option is chosen.

The concept of working memory has to do with the on-line processing of representational information in order to solve problems. According to Baddeley (1986), working memory is dynamic, it is a computational space in which information relevant to a current task is maintained and compared to other incoming information (irrelevant information is inhibited). A number of current researchers have documented links between working memory and theory of mind abilities in preschoolers. For example, in the Hughes' (1998) study, theory of mind abilities were related to three executive function abilities: working memory, inhibitory control, and attentional flexibility. Davis and Pratt (1995) also reported a relationship between theory of mind abilities and working memory. This suggests that advancements in cognitive capabilities develop in concert with social understanding.

Prudence and Altruism

As predicted, there was a significant age effect revealed in the present study, 4-year-olds were more likely to delay gratification for self, for sharing, and for the purpose of solely benefiting another. This finding is consistent with the work of the Thompson et al. (1997) and Moore et al. (1998), studies that showed that 4-year-olds were more likely to delay in order to receive superior future rewards for self and for sharing with another. Despite the fact that the older group achieved significantly higher scores for all trial types,

findings indicate that both age-groups show a similar developmental pattern for the emergence of future-oriented prudence and altruism. For example, contrast analyses showed that, for both ages, the tendency to delay was greater for the delay of self-gratification trial type than in the delay condition that would solely benefit another. Also for both ages, sharing with another that did not involve a cost to the self (shared gratification without cost) was greater than the delay for self-interest. Similar to the work of Moore et al. (1998), the present study also found that both ages delayed more in the self-gratification condition than in the delayed sharing conditions. In the present work, both ages achieved the highest mean scores for the condition that did not involve delay (shared gratification without cost). These findings suggest that as young as three years of age, in situations that involve immediate rewards, most children prefer to share with others. However, in delay situations, even though children will still share, most children would more often chose a greater future reward for self before opting to share with another, or giving up a reward altogether.

Like Thompson et al. (1997), and Moore et al. (1998), the present study also found a significant correlation between the sticker condition "one sticker for self now" and either "two for self later" or "one each later" for the younger age-group. In the present work, this association was even stronger for the older children. In fact, for the older children, three of the sticker choices were significantly intercorrelated, one was marginally correlated. That is, the sticker choice delay of self-gratification versus delay of other-gratification. This suggests that although children's ability to voluntarily exert self-control for the sake of a greater future payoff for self and other develops from a basic social-

cognitive mechanism, a significant developmental shift occurs around age four that further enhances children's ability to be less impulse driven and more capable of planning for future outcomes.

The present study also found that 4-year-old girls demonstrated a significantly greater ability to delay self-gratification than their male counterparts. This finding is consistent with previous work on gender differences in children's delay behaviours (Logue & Chavarro, 1992). It is surprising, and somewhat unexpected from the literature on gender differences in socialization, that girls in the present study would choose to delay self-gratification rather than choosing to select the more altruistic condition, that of giving up a reward in favour of solely benefiting another. Even though evidence is somewhat contradictory, differences in the socialization of boys and girls suggests that girls are more empathic and responsive to the needs of others (Zahn-Waxler et al., 1992), are more able to regulate their own emotional reactions when others are distressed (Eisenberg, Fabes, Carlo, Speer, Switzer, Karbon, & Troyer, 1993), and are generally reared to suppress self-gratification in order to fulfill others' needs (Low, 1989). Moreover, the higher levels of impulsivity and hyperactivity seen in boys (American Psychiatric Association, 1994) likely contributes to their reduced ability to sustain delay of gratification for rewards that they may desire greatly. It is possible that social influences as the women's movement which encourages women to embrace positive self-attributions for their success may have led to less disparity in sex-role socialization in young girls. It may be that these influences have helped young girls develop a more self-nurturing perspective, that is, to place their needs before the needs of others. The gender results revealed in the present work need to be

substantiated with future research.

There is an additional key facet of the present findings that provides support for the contention that the expression of future-oriented self-control encompasses several factors. That is, the positive relations between language skills and future-oriented behaviours (a finding congruent with Rodriguez et al., 1989), found only in the older group, suggests that the more sophisticated verbal abilities of older children enable them to use effective self-instructional delay strategies that make waiting easier. Further, it is likely that children with highly-developed language skills may be able to think differently about rewards. Instead of focussing on the “hot” or consummatory properties of the reward that make waiting more difficult, they may be able to think about the more abstract qualities of the reward that make delay easier (i.e., Mischel & Mischel, 1983). The ability to suppress these conflicting consummatory properties likely involves some measure of cognitive flexibility such as working memory capacity. This claim is consistent with the views of several researchers (i.e., Moore, Jarrold, et al., 1995; Russell et al., 1991; Thompson et al., 1997; Frye, Zelazo, & Palfai, 1995) who propose an executive function analyses to account for the social-cognitive changes observed in 4-year-olds.

Taken together, the results of the prudence and altruism sticker choices indicated clear developmental differences. Four-year-olds appear to have the mental flexibility to simultaneously consider the conflicting information presented to them with two sticker choices, and to act in a manner that indicates their preference to wait for a greater future reward for self and other. In contrast, 3-year-olds have difficulty considering potential future desires for self or other when such options are in conflict with their immediate

current desires. However, it is clear that in addition to cognitive competence, such factors as gender and language abilities also exert key influences on the development of future-oriented behaviour.

Relationship Between Experimental Measures

In the present study, a number of noteworthy correlations emerged between the experimental measures. It is interesting that there were no associations whatsoever among the experimental variables for the younger age group. The lack of an association between future-oriented thinking and theory of mind for 3-year-olds is consistent with the work of Moore et al. (1998). Also, similar to Moore et al. (1998), there were significant associations between the experimental measures for the older age group. There were several methodological differences between the Moore et al. (1998) study and the present work, including differences in sticker trial types, and the fact that Moore et al. included desire tasks in their theory of mind battery. Nevertheless, it is notable that similar to Moore et al., the present work also found a relationship between the delay of shared gratification sticker choice and theory of mind tasks for 4-year-olds. The most significant association was with the sticker trial type that involved a choice between shared gratification in a current situation and theory of mind abilities. There was also evidence of an association between the delayed sharing option and theory of mind abilities. Finally, there was evidence of a weak association between delay of self-gratification and theory of mind abilities.

The present findings suggest however that those 4-year-old children who understand the representational capacity of the mind, are also able to think ahead and plan

for the future well-being of others (i.e., correlations between theory of mind and 1SN/2OL and theory of mind and 1SN/1EL), share with others (i.e., correlation between theory of mind and 1SN/1EN), and to a lesser degree, plan for future self-interests (i.e., weak association between theory of mind and 1SN/2SL). These findings also suggest that preschool-aged children do require a certain level of cognitive ability in order to behave in a prosocial manner. Failure to find any associations between mental state understanding and future-oriented behaviour in the younger age-group clearly suggests that they do not possess the requisite social-cognitive skills. Such a finding is in keeping with the growing recognition that the expression of children's prosocial tendencies likely occurs in conjunction with the development of such social-cognitive abilities as imaginative skills, perspective-taking abilities (Weidman & Strayhorn, 1992), future-oriented behaviour (Thompson et al., 1997), and the development of metarepresentational abilities (Perner, 1991).

The above-noted findings are unique for two reasons. First, the present results revealed associations among all four prudence and altruism trial types in 4-year-olds. Such findings have not been demonstrated in previous work in this area. Second, and perhaps more central to the present work, correlations associated with a child giving up a reward for another (i.e., that is, to share with another in the future or to give up self-gratification in favour of solely benefitting another's future interests) were the most significant. This suggests that around age four, children who are keenly aware of the mental states of others, are also able to use this knowledge in social situations in a decisively prosocial manner. Four-year-olds are able to act in a manner that promotes the

future interests of self and other. Presumably, efforts intended to benefit others would more than likely be associated with positive peer interactions, and peer status.

Sociometric Measures

In contrast to Rizzo (1988) who found that older children were more popular than younger children, the present study found that older children's friendship status scores were not significantly higher. Clearly, many of the present findings have demonstrated that 4-year-olds possess many skills that previous research suggests may advance their sociometric status, and overall peer relations. For example, they possess sophisticated language skills, they understand the psychological nature of relationships, and they can engage in future-oriented thinking that enables them to act in a manner that promotes the future well-being of self and others. Such skills would enable 4-year-olds to initiate and maintain friendships, simply because they would be able to understand and respond effectively to their peers' needs; behaviours that potentially make them more popular and liked by their peers.

There are several possible explanations as to why older children did not emerge as more popular. First, this finding fits well with the view of researchers (Ladd & Mars, 1986; Rizzo & Corsaro, 1995) who suggest that friendship status is influenced by various features associated with children's socio ecological environments. Children in the present study attended preschools and/or day cares with differences in class size, physical layouts, daily routines (i.e., play activity, nap/quiet time, outings), teachers' philosophical orientation, teacher ratio, frequency of child's weekly attendance, strategies for conflict-resolution, and degree of contact with parents. It is likely that any one of these

environmental factors could have been a leveller that obstructed children's ability to exhibit social competencies that would have strengthened their status among peers.

MacDonald and Cohen (1995) have suggested that the accuracy with which children are able to discern the same-sex peers who like and dislike them influences their peer social interactions. This contention may apply to ratings from both sexes. It may be that older children may not be accurate in their knowledge of who dislikes them. Given the speculation that popular peers may take a more active, directive role in friendships (Rizzo, 1988), it is possible that children who rate themselves as more popular than their actual sociometric status, continue to exhibit assertive social behaviours that their peers would label as "bossy" or "mean." For example, during administration of the friendship status measure, it was common for children to make comments such as, "I don't like him. He's mean to me." whenever they placed the picture of a child they disliked in the sad-face box. Since children in the present study were not asked to select the children they believed rated them as popular, it is not currently possible to determine the likelihood of the suggestion above. In future, it would be advisable to also assess the accuracy of children's evaluation of their own sociometric status. Such information would be helpful in assisting children to identify and modify behaviours that others find distasteful, and in the process help to improve the quality of peer relations.

This study also showed that 4-year-old girls were rated as slightly more popular than their male counterparts. Although this result is modest, it is in line with findings noted in the literature with respect to gender differences in friendship status, prosocial behaviour and empathy for others. One possible explanation for this discrepancy may be

that since young boys are generally more hyperactive, and impulsive (American Psychiatric Association, 1994), and they are socialized to be less sympathetic and nurturing in their interactions than girls (Eisenberg & Lennon, 1983), peers may view such behaviours negatively and rate boys less favourably. Alternatively, it may be that setting differences (Strayer & Roberts, 1989), and situational factors differentially reinforce girls' prosocial, cooperative exchanges with others, behaviours that provide more reasons to like them. Direct support for this suggestion was not confirmed by the naturalistic data in the present experiment.

It is also interesting that we did not find an age effect for the empathy concern measure. It is difficult to know what to make of this result given the findings of correlational analyses for the empathy concern for the older group. It has been suggested (i.e., Hymel, 1983) that rating-scale sociometric measures are superior to nomination procedures for preschool-aged children. Nomination procedures obtain information about three members of a child's peer group, whereas rating scales obtain data about the peer group. Indeed, children do not have as much difficulty predicting a peer's future behaviour if they are presented with quantitative information about the person (such as that presented in rating-scales) instead of categorical information (Dozier, 1991). Children in the Dozier study used past behavioural information about their peers to predict how nice, or how helpful, a peer would be in the future.

It may be that some of the younger children in the present study, who likely were not aware of empathic expressions, may have found it difficult to respond to the somewhat abstract nature of the task. One further possibility is that young children may have found

it difficult to restrict their selection to just three peer group members when they were shown pictures of many peers. For those children who have a mentalistic awareness of empathic--they recognized the positiveness associated with such an attribution--it may have been difficult for them to exclude themselves (several children did in fact nominate themselves and were corrected). In order to avoid some of the difficulties discussed here, it may be helpful in future to change the empathic concern measure from its current format into a rating-scale format similar to friendship status. In addition, it would also be beneficial to provide pictorial vignettes of helping situations so that children have a conceptual focus as a basis for their choices.

Relationship Between Experimental Measures and Sociometric Measures

For the older age group, not only was there a significant correlation between theory of mind and friendship status, but friendship status was also significantly positively associated with all prudence and altruism trial types. Past studies have shown that children who are kind, empathic, and behave in an adaptive fashion, especially in conflict-ridden situations, are the recipients of more prosocial acts, and are rated as more popular by their peers (Strayer, 1981; Zahn-Waxler et al., 1992). However, the present work is the first to demonstrate a connection between children's mental-state knowledge, their ability to engage in future-oriented thinking, and a child's ability to coordinate their interaction skills with their peers such that others are rating them as more popular than children who do not understand the psychological nature of human behaviour. This finding is consistent with Slomkowski and Dunn's (1996) claim that lab-based measures of social understanding are likely good predictors of young children's social skills in

naturalistic settings, especially with their peers.

The fact that there was no association between empathy concern for others and theory of mind abilities in the younger age group is consistent with Dunn's (1995) finding that understanding emotions is not present around age 40 months (age of younger group in present sample ranged from 39 to 46 months). As with friendship status, empathy concern was associated with the composite theory of mind score for the older group. This finding suggests that young children who understand the representational capacity of the mind are also more capable of recognizing the emotional needs of their peers and they use this knowledge to respond with expressions of empathy toward distressed peers. The present data is congruent with Harris, Johnson, Hutton, Andrews, and Cooke's (1989) finding that 4-year-old children predict and explain emotions with reference to a theory of mind. Older children who displayed such positive social behaviours as empathic identification with peers were also rated as more liked by their peers.

Another noteworthy correlation emerged for the older group. Those older children who altruistically gave up an immediate reward for self in favour of solely benefiting another were judged by their peers as being empathic. These associations imply that children who possess such cognitive abilities as theory of mind and future-oriented thinking are able to use this knowledge to display certain prosocial behaviours in naturalistic settings that influences the nature and quality of their peer relations. It is clear that older children use their knowledge to interact with others in a meaningful way. The fact that these associations were not present in the younger age group suggests that children who have not yet acquired these cognitive skills likely do not interact with others

in a purposeful, goal-directed manner. These younger children who do not understand the psychological nature of relationships, and also do not understand that accurate processing of emotional cues from others would enable them to choose appropriate behavioural responses that would make them more popular with their peers.

Naturalistic Observations

Consistent with existing literature (i.e., Radke-Yarrow & Zahn-Waxler, 1984; Zahn-Waxler et al., 1992), the present study also found support for the premise that prosocial interventions increase with age. In the present study, 4-year-olds displayed higher frequencies of helping behaviours than their 3-year-old counterparts. Given that older children in the present sample were aware of the mentalistic aspects of relationships, they could promote the future well-being of self and others, they possessed language skills, and were in fact more vocal than 3-year-olds (as evidenced by the higher scores achieved by older children on the Interactive Play behaviours), it was expected that they would exhibit significantly greater peer-oriented prosocial responses. One likely possibility for our limited finding was the short duration of the free-play session. Although Astington and Jenkins (1995) used a similarly brief play session, most current researchers (i.e., Brown et al., 1996; Hughes & Dunn, 1997; Slomkowski & Dunn, 1996) examining the behavioural correlates of lab-based social understanding have used observational periods ranging from 20 to 60 minutes. Another procedural difference between these studies and the present study was that children played alone; the experimenter was not present during the play session. Even though children in the present study were acquainted (e.g., they had known each other for a minimum of six months),

both the brief play period and the experimenter's presence likely curbed children's prosocial tendencies. Indeed, numerous researchers (Caplan & Hay, 1989; Rodd, 1989; Strayer, 1981) have suggested that adult presence often influences the frequency and type of peer-directed prosocial behaviours.

As predicted, younger children's complexity of peer interaction was less sophisticated than that of older children. Consistent with Howes's findings (1983; 1988), 3-year-olds in the present sample had marginally higher rates of parallel play (eye contact only), whereas older children had significantly higher rates of interactive play (vocalizations directed toward peers) and reciprocal and complementary play. These differences in increased rate of sophisticated peer-interaction with age suggest that older children's cognitive and linguistic competencies may promote such abilities as self-awareness, self-regulation, and perspective-taking, that permit older children to initiate more complex social exchanges. It is likely that this sophisticated style of peer contact enables older children to not only achieve acceptance within the peer group but also to establish and maintain stable friendships. According to Dickens and Perlman (1981), children who are able to develop close friendships are less at risk for developing later adjustment problems because early friendships promote social development and serve socialization functions across the life span.

Relationship Between Experimental Measures and Naturalistic Observations

The results of the correlational analyses between the experimental measures and naturalistic observations revealed that for both age-groups, associations were few and modest. It is likely that the brief play period did not provide children with sufficient time

to display their prosocial tendencies, especially for those children who achieved high scores on lab-based measures of social understanding. Nevertheless, it is notable that, despite the low rate of prosocial behaviours in the younger age group, a significant relationship emerged between theory of mind abilities and cooperative behaviours. This finding suggests that just as children's understanding of others' minds is beginning to emerge, they appear to be using this information to act in mutually-beneficial ways with others. It is likely that 3-year-olds cooperative behaviours these were undertaken without a sophisticated mentalistic understanding of behaviour. As mentioned, consistent with the vast amount of empirical research, the present study also found that false belief understanding was beyond the conceptual capabilities of 3-year-olds. Thus, it is more conceivable that, at this early age, engaging in such positive peer interactions as cooperative play and mutual-goal setting may help to promote the development of theory of mind abilities. It is likely that participation in social interactions with others enables 3-year-olds to begin to accurately process social cues and through their accumulated experience in different situational contexts, over time, they gain an understanding of the psychological nature of behaviour. Therefore, it is possible that 3-year-olds with a rudimentary understanding of mental states use these skills to figure out the nuances associated with diverse peer interactions, and ultimately to effectively resolve any discrepancies between the psychological needs of self and others. This highlights the importance of further exploring how children with an initial understanding of mental states use this knowledge in their social exchanges.

Surprisingly, the present study revealed few significant correlations between 4-

year-olds' lab-based social understanding and their naturalistic behaviours during the free-play peer session. It is interesting that most associations involved theory of mind abilities and were in the expected direction. Correlations between 4-year-olds' theory of mind abilities, and engaging the experimenter, and theory of mind abilities and nonsocial behaviours were marginally negatively significant. These results suggest that 4-year-olds with sophisticated social understanding skills spend their play time in collaborate peer interactions (as evidenced by their higher levels of reciprocal and complementary play, interactive play, and prosocial activities) rather than spending time eliciting adult-oriented exchanges. One possible explanation for this finding is that teachers may be encouraging and reinforcing 4-year-olds to behave in a more cooperative, self-regulatory, and independent fashion so that they are prepared for their imminent entrance into kindergarten. As a result, preschool teachers may be cultivating the kinds of behavioural tendencies that have been shown to be highly-valued by kindergarten teachers (Rubin & Daniels-Beirness, 1983).

There were several findings indicating that children who understand mental representation appreciated the causal connection between behaviours and mental phenomena and they guide their own behavioural responses to achieve more mutually-satisfying peer exchanges. The negative correlations between theory of mind abilities and nonsocial behaviours and theory of mind abilities and parallel play suggests that those with mental state understanding do not spend a great deal of their play time engaged in nonsocial activities, nor do they spend considerable time in less sophisticated styles of play. It is likely that these children spend more time initiating cooperative peer play.

Second, the negative correlation between children's ability to share with others in a current state and nonsocial behaviour suggests that 4-year-olds are in fact attempting to meet mutual current needs and the end result of this affiliative process is that they are less involved in nonsocial activities.

Dunn (1995) has provided empirical evidence that different aspects of social understanding, that is, understanding beliefs and understanding emotions, reveal different patterns of correlations over time. In the Dunn (1995) study, understanding of emotions at 40 months was related to children's positive perception of their school social experience at the end of the kindergarden year as well as children's understanding of conflicting emotions at age six. In contrast, children's understanding of false belief at 40 months was associated with children's negative perception of school experiences at the start of the kindergarden year. Consistent with Dunn's (1995) findings, the present data also revealed different patterns of correlations between theory of mind abilities and naturalistic behaviours, and between empathic concern for others and naturalistic observations in both age groups.

Relationship Between Experimental Measures and Questionnaires

It is interesting to note that the pattern of findings that associations between the experimental measures and questionnaires were numerous and in the expected direction for 4-year-olds, whereas the correlations for 3-year-olds were few and modest. In contrast to the RVSS, there were considerably fewer correlations that emerged between parent ratings and experimental measures on the SSRS. On both the RVSS and the SSRS, the number of correlations that emerged between teacher ratings and experimental

measures were fairly consistent. Overall, there were fewer relations between teacher ratings and experimental measures.

With respect to between-source correspondence, for both the RVSS and the SSRS, there were only two modest associations between parent and teacher ratings for 3-year-olds. It is interesting that parents and teachers were in agreement about 3-year-olds' problem behaviours. For the older group, parent and teacher ratings were more strongly correlated for both rating scales. In fact, parents and teachers were in agreement about 4-year-olds problem behaviour as well as their prosocial behaviours. Since the present study was the first to examine the relations between several aspects of children's lab-based socio-cognitive development and behavioural ratings from both parents and teachers, there is limited prior research with which to compare the present findings. Attention will now be turned to discussing the significance and implications of these findings.

It is interesting to note that, for the younger age-group, there were minimal relations between the experimental measures and the rating scales. The results of the RVSS questionnaire were inconsistent with the previous work by Lalonde and Chandler (1995) who found that children's mental-state understanding was associated with teacher's ratings of their social competencies. Children in the Lalonde and Chandler study were younger (2;10-3;10) than those tested here. In the present work, in both age-groups, teacher ratings on the RVSS were not related to theory of mind scores. Only parent conventional scores were related to theory of mind scores for the older group. The other notable feature for the older group, on the RVSS, was that parent ratings were associated with almost every experimental measure. There are several possible explanations for these

findings.

Although Lalonde and Chandler (1995) designed the RVSS to discriminate between children's "Intentional" abilities (i.e., understanding of mental states) and "Conventional" abilities (i.e., understanding of social rules), the significant correlations between the subscales, for both parents and teachers, suggests that the subscales do not distinguish these concepts. It is possible that parents endorsed many items on the RVSS questionnaire because these items reflect many socially desirable skills that they would like their child to possess. Since the SSRS contains a problem-behaviour section, and the RVSS does not, parents may have been more accurate in their assessment of their children's social behaviours because they also had to consider and report about the problematic aspects of their child's behaviour. As noted, there were a fair number of only children in the present experiment. Parents of singletons may have more time to attend to their child's behaviour than do parents with more children, and because there are no siblings to compare developmental milestones against, they may rate their children slightly higher than their agemates, perhaps because singletons spend more time with adults. On the other hand, the similarity in the correlational pattern between teacher ratings on the RVSS and SSRS and children's lab-based cognitive skills suggests that children who possess these abilities are indeed seen by others to exhibit interpersonal sophistication and adaptive social functioning. It is likely that the greater self-awareness, the ability to exercise self-control in the face of ongoing and perhaps conflictual peer interactions, and the greater social insights exhibited by 4-year-old children are highly valued behaviours in classroom settings. Since preschool teachers must contend with more children on a daily

basis, they may organize the classroom along the very principles that would foster the development of such skills.

Relationship Between Sociometric Measures and Naturalistic Observations

The significant relationship between empathy concern for others and interactive play in the younger age group suggests that those 3-year-olds who are more vocal in peer interactions are viewed as displaying more empathic concern for others. The correlational results between friendship status and naturalistic observations in the 3-year-old group were somewhat surprising. First, friendship status was negatively associated with peer-directed vocalizations. This suggests that talkative 3-year-olds may not have the social finesse that is needed to initiate and coordinate peer interactions, and it is likely that their verbosity is viewed as bothersome to others in the play group. Consequently, they may have difficulty acquiring close friends. Thus, in the present study, 3-year-olds who spent more time in nonsocial activities achieved high sociometric ratings of peer popularity. This finding is consistent with research showing that not all nonsocial activity (e.g., a child playing on their own) is associated with negative peer status. For example, Rubin (1982) found that solitary-functional behaviours (repetitive motor actions or sensorimotor play) and solitary-dramatic play behaviours correlated negatively with peer popularity, whereas parallel-constructive activities (constructing artwork, puzzles or blocks in close proximity to another) were positively associated with peer popularity and teacher competency ratings. Given that the present study did not include a fine-grained analyses of nonsocial behaviours it is likely that these more adaptive nonsocial behaviours account for the present finding.

Four-year-olds who are rated by their peers as exhibiting empathic concern for others also spend less time in less sophisticated forms of social play such as parallel play. It is likely that these children are accurately processing affective cues and responding to peers in a socially engaging manner.

Past research has shown that preschoolers' poor social competencies and peer rejection place them at risk for long-term adjustment problems (Denham et al., 1994; Mischel et al., 1988). Given the lack of developmental differences in nonsocial activities found in the present study, in future, it would be helpful to delineate which kinds of nonsocial behaviours are more predictive of children's long-term social functioning. Additionally, it would be important to determine if aggressive behaviours, and social-cognitive immaturity lead to negative, long-term social outcomes.

Relationships Between Questionnaires and Naturalistic Observations

Consistent with previous research (Achenbach et al., 1987; Pettit et al., 1991; Rubin & Clark, 1983), the present study also found that independent direct observations of children's social skills are related to informants' (i.e., parents and teachers) ratings of children's social competencies and/or problem behaviours. It was striking that the rate and magnitude of this correspondence was greater in the older age group than in the younger age group. The novel feature in the present study was the use of the RVSS questionnaire to examine the correspondence between parent and teacher ratings' of children's mental state understanding and independent direct assessments of children's social skills.

It is interesting that despite the overall low rates of prosocial behaviours in the

present study (especially cooperative behaviours), several strong associations emerged in the older age group between cooperative behaviours and the RVSS subscales. It is likely 4-year-olds who engage in cooperative behaviours learn that there are multiple viewpoints about the world. Indeed, these children may be confronted with the reality that they are wrong in their construal about a given situation, or about a particular person. Children quickly learn that certain behavioural responses will either thwart or promote goal attainment. For example, the present data indicated that 4-year-olds who were rated by parents and teachers as possessing keen prosocial skills, mentalizing abilities, and social conventions did not spend a great deal of time attempting to gain an adult's attention in social interactions. Research has shown that teachers will often ignore complaints about peer behaviours and teachers may also avoid intervening in peer disputes in order to encourage children's self-esteem and independence (i.e., Corsaro, 1994). Children learn to modify their behaviour based on their acquired knowledge. This suggests that 4-year-olds in the present study used social information to update any misinformation or to resolve conflictual social exchanges whereby encouraging more adaptive social functioning that was noticed and applauded by parents and teachers. Another possibility is that successful social interactions enhance children's cognitive development.

It is important to avoid attempting to infer causality from correlational data.

However, the present data has shown that children with keen lab-based social understanding skills (i.e., 4-year-olds) exhibit distinctly different behavioural patterns in social interactions than their younger counterparts. For example, there were numerous highly significant correlations between how 4-year-olds were performing socially (as

measured by the sociometric measures and ratings by parents and teachers) and measures of experimental-based social understanding. In contrast, the pattern of associations in the younger age group was minimal, non-existent, or in an unexpected direction. For example, several unexpected associations emerged between questionnaire subscales and naturalistic observations in the younger group. Marginally negative associations were found between: (1) Parent Intentional scores and Cooperative Behaviour scores, (2) Teacher Conventional scores and Simple Interactive Parallel Play scores, and (3) between Children's Delay Strategies scores and Reciprocal and Complementary Play scores. If we consider these findings together with other previously-reported findings in the younger group such as: (1) the lack of associations between the experimental measures, and (2) minimal and unexpected associations between the experimental measures and questionnaire subscales these differences suggest that 3-year-olds do not perform socially in a comparable manner to 4-year-olds. Given the pattern of results for the younger age group, it would appear that 3-year-olds with rudimentary conceptual knowledge are beginning to act in ways that are beneficial to them. The presence of a few significant associations between 3-year-olds' naturalistic observations and rating scales suggests that others acknowledge the social competencies displayed by this age group.

The strong associations in the older group complements existing literature that has also shown that social interactions with others promote social understanding (Dunn et al., 1991; Perner et al., 1994), especially interactions with friends or peers (Brown et al., 1996), or more socially knowledgeable members of their social world (Lewis et al., 1996). Our findings are also consistent with Astington and Olson's (1995) suggestion that young

children make sense of their social experience by activating their conceptual knowledge. Collectively, these findings are consistent with previous research suggesting that 4-year-olds' keen mentalistic insights enable them to respond in a purposeful adaptive manner in peer social situations (Brown et al., 1996; Slomkowski & Dunn, 1996; Watson, Nixon, Wilson, & Capage, 1999).

Family Size and Birth Order

Despite the fact that past research has shown a significant positive relationship between family size and theory of mind abilities (i.e., Jenkins & Astington, 1996; Taylor & Carlson, 1997; Perner et al., 1994), this relationship was not found in the present study. One possible explanation for this negative finding could be our sample composition. In the present work, 48% of the sample consisted of only children. This differs considerably from studies reporting a positive relationship between family size and understanding mental states. For example, 32% of the Jenkins and Astington sample (1995) were only children, whereas 47% of the children had one sibling. Similarly, there were about 29% only children, and 55% of the children in Perner et al.'s study (1994) had one sibling. Although the greater proportion of children with siblings in the other studies may have contributed to the expression of this effect, the large sample size in the present study suggests that statistical power was sufficient enough to identify a relationship between family size and mental understanding, if it were present. In studies that have employed a large sample size (444 children), and a more equal distribution in terms of the number of siblings a child has (i.e., Ruffman et al., 1998), there was a consistent significant finding, one that clearly demonstrated the facilitative effect for family size and birth order on

mentalistic understanding. In the present study, the unequal distribution of the number of siblings each child precluded the examination of such effects. For example, while 40% of the sample had one sibling, 9% had two siblings, and a mere 2% had three siblings. Moreover, 71% of present sample first born, while only 20% were second born. However, it is reasonable to speculate that if the present sample composition was more evenly distributed, then results would be more consistent with previous work (i.e., Jenkins & Astington, 1996; Perner et al., 1994; Ruffman et al., 1998).

The association between family size and shared gratification without cost found in both ages suggests that sibling interaction promotes the development of children's sharing behaviour. In the preschool period, sibling interactions are fairly extensive and intimate. In families with two or more children this increases the likelihood that conflict will arise about sharing of possessions, favourite toys, and individual time with parents. It is likely that parents try to resolve conflictual sibling interactions by encouraging greater empathic concern for the distressed sibling and advocating discourse about feeling states. However, given the lack of associations between family size and any of the delay conditions, it would appear that such discussions are rather present focussed, and likely do not include conversations about considering or dealing with future-oriented sharing. Consistent with Hom and Knight's (1996) position, it is possible that parents do in fact feel that effective future-oriented self-control strategies are learned through self-discovery.

Anecdotal evidence in support of Hom and Knight's view was obtained from many parents who commented about the questions in the author-compiled Parental Prudence Questionnaire (the author readily concedes that this questionnaire may need some further

refinements). In general, parents felt that some of the scenarios represented more the notion of a “bribe”, than an opportunity to assist their child to think about and plan for future desires. Consequently, parents felt that they typically would not promote such inducements as a way to get their children to obtain desired rewards. However, through discussion, parents reported that they had not considered the fact that parental encouragement in such interactions could help to foster the development of delay behaviours. Even though much literature attests to the fact that 4-year-olds are capable of future-oriented thinking, the above comments suggest that parents, because they are unaware of the metacognitive value of these daily interactions, may do little to scaffold the acquisition of future-oriented thinking.

There was no association between friendship status and either family size or birth order. This lack of an association was also found with the empathy concern measure. It is possible that as with theory of mind and family size, the skewed sample composition also prevented the expression of any potential effects here as well. Past research does in fact indicate that child-rearing practices, maternal warmth, and family environment and interaction style influence children’s empathic tendencies (Eisenberg et al., 1993), and their social competencies with peers (Pettit et al. 1991).

Limitations of Present Study

When the present study was designed and carried out, it was not known that Frith, Happe, and Siddons (1994) had also revised and added supplementary mentalizing items to the Vineland Adaptive Behavior Scales (VABS; Sparrow, Balla, & Cicchetti, 1984) to compare against children’s performance on Theory of mind tasks, and teacher ratings of

children's social functioning. Frith and associates used a more stringent approach to establish the validity of the supplementary items than did Lalonde and Chandler (1995). Frith and associates gave 70 initial items to undergraduates and asked them to group items into mentalizing and non-mentalizing categories. The subset of items that emerged were then given to five theory of mind experts to rate. Based on the ratings from the experts (four of five experts had to agree on ratings), 16 final items were selected for each category. In contrast, Lalonde and Chandler (1995) asked "a panel of preschool teachers to rate the social competence of 30 of their young pupils" (pg. 173) from a list of 80 items. The resulting 60-item list was further shortened, and then sorted by Lalonde and Chandler into the "Intentional" and "Conventional" categories. There are also noticeable differences in item content, and item total (225 items in the Frith & Happe version, compared to 40 in the Lalonde & Chandler version) between the two studies. Also, Frith and Happe included the maladaptive behaviour section in their study. Collectively, these differences raise questions about the psychometric properties of the Lalonde and Chandler scale. However, since both studies selected to revise the VABS, this suggests that it is perhaps one of the most promising and appropriate measure with which to compare lab-based outcomes.

As previously mentioned, the cross-sectional nature of the present data does not permit inferences about the direction of causality to be made. Only with a longitudinal design would it be possible to identify which preschool social behaviours were prognostic of adaptive or maladaptive functioning in children's later years. Longitudinal studies would also help to identify which lab-based measures were better predictors of children's

long-term social functioning. Recent longitudinal studies by Brown et al. (1996) and Slomkowski and Dunn (1996) are good exemplars of the direction the research should be heading.

A final limitation of the present study was that children were observed for a brief one-time free-play session. It may be that the brief duration of time did not give children adequate time to exhibit prosocial behaviours at rates reported in other studies (Farver & Branstetter, 1984; Strayer, 1981). It is also possible that the presence of the experimenter and video camera distracted children and limited their peer play-time. Despite these limitations, it was notable that children with higher levels of lab-based social understanding exhibited greater rates of certain prosocial behaviours and a more sophisticated style of play. It was not possible with such a large sample to extend the time spent in each individual day care or nursery school because it would have been too taxing for both children teachers. In future, it may be helpful to extend the duration of the free-play session, in a smaller sample, so that a more fine-grained analyses of the observational data is possible.

Future Research

Based on the pattern of findings obtained in the present work several directions for future research will be discussed. Overall, the present study revealed that clear-cut developmental differences exist not only on how children perform on experimental tasks but also on how this knowledge enables children to behave in real-life situations. For example, the finding that all experimental variables were associated with friendship status in the older age group suggests that knowledge about mental states and future-oriented

thinking helps to cultivate 4-year-olds' peer popularity. It would be important to evaluate whether these measures of social understanding continue to be prognostic of peer popularity over time, especially when children enter school. It has been suggested by Price and Ladd (1986) that since familiar peers spend more time in positive interactions and coordinated play, the popularity or friendship ratings of familiar peers may be reflecting familiarity rather than friendship. Since the children in the present study were familiar peers it would be important to determine whether these children are able to initiate and maintain friendships when they enter kindergarden and are exposed to many unfamiliar peers. It would be important to examine whether these children be able to use their existing social competencies to negotiate the complex social nuances associated with this new environment. Such a longitudinal approach would also help to identify children at risk for developing emotional and behavioural problems because of the lack of friendships, and also help to identify which of the of the lab-based social understanding measures is more helpful in identifying children at risk for problematic peer relations. In this manner, children lacking the basic skills that permit entry into peer relations would be recipients of social skills training programs that would correct these deficiencies. Oden and Asher (1977) found that coaching of peer interaction skills was effective in increasing children's peer acceptance, and that this effect had a lasting outcome. Research has also shown that six-year-olds were able to decipher conflicting emotions following a 10-week training program (Bennett & Hiscock, 1993).

In the course of conducting the present work, it became apparent that even though the naturalistic observations provided useful information about how children were

performing socially with others, a more detailed and fine-grained coding scheme of peer interaction behaviours would have been desirable. For example, scoring of more subtle features such as facial expressions, emotional responses, body orientation during peer interactions, as well as success and failure rates following initiation into peer play would have provided a rich data base of information about children's social behaviour and this would have contributed to a more precise relationship to lab-based measures of social understanding. Such a fine-grained analysis would be recommended with a smaller sample and with an experimental videotaping set-up that could record these subtleties. It would also be advisable to extend recoding session time so that children can feel at ease with the novel. Furthermore, a content analysis of children's vocalizations would permit greater insights into the kinds of verbal exchanges that either promote or hinder successful interactions.

The data presented here also have implications for clinical populations. Happe and Frith (1996) found that children (aged six to 12 years) with conduct disorder performed as well as normal controls on tests of false belief understanding. However, in contrast to normal controls, children with conduct disorder engaged in a high degree of antisocial behaviour (i.e., lying, cheating, bullying) as rated by their teachers. Furthermore, a study by Blair, Sellars, Strickland, Clark, Williams, Smith, and Jones (1996) found that psychopaths do not have a theory of mind deficit. Clearly, these populations are using their mentalizing abilities in a manner that is disadvantageous to others. By using the fine-grained behavioural observation analysis described above it would help to investigate which behaviours correlate with theory of mind abilities in such populations. Such an

analyses would detail more precisely the social skills deficits in these populations, and it would aid in designing effective training/rehabilitation programs that would address the specific needs of these populations.

There is evidence that children's social understanding is influenced by their familial environment (Dunn et al., 1991; Lewis et al., 1996; Perner et al., 1994). The relationships between children's social understanding and social behaviours documented in the present study and by others (Brown et al., 1996; Slomkowski & Dunn, 1996; Watson et al., 1999) suggest that these social skills are likely a consequence of children's familial experiences. It may be that children raised in neglectful or abusive households perform well on lab-based social-cognitive measures. However, they may display rather maladaptive social skills because of their parent relationship history. Mayes and Cohen (1996) contend that when there is unpredictability, hostility, and inconsistency in parental interactions, children do not learn to trust the accuracy of their interpretations of others' behaviour. Consequently, children may withdraw when others are either affectionate or angry for fear that it will eventually lead to negative repercussions. As a result, these children do not learn to develop lasting, stable relationships and are at risk for long-term social dysfunction (i.e., Price & Ladd, 1986). This suggests that, in future, in addition to direct observations, emphasis should also be placed on acquiring information about family interaction styles, family conflict-resolution strategies, and family discourse styles because these empirical investigations would provide invaluable information for clinicians who are treating abused and neglected children.

The multidimensional approach employed in the present study provided a plethora

of information about children's social understanding in the preschool years and yielded greater insights into children's peer social behaviour. In the study of children's social understanding, lab-based measures are indispensable and will be most useful when applied within a multidimensional framework. Since a small portion of the variance in children's social behaviours was accounted for by lab-based social-cognitive measures this suggests that future research is needed to determine what other variables will help to improve predictions about children's social behaviour over and above that explained by lab-based measures. In future, it may be beneficial to include investigations with different social partners in different social contexts as these may help to account for a greater proportion of the variance in studies aimed at better understanding children's social interaction skills.

Conclusions

In summary, on the basis of the preceding results, several conclusions can be reached regarding preschoolers' social understanding. Although many of the present conclusions are based on correlational analyses, it is reasonable to extrapolate that a connection exists between future-oriented thinking, mentalistic understanding, and aspects of children's social interactions as shown in peer play. The present data provides empirical evidence of clear developmental differences in these associations. Compared to 3-three-olds, 4-year-olds achieved higher scores on lab-based measures of social understanding and these abilities enabled them to interact in meaningfully different ways with others. Moreover, 4-year-olds' interaction abilities were also seen as more sophisticated than 3-year-olds by peers, parents, and teachers. Three-year-olds used their restricted abilities in an indiscriminate fashion and were periodically successful in their

interactions. In contrast, 4-year-olds showed more purposeful, goal-directed social behaviour. The pattern of associations varied for different aspects of social understanding.

These findings would be consistent with theory suggesting that young children require sophisticated cognitive capabilities to successfully coordinate the complex and ever-changing aspects of their social world. Both theory of mind, and prudence and altruism require children to mentally consider two conflicting pieces of information at the same time. The similar age transition suggests that these abilities rely on similar underlying cognitive changes. It also seems that an intricate and interdependent relationship exists between children and their social environment. Children's social world provides the material on which they practice and with experience children come to understand their social world. It also seems that different aspects of social-cognitive understanding develop along different developmental paths. The present data showed that theory of mind and prudence and altruism differed with respect to which aspects of children's social behaviours they were associated with.

Appendix A

SOCIAL DEVELOPMENT IN PRESCHOOL CHILDREN

Research Project: In a few days time, your child will receive an envelope containing details about a research project that is about to begin at your child's daycare setting. The aim of the project is to look at the development of social behaviour in the preschool years. This project is being conducted by a fifth year Ph.D. student from Dalhousie University.

This study has been approved by the Dalhousie University Graduate Studies Research Ethics Board and the daycare director of your child's school.

Various tasks will be used to access the skills of children in their daily life. These measures are routinely used to evaluate such skills as social interaction with others, decision-making abilities and language skills. Another component of the research involves looking at children's interactions with others.

If after reading about the study, you and your child would like more information about this project, please contact Ms. Maria Angelopoulos at **466-4294 (home) or 494-3480 (lab)**.

Appendix B

Brief Description of Research Study

Researcher: Ms. Maria Angelopoulos Supervisor: Dr. Chris Moore

Purpose: Your child and you are being invited to volunteer for a study looking at when preschool-aged children develop an understanding that people's behaviour is governed by mental states such as desires, beliefs and intentions and how they may use this information to interact with others in their environment.

Social Development In the Preschool Years: Past research suggests that just prior to children's fourth birthday, children begin to understand that they are distinct individuals from others, each person behaves in certain ways for a variety of reasons. However, most of the research in this area has been studied with experimental tasks, few studies have attempted to understand the link between success on these tasks and children's real world behavior. The present research project hopes to overcome this limitation by looking at the kinds of behavior children display in their play time with their peers, as well as by getting feedback from parents and teachers about some of the behaviours which we feel may be related to children's understanding of mental state concepts. By examining these issues together we can begin to develop a clearer and more integrated picture of children's social behavior during the preschool years.

Participation: If your child chooses to take part in this study, your child will be asked to complete a number of tasks. A description of each task is provided in the Consent Form for Research Using Human Subjects which is included in all study packages. Each parent and/or guardian will also be asked to complete three questionnaires that will provide us with information about your child's activities, and social involvement. Teachers will also be asked to provide information about children's behavior. The time required for this study, including rest breaks, will be about 1 hour. All information obtained will be treated with strictest confidentiality.

Risks and Benefits: Participation in this study will provide no direct benefits to you or your child.

Voluntary Consent: Your child and you are under no obligation to consider this request to participate in the study. However, if you would like to find out more about the study, please feel free to contact me by telephone for further information.

Sincerely,
Maria Angelopoulos Phone: 494-3580 or 466-4294

Appendix C

Consent Form for Research Using Human Subjects

Study Title: Theory of Mind Development

We would like to ask your permission for your son or daughter to become involved in some child development research to be conducted at his/her school by researchers from Dalhousie University. This project will investigate preschoolers' understanding of other people's minds, and the implications of this for social behaviours. The children will participate in some tasks in which they will be shown common objects which appear to be something other than what they are. Children will then be asked questions about the objects. Another task will involve the researcher giving the child a sticker book and then asking the child to make choices about some stickers. The child will choose who will receive stickers (the child, or a female research assistant, or both) and when the stickers will be received (immediately or at the end of the game). Children will be permitted to keep their sticker books and any stickers they have chosen. In another task children will be asked to identify which children in the school they consider to be their friends and those who are not. Children will be asked to place a picture of the selected friend or non-friend into a box marked for that purpose (a "neutral" box will be available if children are undecided about an individual). Children will be asked to select children whom they consider to be helpful when others were upset. The final task is a measure of children's general language development, wherein children will be asked to respond to pictorial or verbal information. It is expected that the children will find the games enjoyable. However, if for any reason a child does not wish to participate or is unwilling to complete the session, the experiment will be discontinued for that child. The session will typically take about 1 hour, including rest and refreshment breaks.

In order to allow later scoring of test material the session with your child will be videotaped. In order to understand how child express the knowledge they have shown on the above tasks, a video-taped free play session with 3 to 4 children will occur about a month after the first session. This video completes the study. Only those researchers directly involved with the project will have access to the tapes and/or questionnaires. All information will be kept in a locked cabinet in the laboratory. Written consent will be obtained from the parents if it is necessary to screen video-tapes for educational purposes. Participant anonymity will be preserved whenever results are presented in meetings or through publications to the scientific/medical community.

Parents will be asked to complete three questionnaires assessing various aspects of your child's behavior and activities. Your view of your child's behavior and development are very important to this study. Teachers will be asked to complete two questionnaires assessing your child's behavior and activities in a different setting.

Participation in the study is entirely voluntary. If you are willing to allow your

child to participate in this research, please fill in the attached permission form and return it to the school. Please rest assured that all information obtained will be kept strictly confidential. Once information has been collected, your child's name and your name will be removed and replaced with a number so that your identification is not connected with any responses. There will be no direct benefit to you or your child by participating in the study. There are no foreseeable risks associated with participation in the study.

Results of the study will be mailed to participants upon completion of the project, if you so desire. Along with the results of the study, each child participating in the study will also receive a certificate, personalized with their name and date of participation. This project has been reviewed and approved by the Dalhousie University Graduate Studies Ethics Board and by the director at your child's daycare.

If you have any questions regarding the nature of this research, please feel free to contact Dr. Chris Moore (902-494-3458), research supervisor.

I have read all of the above information. I have been informed that all information gathered, including the identity of my child and myself will be kept strictly confidential. In addition, my child and I maintain the right to withdraw from the study at any time.

I give my consent for my child _____ to participate in this research study.

PARTICIPANT _____ SIGNATURE _____ DATE _____

RESEARCHER _____ SIGNATURE _____ DATE _____

Optional Request for Feedback

If you wish to receive a brief summary of the overall findings of this study when they become available, please provide a mailing address.

Name: _____

Street: _____

City: _____

Province: _____

Postal Code: _____

If you and your child are willing to participate in this research project, please include a recent photograph of your child so that it can be used in the task described above. Also, please provide the following information regarding family size.

Total number of people in the family _____.

Total number of siblings and ages _____.

Child's position in the family _____.

Appendix D

Theory of Mind Test Questions

Smarties

Representational change – What did you think was inside this box before you opened it–**ROCKS** or **SMARTIES**?

False belief - Another boy/girl hasn't opened this box before. What will he/she think is inside this box when he/she first sees it–**SMARTIES** or **ROCKS**?

Appearance - What does this look like it has inside–**SMARTIES** or **ROCKS**?

Reality - What is inside this really and truly–**ROCKS** or **SMARTIES**?

Candle

Representational change - What did you think this was before you held it in your hands–an **APPLE** or a **CANDLE**?

False belief - Another boy/girl hasn't held this in his/her hands before. What will he/she think this is when he/she first sees it– a **CANDLE** or an **APPLE**?

Appearance - What does this look like–a **CANDLE** or an **APPLE**?

Reality - What is this really and truly–an **APPLE** or a **CANDLE**?

Ball

Representational change - What did you think this was before you held it in your hands–a **BALL** or a **ROCK**?

False Belief - Another boy/girl hasn't held this in his/her hands before. What will he/she think this is when he/she first sees it–a **ROCK** or a **BALL**?

Appearance - What does this look like–a **ROCK** or a **BALL**?

Reality - What is this really and truly–a **BALL** or a **ROCK**?

Flashlight

Representational change - What did you think this was before you held it in your hands–a **PEN** or a **FLASHLIGHT**?

False Belief - Another boy/girl hasn't held this in his/her hands before. What will he/she think this is when he/she first sees it–a **FLASHLIGHT** or a **PEN**?

Appearance - What does this look like–a **PEN** or a **FLASHLIGHT**?

Reality - What is this really and truly–a **FLASHLIGHT** or a **PEN**?

Appendix E

Revised Vineland Socialization Scale

When completing the questionnaire please consider the child's behaviour in the past two months *only*. You may notice that some of these items seem simple, others too hard. However, because this form will be used with both younger and older children, it is important that you complete all the items. There are two sections to this questionnaire. For each statement given in Section 1, please indicate the child's current level of functioning using the following criteria:

2 = Yes, usually

1 = Sometimes or partially

0 = No never (I have never seen the child do this)

In Section 2, please rate the child's overall level of development for his/her age, using the 5-point scale provided.

Section 1

1. Plays with 4-5 children on cooperative activity without constant supervision ____
2. Explains rules of game or activity to others ____
3. States goals for him/herself and carries out activity ____
4. Acts out parts of story, playing part or using puppet ____
5. Makes own friends ____
6. Converses with others on topics of mutual interest ____
7. Has cooperative relationships with friends ____
8. Uses common household objects of other objects for make-believe activities alone ____
9. Engages in simple make-believe activities alone ____
10. Engages in simple make-believe activities with others ____
11. Follows rules in simple games without being reminded ____
12. Plays simple board game based only on change ____
13. Ends conversations appropriately ____
14. Able to comment on differences between his/her own *wishes* and those of another ____
15. Able to comment on differences between his/her own *feelings* and those of another ____
16. Tells simple jokes or plays on words ____
17. Has an imaginary friend or playmate ____
18. When involved in a conflict with a peer, the child has no trouble seeing the peer's point of view on the situation ____
19. When involved in a conflict the child gives reasons or explanations for not complying with others wishes ____
20. To resolve or end a conflict, the child offers a bargain or compromise (e.g., turn-taking, trade, etc.) ____

21. Follows rules in group games led by an older child___
22. Asks for assistance when having difficulty (with bathroom or getting a drink)___
23. Comforts playmates in distress___
24. Responds verbally and positively to good fortune of others ___
25. Honours a simple bargain with caregiver___
26. Asks permission to play with or use toy or object being used by another ___
27. Shares toys or possessions without being told to do so___
28. Takes turns while playing games without being reminded___
29. Says "thank you" when given something___
30. Says "please" when asking for something___
31. Responds appropriately when introduced to strangers___
32. Participates in conversation involving both peers and adults, without monopolizing it___
33. Permits conversation to continue without interruption___
34. Follows time limits set by caregiver___
35. Controls anger or hurt feelings when plans are changed for unavoidable reasons__
36. Controls anger or hurt feelings when denied own way___
37. Apologizes for unintentional mistakes___
38. Apologizes for hurting feelings of others___
39. Tries to explain or give excuses for his/her misbehaviour ___
40. Apologies or excuses include statement about what he/she "really meant" to do or say___

Section 2

How would you rate this child's overall level of maturity for his/her age? (Please circle)

	Intellectual Development	Social Development	Emotional Development
1. Well below average	1	1	1
2. Somewhat below average	2	2	2
3. Average	3	3	3
4. Somewhat above average	4	4	4
5. Well above average	5	5	5

Appendix F

Parent Prudence Questionnaire

Children are often given various opportunities in their daily life to select if they choose to receive a reward either immediately or in the future. Below is a group of scenarios concerning various daily activities parents and children engage in. Please read each statement carefully, then select the response that best describes your child.

1. At meal times children may not always wish to finish eating their food. In order to encourage children to eat a well balanced meal, parents may indicate to children that they may have a treat or their dessert if they finish eating their main meal. Children may comply with the parental request and decide to finish their food in order to receive their treat. Please indicate how easy it is for your child to change his/her behaviour.

Very Difficult _____ Difficult _____ Sometimes _____ Easy _____ Very Easy _____

2. Children often accompany adults on shopping trips. During these times children may be encouraged to cooperate with the adult in return for receiving a treat when the shopping trip is completed. Children may choose to cooperate in order to receive a later reward. Please indicate how easy it is for your child to change his/her behaviour.

Very Difficult _____ Difficult _____ Sometimes _____ Easy _____ Very Easy _____

3. Around the time of their birthday children may become overly excited. This may lead to some changes in way they normally interact with others (i.e., crying, clinging behaviour). Children may be told that continuing to engage in these undesirable behaviors may influence the presents they will receive on that special day. Children may opt to change their behaviour so that they will receive presents. Please indicate how easy it is for your child to change his/her behaviour.

Very Difficult _____ Difficult _____ Sometimes _____ Easy _____ Very Easy _____

4. The December holiday season is usually a time of great excitement for children. Often times, children cannot contain their excitement and they may begin to fuss, become extremely demanding, cry more easily, etc., during this busy time of the year. Children may be told that continuing to engage in these undesirable behaviours may influence the presents they will receive on that special day. Children may opt to change their behaviour so that they will receive presents. Please indicate how easy it is for your child to select to change his/her behaviour.

Very Difficult _____ Difficult _____ Sometimes _____ Easy _____ Very Easy _____

5. Children often receive an allowance, or they may receive money as a gift from others. Often times, they may decide to spend their money immediately, other times they may choose to save their money in a piggybank in order to buy a more expensive present for themselves at some later date. Please indicate whether your child is in the habit of saving his/her coins in order to buy something later in time. Please indicate how easy it is for your child to save money in order to buy something later.

Very Difficult _____ Difficult _____ Sometimes _____ Easy _____ Very Easy _____

6. Children sometimes choose to receive a reward immediately or they may decide they can wait to receive a reward sometime in the future. Often times, the amount of time children choose to delay may be determined by the value of the later reward. Please indicate how easy it is for your child to delay.

Very Difficult _____ Difficult _____ Sometimes _____ Easy _____ Very Easy _____

7. Below is a list of strategies individuals may use to help them wait for a later reward. In the first column please indicate which strategies your child uses on his/her own. In the next column please indicate which strategies you encourage your child to use in order to wait for later rewards.

Child's Own Strategies	Parental Suggestions
__ putting desired reward out of sight	__ putting desired reward out of sight
__ playing with a toy	__ playing with a toy
__ thinking about something else	__ thinking about something else

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