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**Preschoolers' Non-Social Play:
An Examination of Cross-Situational Stability**

by

Cherami Wichmann

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of

Master of Arts

Department of Psychology

**Carleton University
Ottawa, Ontario**

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STABILITY"**
submitted by **Cherami Wichmann, B.A.**
in partial fulfillment of the requirement for the degree of Master of Arts

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ABSTRACT

Different sub-types of non-social behaviours have been identified (Rubin, 1982). Solitary-passive play, thought to reflect social-disinterest, is not related to mother-rated temperament. Solitary-active play is associated with impulsivity, behaviour problems, and low peer acceptance. Reticent behaviours, thought to reflect social anxiety, are associated with hovering, anxious behaviours, and shyness. The latter two forms of behaviour were thought to reflect stable dispositions. This study explored the stability of these behaviour in 163 preschool-aged children, from a laboratory-like setting to the playground. Fifty-two children were targeted as extreme on solitary-passive, solitary-active, and reticent behaviour or as average, then observed on the playground. Children who would have been classified as "at risk" due high frequencies of reticence and solitary-active behaviours in the laboratory could not be differentiated from other children based on their playground behaviours. The implication for the risk status of these children in "real life" interactions is discussed.

ACKNOWLEDGMENTS

Well, I've done it, and although it wasn't always easy, I have had the love and support of many during these last two years. I must say that my Mom and Dad (and Brother) have been really great about encouraging me - especially when I was down. Drew, my best friend and sounding board, has not only lived through my stress with me, but also acted as my editor as well (no easy task). Of course, Tina my advisor has been wonderful - getting me through some of my rougher periods with encouragement and advice that somehow was always right. Others who have given me support include Rob Coplan, whose comments and suggestions were greatly appreciated, Lynn Giff who helped me through the administrative nightmare, and Lynne O'Neil who listened to my stressing and always managed to put it into perspective. Finally, to all my friends who have been there for me, Nicki, Sam, Bev and Chris, and all the others, thanks for everything. Without all of these people I don't know where I'd be right now (perhaps a sanitarium?).

CONTENTS

NON-SOCIAL PLAY, SOCIAL WITHDRAWAL AND SHYNESS	1
Definitional Issues	1
The literature extant	1
The present research	3
Research focus	3
Risk Status of Socially Withdrawn Children	4
Assessment of Non-Social Behaviours	6
Cognitive play	7
Social participation	8
The Play Observation Scale (Rubin, 1989)	10
Forms of Non-Social Behaviour	12
Behavioural withdrawal	12
Solitary-passive play	13
Solitary-active play	14
Social reticence	14
Distinguishing forms of non-social behaviour	15
Summary	16
Consistency of Children's Non-Social Play	17
Trait models of behaviour	17
Biological/Genetic perspective of Kagan	17
Interactive pathways of Rubin	18
State Models of non-social behaviour	19
Two-factor model of Asendorpf	19
Stability of non-social play	20
Summary	21
Impact of Familiarity/Novelty on Non-Social Play	22
Laboratory paradigms	22
Present study	24
Situational (non-social) novelty/familiarity	25
Social novelty/familiarity	25
Summary	27
Moving Toward the Playground as a Research Environment	28
Advantages of the playground	28
Behavioural constraint	28

Playground research	29
The playground and young children	29
The playground and elementary school-aged children	30
Cross-Situational generalization of behaviours	31
Present Research	32
Goals	32
Predictions	36
Behavioural constructs: Past and present	36
Extreme group creation	36
Stability of patterns of behaviour	37
Synopsis	38
METHOD	39
Overview	39
Subjects	40
Recruiting subjects: Parent permission	40
Permission for the second session	42
Demographics: session 1	42
Laboratory Observations	42
Lab free play	42
Area of play	44
Videotaping procedure	44
Experimental Toys	45
Behavioural coding for play session	46
Extreme Groups Targeting	49
Subject attrition	50
Playground sample	51
Playground Observations	51
Observations	52
Behavioural coding on the playground	53
Observational Reliability	55
Session 1	55
Session 2	55

RESULTS	55
Session 1: Non-Social Play in the Lab	55
Interrelations within the non-social variables	56
Relations between non-social variables	59
Relations between the non-social variables and social play.	59
Groups High in Non-Social Play	61
Behavioural observations	61
Differences in play as a function of group membership.	63
Differences among the target groups for aggression	63
Interrelations among variables of the non-social subsets.	64
Session 2: On the Playground	64
Behavioural observations	64
Differences in playground play based on group.	65
Differences in double-coded playground activities.	67
DISCUSSION	68
Non-Social Constructs in the Laboratory	69
Support for the validity of non-social constructs	69
Targeting children based on play observations.	70
Summary.	71
Non-Social Behavioural Variables	71
Solitary-passive play.	71
Laboratory observations	71
Stability.	72
Solitary-active play.	73
Laboratory observations	73
Stability.	73
Reticent behaviour	74
Laboratory observations	74
Stability.	74
Summary.	77
Re-Examination of Extreme Groups.	78
Case studies.	79
Indoors	79
On the playground.	80
Faces of Playground Behaviours	82

General Summary.	83
Limitations.	84
Session 1.	84
Practical issues	84
Theoretical issues	86
Session 2.	86
Practical issues.	86
Sample size	87
Targeting children	87
Groups selection problems	88
Playground Observation Scale	89
Theoretical issues.	91
Playground setup	91
Summary.	92
Suggestions for Future Research	93
Targeting issues	93
Playground observations	95
General Conclusions	97
Where do we go from here?	97
Impact of this study on the understanding of children's solitude	97
REFERENCES.	99

LIST OF TABLES

Table 1. Demographics for Both Phases of the Research	43
Table 2. Descriptives for the Non-Social Variables	57
Table 3. Comparison of Non-Social Variables Past and Present	58
Table 4. Relations Between Non-Social Variables and Social Play	60
Table 5. Descriptives for Laboratory Behaviour by Group	62
Table 6. Descriptives for Playground Behaviour by Group	66

List of Figures

Figure 1 Overview of Methodology	41
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List of Appendices

Appendix A: Play Observation Scale (Rubin, 1989)	108
Appendix B: Addendum to the POS.	125
Appendix C: POS Coding Form	126
Appendix D: Toy List	127
Appendix E: Guide to Playground Observations	128
Appendix F: Playground Coding Form	131

NON-SOCIAL PLAY, SOCIAL WITHDRAWAL, AND SHYNESS

Nearly everyone can remember those children who seemed different, who shied away from others and preferred to play alone, usually off to the side of the main area of interaction. These children may have been labeled "shy" or "socially withdrawn" by peers and teachers, and teased or ignored by classmates

Definitional Issues

Children who exhibit withdrawn behaviours and do not interact with peers are typically labeled as shy by laypersons. However, an examination of the research literature reveals that there are many concepts and definitions used to explain and describe the behaviour and characteristics of these children, leading to *many* different forms or conceptualizations of social withdrawal which may be interchanged. Some of the terms which are encountered in the literature extant include "inhibition", "behavioural inhibition" or "behavioural withdrawal", "behavioural isolation", "social withdrawal", and "social reticence". These terms represent distinct conceptualizations underlying different theoretical tenets. The present study focuses on one aspect of behaviour believed to be a behavioural indicator underlying shyness and social withdrawal - non-social play

The literature extant

Kagan and colleagues have utilized the term *inhibition* to refer to particular physiological reactions exhibited by a subset of the children they have studied (e.g., Garcia-Coll, Kagan, & Reznick, 1984, Kagan, Reznick, & Snidman, 1988, Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984, Kagan, Reznick, Snidman, 1987). The terms *behavioural inhibition* or *behavioural withdrawal* have been used by Kagan to

describe such behavioural reactions as a reluctance to approach novel stimuli and persons Asendorpf denotes children's latency to approach and speak to others as *behavioural inhibition*, however, he includes children's exhibition of solitary behaviours and lack of interaction with peers and adults in his definition as well (e.g., Asendorpf, 1990a, 1990b, 1991) Rubin has referred to children's exhibition of solitary play, onlooking and unoccupied activities as *behavioural isolation* (e.g., 1982, 1993), he uses the term *socially withdrawn* to refer to children selected by their classmates as shy, sensitive and preferring solitude (e.g., Rubin, 1993) Finally, Coplan and colleagues (Coplan, Rubin, Fox, Caulkins & Stewart, 1994) label children's exhibition of onlooking and unoccupied behaviours in the presence of peers as *social reticence*

The concepts discussed above represent merely a subsample of the ones used by researchers In addition to the plethora of terms and outlined in the literature, there are many different ways to assess the behaviours and characteristics of children thought to be withdrawn, leading to an additional source of confusion and controversy This controversy occurs because many researchers have utilized the *same* terms to describe children identified through *many* different methods For example, children identified because they exhibit a low frequency of interactions with peers may be called socially withdrawn, yet children identified by teachers as preferring to play alone have also been labeled this way These targeting procedures would seem to be addressing commensurate constructs, however the same children are not necessarily being targeted by these procedures

The use of different conceptualizations and operationalizations in the assessment and description of "shyness" and "social withdrawal" has led to a lack of cohesion and apparently conflicting findings reported by researchers (see Rubin & Asendorpf, 1993b for a discussion of definitional and conceptual issues). It is therefore important to attend to the subtleties of targeting and conceptual issues when examining the research on children's social withdrawal and shyness.

The present research

For the purpose of the present study, *social withdrawal* will denote children's reactions (e.g., wariness, fearfulness) to both novel and familiar social situations, and *shyness* will refer to children's inhibited reactions to novel social situations.

Research focus. Recently, the behaviours of the children described as "socially withdrawn" have become a focus of research interest. It has been suggested that children who do not experience sufficient quantity or quality of peer interaction may be "at risk" for difficulties of a social and social-cognitive nature. Studies have been conducted focusing on children's solitary play as a marker of possible concomitant and future social difficulties. Although children's solitude has been thought of as a unidimensional construct, it has now been established that children's non-social play has several facets (Asendorpf, 1991; Coplan et al., 1994; Rubin, 1982a, 1993). In the present study, the subsets of non-social behaviours are examined in the context of a modified laboratory situation as well as on the playground to further the understanding of children's solitude in diverse settings. The rationale for this research is that children's behaviours on the

playground will reflect their true play patterns, providing a more accurate view of their "play life" than their behaviour in a laboratory situation would allow.

Before discussing the present research further, the framework of this project will be set. Firstly, the importance of studying social withdrawal will be discussed with attention to the risk status of socially withdrawn children. In the second section of this introduction, the focus will shift to children's play and particularly non-social play: observational methods of examining children's solitude; and different forms of solitary behaviour. The third section will address the consistency of children's non-social behaviours, and state versus trait issues. The fourth section will focus attention on issues which may impact on non-social behaviours as assessed in the lab, such as novelty versus familiarity and indoor versus outdoor dimensions. The final section of the introduction will concern the goals and predictions of the present research: a brief overview of the study will be presented, and the hypotheses concerning this research will be discussed.

Risk Status of Socially Withdrawn Children

Children spend much of their time in the company of peers; in this milieu children develop much of the social and social-cognitive competence that will affect subsequent learning and social interactions (Rubin & Coplan, 1992). In support of this concept, it has been found by some that children who do not experience sufficient quantity or adequate quality of interactions with those in their social environment may experience later social and emotional problems (e.g., Altman & Gotlib, 1988; Rubin & Mills, 1988; Strauss, Forehand, Smith, & Frane, 1986). However, there is very little longitudinal research

which focuses on socially withdrawn children; the consequences of inadequate peer relations and the resulting risk status of children in the long run are unclear. There has, however, been several studies which have focused on concurrent risk and the short-term longitudinal effects of withdrawal on children (e.g., Rubin, 1993)

Socially withdrawn, elementary school-aged children appear to be at risk for developmental difficulties and inadequacies, especially of an internalizing nature (e.g., Hymel, Rubin, Rowden & LeMare, 1990; Parker & Asher, 1987; Rubin, 1985; Rubin & Mills, 1988; Rubin, Hymel, Mills & Rose-Krasnor, 1991). For example, children who are identified by teachers, peers, and through behavioural observations as socially withdrawn have been found to report more negative self-perceptions, express greater feelings of social anxiety and loneliness, and are more likely report feeling depressed in middle childhood and early adolescence (e.g., Rubin, 1993; Rubin & Mills, 1988; Rubin et al., 1991; Strauss et al., 1986).

As preschoolers, children who are identified behaviourally as socially withdrawn have been found to play less "confidently". In dyadic play situations, these children's social requests to play partners are more unassertive, and fewer in number than the requests of their more sociable agemates - they showed less social initiative (Rubin & Borwick, 1984; Rubin & Krasnor, 1986). Moreover, the requests withdrawn children do issue are of a 'low cost' nature. For example, children may try for the attention of playmates as opposed to trying to gain access to their toys, stop activity, or join the peers in play (Rubin & Borwick, 1984; Rubin & Krasnor, 1986). These requests are more likely to be rejected through noncompliance and non-responsiveness (Rubin, 1993; Rubin &

Borwick, 1984). Withdrawn preschoolers are less likely to play dominant roles in social interactions, and when they attempt to take on these dominant roles, albeit infrequently, they are often rebuffed (Rubin, 1993). This unintentional rejection, experienced before children become consciously rejected and isolated by their peers, could act as a significant source of anxiety and negative self-appraisal and thereby play a role in tainting future interactions

Based on the research discussed above, it appears that children's lack of social interaction with agemates may lead to later social and social-cognitive deficits which may affect withdrawn children's self-perceptions and the perceptions of their peers. This finding has led to the examination of children's solitude when among peers; specifically non-social play and behaviours in the company of agemates (e.g., Asendorpf, 1990a, b; 1991; Coplan, et al., 1994; Rubin, 1982, 1985).

Assessment of Non-Social Behaviours

Traditionally, children's non-social play has been treated as a uni-dimensional construct; lack of interaction with peers was seen in a negative light (Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Walker, Greenwood, Hops, & Todd, 1979). However, it is becoming more evident that children's non-social play is a more complex matter and must be dealt with as such (e.g., Asendorpf, 1991; Coplan et al., 1994). Typically, children's behavioural solitude when in the company of others has been examined through the use of direct observation. Children have been observed in situations in which there is

opportunity for peer play and the activities in which they engage have been categorized and recorded.

Direct behavioural observation is an objective method of studying children's non-social play with peers. One of the advantages of using this method is an ability to get an impartial account of children's activities. Observers can be trained to target specific behaviours of interest, and if kept blind to any characteristics of the children being observed, they can provide a less biased account of children's behaviours

Several different taxonomies have been developed to assess children's behaviours observationally; however, the examination of children's non-social play has been accomplished through the use of the Play Observation Scale (POS) of Rubin (1989), which was developed based on theoretical perspectives on children's play concerning cognitive levels of behaviour (Piaget, 1962; Smilansky, 1968), and social participation (Parten, 1932).

Cognitive play

Piaget (1962) acknowledged play as an important aspect of children's cognitive development, hypothesizing that children learn through the resolution of the cognitive conflict that is experienced as a result of differences in what they and others believe to be true. Building on the work of Piaget (1962), Smilansky (1968) described four different categories of children's cognitive play thought to represent fixed developmental levels:

1. *Functional* play encompasses forms of repetitive motor activity which may or may not utilize objects. Children engaging in functional play appear aimless' behaviours such

as repeatedly banging a truck on the floor for the physical sensation, repetitive vocalizations (e.g., aimlessly singing La-La-La), or screaming would fall under this class.

2. *Constructive* play involves goal-directed activity with a focus on creation or, alternatively, the use of an object for the purpose which it was designed. Constructive activities include passive behaviours such as reading, completing puzzles, and doing artwork, as well as active behaviours such as riding a bike to the sandlot, loading a dump truck, pushing it to a sand pile, and dumping the contents (without pretense).
3. *Dramatic* play includes those activities in which imagination is used to create a fantasy situation or objects are used to represent alternate entities. Children engaging in dramatic play may be playing Batman or Doctor; essentially any behaviour which involves some degree of imagination may be classed as dramatic play.
4. *Games-with-Rules* encompasses those activities in which predetermined rules govern the play; they can be altered in the course of play, but must remain intact. This category of behaviour would include card or board games, games of tag, or any form of behaviour which is constrained by rules. Even behaviours such as throwing a ball against a wall can be classed as "Games-with-Rules", if the participant is keeping score or is using some guideline to govern his or her behaviour.

Social participation

In addition to defining levels of cognitive play, it is also possible to classify children's behaviour on the basis of social participation. Parten (1932) developed a

hierarchy of social participation which included six categories; unoccupied behaviour, solitary play, onlooker behaviour, parallel play, associative play and cooperative play. Although Parten's (1932) categories of social participation have been hypothesized to follow a hierarchy, research has indicated that children may alternate between solitary and group play, not necessarily following the levels proposed by Parten (e.g., Moore, Evertson & Brophy, 1974; Rubin, 1982b). However, there has been some indication that there are developmental differences in social play: researchers (e.g., Ladd & Price, 1993, Rubin, Watson & Jambor, 1978) have found the play of kindergarten children to be more socially oriented than that of preschoolers. The hierarchy of social participation is as follows:

1. *Unoccupied* behaviour occurs when a child is not engaging in any activity - the child may be aimlessly looking around the room or sitting still in the corner, for example. An important component of unoccupied behaviour is a lack of focused attention on activities.
2. *Onlooking* behaviour occurs when the child is watching others without joining in the interaction; the child is focused on the behaviours of children around him or her. This behaviour is thought to be the first step in joining an ongoing interaction (Asendorpf, 1991); however this is not always the case, as for some children onlooking is an end in itself (Asendorpf, 1991).
3. *Solitary* play encompasses activities a child engages in on his or her own, within speaking distance of other children; there is no effort to involve others, and children are not influenced by others' play. An example of a child engaging in solitary activity might be, playing with toy cars in an area in which others are drawing. Such children

may also be off in the corner reading, playing doctor, or engaging in any other form of cognitive play, on their own.

4. *Parallel* play involves activities which children engage in by themselves near others, with similar toys although without interaction or interference with others. Children engaging in parallel play are being influenced by the activity around them, but not to the extent that their play becomes group oriented. An instance of this form of activity would be one in which one child builds a block structure, and another child playing nearby copies that structure without interacting with the first.
5. *Associative* play involves a group recognition a common activity.
6. *Cooperative* play is the highest form of play in terms of organization, and involves a division of labour and a group goal.

Based on the research of Rubin et al., (1978) there seems to be very little to outwardly distinguish associative and cooperative play categories. As a result, these two forms of social participation have been consolidated into the single category of *Group* play in much of the subsequent research. *Group* play would occur when children are interacting with each other either to complete a project, playing house, running around the room, or playing games such as tag.

The Play Observation Scale (POS; Rubin, 1989)

The categories of cognitive play and social participation discussed above have been combined by Rubin and colleagues (Rubin, Maioni & Hornung, 1976) to create a behavioural taxonomy which addresses both social and cognitive play (see Appendix A).

The cognitive play categories have been nested within the social participation categories of solitary, parallel, and group play. Within this scale, exploratory behaviours while typically described as a non-play activity, have also been nested within the social participation categories along with the cognitive levels.

Exploratory play is described as the examination of an object to glean information about its properties (particularly physical attributes). Exploratory play may involve an object which is proximal (e.g., in the child's hand) or distal to the child (i.e., across the room). Exploratory behaviour may include moving the limbs on an action figure to see how they work or picking up a truck, turning it upside down and examining the underside.

In sum, fifteen separate forms of play behaviours can be distinguished, as well as several non-play categories, including single-coded variables such as onlooking, unoccupied, transitional and teacher/researcher focused behaviour, and conversation, as well as rough-and-tumble play, aggression, and crying (see also Appendix B and C for relevant information).

The POS has been found to reliably distinguish forms of behaviour that relate to different indices of child competence, such as parent rating of child's temperamental characteristics (Asendorpf, 1991; Coplan et al., 1994); cognitive measures, social competence as rated by teachers and sociometric ratings (Rubin, 1982); and social problem solving (Rubin, 1993; Rubin & Krasnor, 1986). The forms of behaviour which have typically been assessed through the use of the POS and which have been found to be related to the aforementioned indices of competence include social play, and particularly non-social activities.

Forms of Non-Social Behaviour

Behavioural withdrawal. As previously mentioned, children's solitary play behaviours have been observationally assessed by researchers in the interest of learning more about the structure and meaning of children's non-social play in a social situation. Children's exhibition of onlooking and unoccupied behaviours, and solitary play have often been seen as an index of social withdrawal. Children who engage in high frequencies of isolated behaviour are often considered to be "at risk" for later developmental problems (Cowen et al., 1973; Walker et al., 1979). However, it is becoming increasingly apparent that there is not only one interpretation or consequence of behavioural solitude - in fact, in early childhood, some forms of non-social activity have been found to be normal and adaptive (e.g., Jennings, 1975; Rubin, 1982; Rubin & Mills, 1988).

In 1982, Rubin distinguished among different forms of isolated activity in preschool aged children for the first time. Based on the POS (Rubin, 1989; Rubin et al., 1978) he differentiated between solitary-passive and solitary-active play: *solitary-passive* behaviour consists of solitary-constructive and -exploratory play; *solitary-active* behaviour consisted of the categories of solitary-dramatic and -functional play (see also Rubin & Mills, 1988). Recently, a third subset of solitary behaviour, labeled "social reticence", consisting of onlooking and unoccupied behaviours, has also been identified in children ranging from preschool to 8 years of age (Asendorpf, 1991; Coplan et al., 1994).

It has been postulated that the three subsets of solitary behaviours reflect underlying differences of a psychological nature, and have different implications for a child at different ages (Coplan et al., 1994; Rubin, 1982; Rubin & Asendorpf, 1993; Rubin &

Mills, 1988). For example, solitary-passive, solitary-active and reticent behaviours were not found to be significantly associated in children from 4 to 6 years of age (Asendorpf, 1990a, 1990b, 1991; Coplan et al., 1994). It is these three groups of children who will be studied in the present research.

Solitary-passive play

Solitary-passive play consists of solitary-constructive and -exploratory activities. Solitary-constructive play includes activities such as building with blocks or drawing a picture away from the activities of others. Solitary-exploratory play encompasses activities such as the examination of an object to gain information about it.

Rubin and colleagues (Rubin et al., 1976, Rubin et al., 1978) found that 40% to 60% of children's non-social play during preschool/kindergarten age is of a constructive or educational nature. These behaviours, when displayed in early childhood, seem to indicate social disinterest and do not appear to reflect social incompetence (Asendorpf, 1990b, Coplan et al., 1994; Rubin, 1982). In young children, particularly before grade two or three, these forms of behaviour have been found to be adaptive, encouraged by teachers (e.g., Rubin 1982), and not negatively salient to the peer group (Rubin, 1985; Younger & Piccinin, 1989). In addition, these behaviours as exhibited by preschool aged children have not been found to be related to maternal ratings of shyness or impulsivity (Coplan et al., 1994).

Solitary-active play

Solitary-active behaviour involves the exhibition of solitary-dramatic and -functional play. Solitary-dramatic play occurs when children engage in pretense away from other children (e.g., playing "Superman" alone in the corner). Solitary-functional play consists of engaging in repetitive sensori-motor activities while alone. An example of this form of behaviour would be repeatedly pushing a truck back and forth without paying attention to the activity while sitting apart from other children.

It is believed that solitary-active behaviours reflect immaturity and impulsivity (Coplan et al., 1994; Rubin, 1982; Rubin & Mills, 1988). In addition, the children who exhibited these behaviours have been found to experience low peer acceptance even in early childhood, as well as manifesting an increased risk of externalizing problems later in life (Rubin, 1982, 1993; Rubin & Mills, 1988). Solitary-dramatic and solitary-functional behaviours as exhibited by preschool-aged children are related to maternal assessments of impulsivity (aggregated score of emotionality and activity level) on the Colorado Child Temperament Inventory (CCTI; Buss & Plomin, 1984) (Coplan et al., 1994).

Social reticence

A further behavioural subset termed shyness, behavioural inhibition, or social reticence (see Rubin & Asendorpf, 1993 for a review of the recent research concerning social withdrawal, shyness and inhibition in childhood) has also been distinguished. Reticent behaviour involves such activities as sitting/standing unoccupied, and observing others without subsequently attempting to join the interaction (Asendorpf, 1991; Coplan

et al., 1994). Onlooking and unoccupied behaviours as exhibited by preschool-aged children have been found to be highly associated with overt indications of anxiety (e.g., crying, automanipulatives), hovering on the edge of a group, poor performance on tasks in the presence of peers, and maternal ratings of shyness (Coplan et al., 1994).

Distinguishing forms of non-social behaviour

As noted above, the literature on social withdrawal seems to have confounded passive-solitude, reticence and active-solitude (e.g., Rubin et al., 1989, Rubin & Mills, 1988). This is a direct result of the fact that many researchers did not distinguish different forms of behavioural withdrawal in the course of their research (e.g., Strauss et al., 1986, Gottman, 1977; Rao, Moely, & Lockman, 1987, Furman, Rahe & Hartup, 1979). Instead, these researchers focused on children's lack of interaction and solitary behaviours; it is now apparent that groups of children observed and assessed in this manner were a heterogeneous sample. Findings generated from this research would be difficult to interpret based on our present knowledge base concerning the three forms of children's non-social play.

In addition to acknowledging the existence of the three subtypes of non-social play behaviours, it is important that these *not* be considered equivalent but different faces of the same coin. This warning is borne out by both Asendorpf (1991) and Coplan and colleagues (1994), who have found that in *early childhood* (from 4 to 6 years of age), solitary-passive, solitary-active and reticent behaviours are not positively associated. Yet as childhood progresses, solitary-passive behaviour has been found to steadily become

more associated with reticent behaviour and rejection by the peer group. In fact, the correlation between reticence and solitary-passive activity had increased significantly from $r = -.12$ at age 4 to $r = .34$ at age 8 (Asendorpf, 1991), this may be an indicator of a shift in the underlying mechanisms and meanings of solitary-passive play. Solitary-active play continued to be unassociated with the other two forms of non-social activity (Asendorpf, 1991).

Summary

Several issues regarding children's non-social play have been addressed in this section. The relation of children's play to their social competence and peer relations has been discussed. Further, it has been shown that children's play can be broken down into discrete categories of behaviours and that these categories of behaviour can then be combined into a reliable coding scheme (Rubin, 1989). Finally, the different forms of non-social behaviour which can be differentiated through the use of this taxonomy have been discussed. Moreover, an emphasis has been placed on the importance of not viewing these forms of non-social activity as equivalent and having the same underlying meaning. Based on the concepts which have been discussed, it is clear that researchers of children's solitary play and behaviour must be aware of the issues surrounding the assessment of behavioural withdrawal.

Also, it has been established that children's non-social play is a multi-dimensional construct with different forms of solitude relating to different aspects of child temperament and characteristics. However, these forms of behaviour have been assessed

predominantly in a laboratory situation, leading to the question of whether these forms of behaviour should be consistent in settings outside the laboratory. The theoretical positions of several researchers speak to this issue, which can basically be broken down into a state versus trait argument.

Consistency of Children's Non-Social Play

Trait models of behaviour

There has been no research which has addressed the state versus trait nature of children's solitary-passive, solitary-active, and reticent behaviours. Arguments for a trait standpoint on the issue of the non-social behaviours would come from the models concerning inhibition (Kagan) and social withdrawal (Rubin).

Biological/Genetic perspective of Kagan. Kagan (1989) supports a biologically based model in which inhibited patterns of behaviour stem from children's dispositionally low threshold for arousal in novel situations. He found that the reactions of inhibited children to *novel* social and non-social situations can be differentiated from the reactions of uninhibited children. Inhibited children have higher, more stable heart rates, higher cortisol levels; behaviourally, they become quiet, cease activity, retreat to a familiar person, and withdraw from the situation itself when faced with novelty (Garcia-Coll, et al., 1984; Kagan et al., 1984; Kagan et al., 1987; Kagan et al., 1988).

Although Kagan has focused predominantly on children's behaviours in novel settings, a disposition towards inhibition would be carried over into familiar settings as well. Initial support for the dependence between behavioural patterns exhibited in a novel

social and non-social environment (the laboratory) and the solitary behaviour of kindergarten-aged children in a classroom setting has been reported (Gersten, 1986 in Kagan et al., 1987). Moreover, Kagan and colleagues (e.g., Kagan, Reznick, & Gibbons, 1989) have found that extremely behaviourally inhibited preschool-aged children are less interactive, even in a *familiar* school setting (e.g., Reznick, Kagan, Snidman, Gersten, Baak, & Rosenberg, 1986). Finally, Kagan and Moss (1962) found that children identified based on a laboratory paradigm as extremely behaviourally inhibited until the age of three years were more easily dominated by peers and more likely to withdraw from social interaction at three to six years of age. These studies seem to lend support to the suggestion that children's reactions to novel social and non-social situations may show stability over different situations (e.g., more familiar). Although inhibition is not the same construct as social reticence both relate to solitary behaviours with peers.

Interactive pathways of Rubin. Rubin addresses children's social isolation *by* the peer group (due to aggressive behaviours) and *from* the peer group (social withdrawal), focusing on how physiological and environmental factors interact (e.g., Rubin & Mills, 1988; Rubin & Mills, 1991) to affect child characteristics and resulting behaviours.

Children who are behaviourally isolated from the peer group (i.e., engaging in non-social behaviours) would be exhibiting trait-like withdrawal from peers - both the impulsive children (solitary-active) as well as the children who experience social fear (social reticent and later solitary-passive children). Thus, Rubin does not address the three subsets of non-social play directly, however, he does posit that children enter into familiar and novel social situations with the insecurities and inadequacies created within the family

environment. This supposition leads to the hypothesis that non-social behaviour may be indicators of trait-like characteristics of children, and the exhibition of these behaviours should be stable across different settings. Temporal stability of reticent and solitary-active behaviours across two play sessions (on the same day) has been established by Coplan and colleagues (1994).

State models of non-social behaviour

Some researchers take the position that children's behaviour in one situation will not necessarily reflect their behaviour in other settings. This standpoint is strongly tied to the belief that characteristics of settings elicit particular behaviours in certain children (such characteristics will be discussed in detail below)

Two-factor model of Asendorpf. Asendorpf (1990) supports Grey's (1987) and Buss' (1985) theory that behavioural inhibition in childhood is rooted in or develops from *two independent* constructs: (1) behavioural inhibition towards strangers (social novelty), and (2) inhibition that occurs in the company of familiar persons (social fear). In support of the distinction Asendorpf (1990a) has shown that there is a relatively low correlation between the two forms of behavioural inhibition in elementary school-aged children ($r=.23$; Asendorpf, 1990a). In fact, he concludes that, "Children's inhibition towards strangers does not appear to reflect a general lack of social competence because inhibited children seem to interact normally with familiar peers" (Asendorpf, 1990a, p. 728)

Through his research, Asendorpf has supported the idea that behavioural inhibition in novel versus familiar social situations are independent constructs in young children, but

begin to merge in late childhood to one form which encompasses both types of inhibition. Hence, Asendorpf presents a view of behavioural inhibition/withdrawal that is different from the perspective of Kagan and Rubin, insofar as he supports the view that behavioural inhibition exhibited by children in a *novel* social situation is not inherently related to behavioural inhibition exhibited in *familiar* social situations. This leads to the supposition that children's behaviours are state dependent: different characteristics of children environments will pull for different types of behaviours. The implication of this standpoint for the study of non-social activities is that children's differential reactions to situations will result in behaviours that will change depending on the particular situation. For example, children may exhibit reticent behaviours when with unfamiliar peers, but when with familiar agemates, they may engage in more social play.

Due to the lack of research available which has focused on the three subsets of non-social play, it is not clear as to whether children would be exhibiting behaviours which are trait or state related. However, initial indications support the view that there should be some stability of solitary behaviours.

Stability of non-social play

Based on the descriptions of children's non-social activities discussed above, there will be differential expectations regarding the stability of the three aspects of children's solitude. Solitary-passive behaviours are normal and adaptive when exhibited by preschool-aged children and have not been associated with markers of social-cognitive risk (Coplan et al., 1994; Rubin, 1982b). Thus for young children, there is no reason to

expect stability in the exhibition of passive solitude, moreover, it has been found that solitary-passive behaviours are not temporally stable. In middle childhood, however, the meanings of these behaviours seem to change; passive solitude is no longer a normative activity, but is found to be related to social fear (Asendorpf, 1991) and peer rejection (Younger & Piccicin, 1989). For children of this age, solitary-passive behaviours may underlie social fear and negative self-perceptions which would affect behaviour in many different situations.

Solitary-active behaviours seem to be indicative of impulsivity (Coplan et al , 1994) and perhaps aggression in young children, and thought to be related to early peer rejection (Rubin, 1982). It would be expected that children who engage in these behaviours in a laboratory would be exhibiting a pattern of behaviour which would show stability across many different settings. Reticent behaviours seem to be indicative of social fear and shyness for preschoolers, and have been related to indices of anxiety exhibited in the laboratory. Thus one would expect that reticent behaviour may be indicative of an underlying trait towards social fear in young children

Summary

In this section whether children who exhibit particular forms of solitary behaviours are exhibiting trait (dispositions) or state (reactions to situations) was discussed; theoretical support and research was presented for both sides. Although there is no definitive evidence supporting one position (state or trait) more clearly, the perspective taken by the present research is that at least two of the three forms of non-social play

exhibited by children will show stability. Children who engage in a high frequency of reticent and solitary-active play in the laboratory are hypothesized to be exhibiting behaviours which are indicative of underlying characteristics and temperamental dispositions. Therefore, they will engage in similar types of behaviours in other settings (indicating social fear and impulsivity, respectively)

However, there are several issues which may impact on our understanding of the constructs of non-social play. Solitary behaviours have been assessed in only one situation to date, a laboratory. This situation has highly specific characteristics associated with it, which may affect our ability to discuss solitary-passive, solitary-active, and reticent behaviours in more general terms

Impact of Familiarity/Novelty on Non-Social Play

The discussion of whether solitary-passive, solitary-active, and reticent behaviours are indicative of a disposition towards certain characteristics, or these behaviours are simply a reaction to a specific situation, has not been fully explored to date. The three forms of non-social behaviours have been examined in a highly specific situation - the laboratory.

Laboratory paradigms

Children's non-social play in the company of peers has been assessed predominantly in laboratory settings; highly specific situations in which children are brought into a novel non-social environment and placed with unfamiliar children (social

novelty; e.g., Asendorpf, 1991; Coplan et al., 1994). As such, there may be particular characteristics of children's behaviour associated with this situation. It is clear that further research is needed to examine the construct of non-social play in alternative settings to get a clearer picture of these behaviours as well as their relations to indices of child characteristics and social functioning - the present research addresses this need.

In the present section the effect of several characteristics of the laboratory setting will be discussed as they affect both interpretations of previous research and directions for the present study. In addition to discussing the characteristics of the traditional laboratory setting, issues of non-social and social novelty will also be discussed.

Asendorpf (1990a, 1991) has studied children at four, six, and eight years of age, in a dyadic situation composed of one other unfamiliar peer. In all sessions an adult (either a researcher or the mom) was present in the room, but instructed not to interact with the children. Having an adult in the room may have changed or constrained children's behaviour, resulting in more restrained or adult-focused behaviours. The fact that children were placed in a dyadic situation places a further restriction on children's play. When children have only one possible play partner their behaviour becomes dependent on the activities of the other child. If that child is playing alone with his or her back to the target child, the latter has little opportunity to play in a more sociable manner.

In the laboratory studies conducted by Rubin and colleagues (Booth, Rose-Krasnor & Rubin, 1991; Coplan et al., 1994; Rubin, 1993), four-year-old children were observed in unfamiliar dyads or quartets. Similar to the program of research conducted by

Asendorpf, the laboratory situation, was unfamiliar to the children participating, although in this research no adult was present in the room.

Through an examination of the characteristics associated with the laboratory session two issues come to the fore: situational novelty and social unfamiliarity.

Unfortunately, a characteristic of all laboratory studies is the confound between social and non-social novelty: children are placed with unfamiliar peers in an unfamiliar situation (see Kachanska, 1991; Kochanska & Radke-Yarrow, 1992). As a result of this problem, researchers are unable to determine whether children's behaviour may be affected by social or non-social variables or interactions between these

Present study. In the present study an attempt was made to recreate a laboratory setting as closely as possible (specifics will be discussed in a subsequent section); however, the situation was less novel (both socially and non-socially) as a result of the constraints associated with working in day cares. Due to the exploratory nature of this research and the attempt to follow previous research as closely as possible, the confound between social and non-social novelty was not addressed. Thus, although these two issues will be addressed separately, further research must be conducted, attempting to untangle the individual as well as interactive effects of these variables and how they may affect children's behaviour. The purpose of the present study was to compare children's behaviour in a lab setting with their behaviour in an environment which was unfettered by novelty - the playground.

Situational (non-social) novelty/familiarity

The laboratory setting is a novel one for children: they are brought into a strange place and put in a room with new toys. It is claimed by researchers such as Coplan et al. (1994), that the laboratory situation will cease to be novel for the children involved after a short period of time. However, it cannot be certain at what point in the study the novelty may have worn off, or even if the situation has ceased to be novel for the children. There is no way to measure whether novelty is a continuous variable, or a discrete one in which a setting is novel or not. As previously mentioned, the laboratory situation in the present research involved a level of non-social novelty which was lower than that found in previous research, despite the attempt to recreate a laboratory setting as closely as possible.

Social novelty/familiarity

Another characteristic typical of the previous research addressing children's non-social play behaviours was that children were placed with unfamiliar peers in the laboratory. This fact leads to the question of whether this paradigm assesses *patterns* of solitude. For example, are children who engage in reticent behaviour in the laboratory exhibiting social withdrawal (to both novel and familiar social situations), or are they simply "shy" with strangers, and would not exhibit the same behaviours when playing with friends (as Asendorpf would posit)?

When preschool and early elementary school-aged children's exhibition of solitary behaviour in a social situation (i.e., with peers) has been assessed, it has typically been

examined in unfamiliar social contexts such as a laboratory setting (e.g., Asendorpf, 1991; Coplan et al., 1994). It is possible that this design may not provide an accurate picture of children's behaviour in everyday situations. It may be that young children who are observed to engage in high frequencies of solitary-passive, solitary-active, or reticence when placed with unfamiliar peers in laboratory situations will not engage in the same degree of solitude when they are observed in a familiar setting with familiar peers.

From the onset, research on children's solitary play has predominantly focused on behaviour with unfamiliar peers. Thus children's exhibition of non-social play may be due to two different factors. (1) children may be exhibiting a general tendency to engage in a particular form of solitary play; or (2) the children's behaviour may be temporarily more solitary as a function of being placed in a situation with unfamiliar others.

Asendorpf (1990) has reported that preschool and elementary school-aged children may exhibit behavioural inhibition in novel situations which is not manifested in a familiar setting with schoolmates (Asendorpf, 1990). Additionally, Broberg, Lamb and Hwang, (1990) found that for inhibited toddlers, involvement in peer play was related to the degree of familiarity between the peer partners. More recently, Paquette and St. Onge (1993) reported no association between inhibition to the unfamiliar and social withdrawal in preschool. Hence, there is some indication that behavioural withdrawal may be composed of more than one subset of behaviours - at least in childhood.

Summary

Thus, one of the several aspects toward the development of a new study examining children's solitary play is a focus on the context of familiarity. The behaviour of children in a socially novel situation must be compared with behaviours exhibited where there is no constraint on choice of play partners, a scenario in which children would be free to choose to interact with familiar peers. Examining the issue of familiarity and its relation to the exhibition of solitary behaviours is important, leading to an ability to determine whether some children who exhibit solitary behaviours with unfamiliar peers continue to do so with familiar peers.

The drawbacks to laboratory research, the problems surrounding the assessment, and control of familiarity and novelty are important issues which need to be examined in future research. In terms of the issue of familiarity, in the present study random assignment will ensure that there will be a range of familiarity in the groups of children observed. Some children will be placed with close friends, while other children will be less familiar with their play partners. In terms of the question of situational novelty, it will be assumed that the laboratory situation in the present study, while not as novel as pure laboratory studies, is still relatively unfamiliar for the child participating. If it is found that there are differences in children's solitary behaviour across the two situations, exerting more experimental control over both social familiarity and situational novelty would be the next step toward resolution of this issue. This would be accomplished in a study experimentally controlling for familiarity *and* novelty simultaneously.

To further knowledge of children's non-social play, it is necessary to examine solitary behaviours in alternative settings. One situation which provides the context of social and non-social familiarity is the playground

Moving Toward the Playground as a Research Environment

Advantages of the playground

Some of the existing research that focuses on children's solitary behaviours in the company of agemates has been conducted in a classroom environment (e.g., Asendorpf, 1990a; Rubin, 1993, 1982). From the point of view of reducing unfamiliarity, this research represents an advantage over the lab situation. However, the fact still remains that it is on the playground in which children engage in the majority of peer interaction; the playground most closely mirrors children's 'play world' (which includes their play after school in unstructured groups). The environment of the playground is quite different from the lab or the classroom; the rules and constraints placed on children in this setting vary from those indoors.

Behavioural constraint. The playground is a relatively unconstrained environment; - supervision is more lenient, and children are free to play as they wish. Behaviours which occur in the lab or classroom with indoor toys may or may not generalize to the more naturalistic situations and play opportunities of the playground. Children's behaviour indoors, by necessity, is more sedate, quiet, passive and generally less group-oriented. Outside, children are free to make noise and engage in almost all

forms of play - including gross motor and rough-and-tumble - behaviours virtually absent in the classroom.

On the playground, children are able to determine their own activities and have relatively free choice of play partners. When indoors, although children may sometimes be free to choose play partners, their choice is still limited to classmates. Further, children of a varied age range are present outdoors. Thus, laboratory-based research, and even studies which have examined children's behaviour in the classroom (e.g., Rubin, 1982, 1993), have not assessed a range of representative play patterns (Ladd & Price, 1993).

The playground is a rich source for the observation of children's behaviour patterns, this environment provides a ready-made opportunity to watch children interact (or not), with peers of their choice. Until recently, there was very little research concerning children's behaviours on the playground and the relation of these behaviours to social and emotional development (Pellegrini, 1987). However, in the past few years, playgrounds and the opportunities that they offer researchers have become more of a focus for those who study children's play and peer relations (see Hart, 1993 for recent review of research on playgrounds).

Playground research

The playground and young children. Ladd and Price (e.g., 1993, Ladd, 1983, Ladd, Price & Hart, 1988), two of the researchers who have led the movement toward playground observations, have found that behaviours on the playground *do* indeed relate to other indices of development. Ladd and Price (1993) found that unoccupied behaviours

exhibited by preschool children on the playground predicted neglected peer status in the classroom. In addition, Ladd and Price (1993) examined the playground behaviour of kindergarten versus grade one children, and found developmental differences in socially interactive and parallel play - children's playground behaviours became more social as the year progressed. Thus, young children's playground behaviours do consistently and meaningfully relate to indices of competence with peers.

The playground and elementary school-aged children. On the playground, elementary school-aged, peer-rejected children have been found to exhibit differences in behaviours and choice of play partners relative to popular and average children (Ladd, 1983; predictive differences, see Ladd, et al., 1988). Rejected children engaged in more unoccupied, parallel, and onlooking behaviour than the popular children, and also played in smaller groups. Moreover, Serbin and colleagues, (Serbin, Marchessault, McAffer, Peter & Schwartzman, 1993) found elementary school children identified as withdrawn by peers spent more time alone, were less involved with other children, and made fewer attempts to gain the attention of their peers on the playground. Thus, for school-aged children, playground behaviours seem to be related to indices of social competence and peer relations. These findings support the validity of using the playground as a context in which to examine children's play, and in particular, solitary play.

In view of the recent move toward examining children's behaviour on the playground, it is important to link the findings concerning solitary play and social withdrawal generated in lab situations, to the playground. As the research based on the playground has not used the nested categories of Rubin (1989), the present study will

assess the validity of this behavioural taxonomy, which has predominantly been utilized in laboratory situations - in a more naturalistic setting. More specifically, previous research concerning multiple forms of social withdrawal in a laboratory setting has utilized the POS as the method through which to examine children's solitude in the company of peers. It is therefore important to determine whether the behaviours assessed in the laboratory can be generalized to the playground and if the behaviours assessed in the laboratory have the same meanings on the playground. These issues will be addressed in the present study.

Cross-situational generalization of behaviours

Only two studies have examined cross-situational generalization of behaviour from the laboratory to the playground. Both studies have examined peer group entry and response to provocation in elementary school-aged boys (Dodge, Pettit, McClaskey & Brown, 1986; Pettit, McClaskey, Brown & Dodge, 1987). These studies suggest that there is *some* generalization of children's behaviour patterns - if not specific behaviours - across situations. Both Dodge and Pettit have reported that molar behaviours, such as ratings of overall competence, did generalize across situations, but molecular ones, such as verbal greetings and hitting, did not. Thus, the difference in the two environments may "pull" for, or allow for, the exhibition of different types of behaviours which may have the same underlying meaning.

In terms of general behaviour patterns such as withdrawn behaviour, it is likely that children who exhibit a particular pattern of behaviour in one setting may be apt to exhibit a similar pattern in a different setting. This premise will be examined in the context of the present study in which children's behaviours will be examined in a laboratory situation as well as on the playground. The issue of whether non-social play underlies stable characteristics of children or rather is situationally motivated has been addressed above, and impacted on the expectations concerning maintenance of patterns of behaviour across situations. If non-social play is a behavioural indicator of underlying traits of children, then greater preservation of patterns of behaviour would be expected across situations

In light of the issues and concerns discussed above, I would assert that it is time to take the study of non-social play and its correlates into a more naturalistic setting such as the playground. Moreover, it is time to test the generalizability of many of the constructs postulated based on laboratory and classroom research on the playground.

Present Research

Goals

The main objective of this research project was to further the knowledge concerning non-social play behaviours. This was accomplished through an examination of these constructs in a setting engineered to be as close to a laboratory as is possible in a daycare, and comparing behaviours observed in this situation to children's behaviour on the playground. The attempt to replicate previous laboratory research allowed for an

examination of the constructs and behaviours reported based on the laboratory setting - that is, a situation in which the level of familiarity and novelty was different

Because this project was not funded, lab space in which to observe children was not available. Furthermore, the practical issues such as liability, and gaining permission from parents would restrict the ability to transport children from school to the laboratory and back. Therefore this research was conducted within the constraints of the daycares, as a result, the lab paradigm from previous studies was adapted to suit the venue. The laboratory session was conducted in an area within the school; children played in a small space with novel toys (similar to previous research), with two to four other children who may or may not have been familiar to them (following the paradigms of Coplan et al., 1994, Asendorpf, 1991, and Booth et al., 1991)

It was not possible to place children with strangers: the children were more familiar to each other than children in the previous laboratory studies. The issue of familiarity was controlled for as thoroughly as possible by randomly assigning children to play groups, resulting in a range of familiarity: some children played with less familiar others while others played with closer friends.

The situation was set up to maximize novelty, and children were provided with toys by the researcher who was in the room. The laboratory area was partitioned off to provide maximum privacy; although the children remained in the school area, the situation was as novel as possible.

The second, and most important goal of this research was to examine possible patterns of behaviour that children may exhibit across the laboratory and playground

situations. Thus, children's behaviour in the laboratory session was compared to their behaviours on the playground - a naturalistic situation.

In the present study, as a result of the attempt to replicate previous research, there will be no true attempt to control for the effect of novelty or familiarity, or for the possible interaction. In this study, it was not possible to determine if children's exhibition of non-social play behaviours were affected by the level of familiarity of their play partners, or if the novelty of the situation may have affected their behaviour (this may be addressed by further research).

In an attempt to replicate the laboratory paradigm of others (Asendorpf, 1991; Coplan et al., 1994; Booth et al., 1991), groups of three to five children were created and then observed in a laboratory situation. The constructs of solitary-passive, solitary-active and reticent behaviours which have been reported by those who study children's behaviours in a lab setting were then examined.

The next step was to target the extreme groups of children based on the amount of the three forms of non-social behaviour they exhibited in the laboratory session. An extreme group approach was utilized instead of correlational one for this research for three reasons. Firstly, it is the children who engage in high frequencies of non-social behaviours who are hypothesized to be "at risk" and it is these children who must be targeted. Second, there has been some suggestion by Kagan (1989) that children extreme on certain indices of behaviour are not derived from a continuum but in fact are composed of separate categories of children. For example, a child who engages in a high frequency of reticent behaviour may exhibit qualitatively different characteristics than a child below a

certain threshold. Thus, it may be argued that the differences among the Solitary-Passive, Solitary-Active and Reticent children would not be present in a normative sample. Thirdly, collecting observations on a large normative sample both indoors and outside would have been very time consuming (it takes a minimum of one hour to code each child).

Children who engaged in the greatest amount of either 1) reticent behaviours, 2) solitary-passive play; or 3) solitary-active play (as proposed by Rubin, 1982, Coplan et al., 1994 and Asendorpf, 1991) made up the three groups. It was expected that these three groups of children would be mutually exclusive, as researchers (Asendorpf, 1991, Coplan et al., 1994) have found reticent, solitary-passive, and solitary-active behaviours to be unrelated in early childhood. A group of children who engage in an "average" amount of solitary play will be used as a comparison group.

The four groups of children were then observed on the playground for the purpose of evaluating the type of behaviours exhibited across differing situations. This cross-situational comparison allowed for an examination of solitary behaviours exhibited by children within a constrained environment, with a limited choice of play partner and activity compared to their solitary behaviours on the playground which offers relative freedom of choice in terms of both activities and play partners.

Predictions

Behavioural constructs: Past and present

In terms of the replication of the behavioural constructs reported in previous laboratory research, three predictions were made:

- 1. It was expected that the incidence of solitary-passive behaviour would be greater than that reported in previous research because there was a researcher present in the room.**

Children's behaviour may be effected by the fact that someone who they perceive as a teacher was in the room an thus they may play in a more passive solitary manner as a result.

- 2. In terms of solitary-active behaviour, it was expected that the frequency would be similar to that reported by previous studies.**

These behaviours would be less affected by situational changes.

- 3. The incidence of reticent behaviour was hypothesized to be lower in the present study.**

The children observed in the laboratory session were not be strangers to each other, thus children may experience less social fear.

Extreme group creation

- 1. Specifically, it was expected that the three extreme groups created based on their play in the laboratory session would be independent, with very little overlap between the Solitary-Passive, Solitary-Active, and Reticent groups.**

Due to previous findings that the incidence of solitary-active behaviour occurs in about five to seven percent of observational intervals (Asendorpf, 1990; Coplan et al., 1994), the Solitary-Active group may be less extreme than the others.

Stability of patterns of behaviour

Based on the research and theoretical positions outlined above, three predictions were made.

- 1. It was expected that the children in the solitary-passive group would not necessarily exhibit more solitary-passive play, on the playground (-constructive or -exploratory play), than the "average" group.**

These behaviours exhibited in the lab may not be indicative of a general pattern of behaviour that would be generalizable to the playground setting. Moreover, solitary sedentary behaviours, such as colouring, reading, and building are normative forms of behaviour especially in a day care setting. Furthermore, following the paradigms of Coplan et al., (1994) and Asendorpf (1991) and Booth et al., (1991), in the lab session children played in a small space, with two to four other children who may not have been frequent play partners, with novel toys, a situation which will most likely pull for the solitary-passive behaviours such as exploring the toys, reading and playing constructively alone. All of these factors were thought to function to increase the incidence of solitary-passive play, contributing to the selection of a heterogeneous group of children. The lack of similar constraints on children on the playground may function to decrease the incidence of solitary-passive play in all groups of children, decreasing the likelihood of

finding stability for solitary-passive activities. Moreover, the stability of solitary-passive behaviours has been found to be somewhat less robust than that of reticent behaviours (Coplan et al., 1994).

- 2. Children in the solitary-active group were expected to engage in significantly more solitary-dramatic and -functional play on the playground than the "average" group.**

These children were hypothesized to be exhibiting a pattern of behaviours an underlying tendency towards impulsivity and immaturity

- 3. Children in the Reticent group were expected to engage in significantly more onlooking and unoccupied behaviours than the "average" group on the playground.**

It was expected that children who engaged in the greatest amount of reticent behaviours in the laboratory would be displaying social fear, and would continue to exhibit the same behaviour pattern on the playground engaging in significantly more reticent behaviours on the playground than the groups of "average" children.

Synopsis

During the course of this introduction we have examined a number of subjects central to children's social-cognitive development and peer relations. The issues surrounding the definition and assessment of social withdrawal have been addressed. One way through which peer relations, social-cognitive development and social withdrawal can be assessed is through children's non-social play behaviours. To this end we have

examined the different forms of play and a taxonomy which has incorporated both the social and cognitive levels of play (Rubin, 1989)

Existing research concerning children's non-social play was then addressed and the drawbacks associated with these studies was assessed. It was concluded that researchers need to turn to the playground to observe children's behaviour with their peers, and research which has been conducted on the playground was reviewed. The final section dealt with the goals and predictions of the present study. We will now turn to the present study and describe the research methodology in detail.

METHOD

Overview

The study was run in two sessions. The first session began at the end of January and ran until the end of March 1995, and during this time 163 children were observed in a small group laboratory play session for the purpose of identifying extreme groups. The time period from February to June 1995 was utilized to code children's behaviour from the video tapes. The second session of the study ran from the beginning of May until July 1995. During this session children targeted based on their non-social behaviour in the laboratory were observed on the playground. Observational data was collected on 163 children in the first session and 52 children in the second session (see Figure 1 for an overview of this study).

Subjects

Twenty-eight day cares, nursery schools and Montessori schools in a medium sized city in Southeastern Ontario were approached by telephone; directors of 16 schools agreed to participate in the proposed research. Although no information on the socioeconomic status (SES) and ethnic distribution in each school was available, the schools were located in diverse neighborhoods which represented a wide range in SES.

Recruiting subjects: Parent permission

After permission to approach parents was granted by the schools involved, permission forms were sent home with children who were between the ages of three and a half and five years of age. A total of 350 permission forms were distributed by the teachers at the participating schools, 210 parents agreed to allow their children to participate in the research. Response rates varied with each school, the average rate being 63%.

When parents were asked to provide permission for their child to participate in this research, they were given two options. Parents could choose to allow their child to participate in the laboratory session only (indicating interest to receive information about the second session if their children were part of the target group); 42 parents provided permission for the first session only. Alternatively, parents could give permission for their children to participate in both sessions; 168 parents chose this option. Only nine parents responded with negative permission to the request.

Figure 1
Overview of Present Research

Permission for the second session

Before beginning the second session of observations, a report was sent to parents based on the data from the first session. At this point, parents whose children were selected to participate but who had only given permission for the first session were asked to provide further permission. After the forms were sent home to parents, the researcher arranged to conduct her observations in each of the day cares during the regular playground free-play time (predominantly during the morning)

Demographics: Session 1

One hundred and sixty-three children had permission to participate in this research, and were observed in the laboratory session (see Table 1 for demographics). There were 97 males and 84 females with an average age of 51 months. There were 52 three year olds, 93 four year olds, and 17 five year olds (for one child no age was reported). The use of a restricted age range (children three and a half to five years of age) was included to reduce developmental differences in children's social and cognitive levels of play (e.g., older children engage in more socially and cognitively mature forms of behaviour; Rubin et al., 1978). A large sample of children was utilized to allow for an extreme groups targeting procedure

Laboratory Observations

Lab free-play

The participating subjects were placed in groups of three to five children: there were 24 triads, 14 quartets and 10 groups of five. Children played in same-sex groups,

Table 1

Demographics for both phases of the research

	Session 1 N= 163	Session 2 N= 52
Age:		
three yr.	52	17
four yr.	93	30
five yr.	17	5
months	51.21(6.39)	50.76(6.06)
Sex:		
Females	97	23
Males	84	29

consistent with previous research, groupings were created as randomly as possible while under this constraint. In some schools, there were only enough children to create one group, and thus children were not randomly assigned to groups. Two separate ANOVAs on these three groups revealed that there were no differences in sociable or isolated play between the three group sizes. The principal researcher was available for all sessions, although for three sessions a second female researcher assisted.

Area of play

Children were observed in various areas of their respective day cares. the majority of children were taken to a separate area, but in a few cases no separate room was available, so the other children were able to see the participating children. In the latter situation very little attention was paid to the children being observed after a brief period.

The sizes of the play areas were approximately 15 to 20 square feet, depending on the area available at each school. An attempt was made to keep the area size constant across schools by maximizing the area of smaller rooms and blocking off sections of larger rooms.

Videotaping procedure

The experimenter set up her equipment - which consisted of a video camera and tripod - in the designated area, and placed the toys randomly about the room. The children were then brought into the play area and told that they were going to have their

picture taken with the researcher's camera. After this was completed, the children were asked to play only with the toys which had been laid out in the floor (often there were other toys around the room), and told to have fun. Fifteen minutes of behavioural observations were collected for each child.

Experimental toys

The experimental toys included a doll, books and puzzles, small cars, Duplo blocks; a peg board, and a doctor set (see Appendix D for complete list of toys available to the children). These toys were chosen because they were similar to the toys used in previous studies (e.g., Booth et al., 1991; Coplan et al., 1994), and because they pulled for the exhibition of all forms of social and cognitive play.

In the first eight sessions, "Hungry Hippo" was included (used by Coplan et al., 1994), a game which consists of a plastic board with four hippos attached, children attempt to make the hippos "swallow" marbles which sit in the center of the board. Unfortunately, this toy led to difficulty in coding behaviour. Because of the ambiguity involved in the determination of the forms of play that children exhibited with this game, the Hungry Hippo game was removed for the remaining 39 groups. When the children who had an opportunity to play with the hippo game were compared to those who did not have the game included with the experimental toys, it was discovered that there is significant differences in the amount of social and isolated play observed. ANOVA revealed that the children who had the game were significantly (at least $p < .001$) more sociable ($M = .27$ versus $M = .17$; 7% of the variance accounted for) and less isolated (M

30 versus $M = .57$; 16% of the variance accounted for) in their play styles, even though there was a lot of variation within groups; therefore the effect of the Hungry Hippo game was controlled for in subsequent analyses.

Behavioural coding for play session

The laboratory sessions were coded with the Play Observation Scale (Rubin, 1989), an oft used method of coding children's play behaviours (e.g., Asendorpf, 1991; Coplan et al., 1994, Rubin, 1982). This coding scheme involves a time-sampling procedure which breaks behaviour into 10-second intervals in which the predominant behaviour in that time sample is coded (see Appendix C). Children's behaviours are further broken down into play and non-play categories, social and cognitive levels of play are assessed in addition to other non-play behaviours.

The cognitive play categories (functional, exploratory, constructive, dramatic, and games-with-rules; Smilansky, 1968) are nested within the social participation categories (solitary, parallel and group; Parten, 1932). The non-play categories are: unoccupied behaviour, onlooker behaviour, conversation with teacher or peers, transitional, and researcher/teacher focused. Variables which could be coded simultaneously with the play and non-play codes (double coded variables) included crying, aggression, automanipulatives, and rough-and-tumble play (see Appendix A, POS manual for a complete explanation). Different forms of aggression were coded, object struggle, aggression directed at objects, physical aggression, and bullying aggression (see Appendix B for further explanation); these forms of behaviour were summed to a total aggression

score. Automanipulatives were coded when children were observed to bite their nails, pull their hair, or wring their hands outside the context of play

Through the use of this scale, several types of non-social behaviour can be identified: solitary-constructive, solitary-exploratory, solitary-functional, and solitary-dramatic play and onlooker and unoccupied behaviours. Solitary behaviour involves those activities in which the focal child is within speaking distance of the other children but is playing with different toys; thus the child's behaviour is not being affected by what the other children are doing. The cognitive levels of functional (e.g., repetitively pushing a truck back and forth), dramatic (e.g., playing superman), constructive (e.g., building with blocks), and exploratory (e.g., examination of a toy) activities were targeted under the solitary category of social participation. In addition, unoccupied and onlooking behaviours were also targeted (Asendorpf, 1991, Coplan et al., 1994, Rubin, 1982)

We were confident in our use of the POS to code the laboratory session in the present study, as the paradigm of the present study was similar to other research in which this taxonomy was used (Asendorpf, 1991, Booth et al., 1991, Coplan et al., 1994, Rubin et al., 1993). The POS has been used extensively in its full form (Asendorpf, 1991, Coplan et al., 1994; Hymel et al., 1990; Rubin, 1993, Rubin, 1982, Rubin et al., 1976, Rubin et al., 1978; Rubin & Hayvern, 1981), and has been found to have adequate reliability; Kappas have been reported to range from .71 to .86 overall, and percent agreement from 85% to 95%.

Solitary-passive, solitary-active and reticent behaviours were aggregated into three subsets similar to the procedure used by Coplan et al. (1994). Proportions were used to

account for the fact that not all children had the same number of data points; across all single coded categories, the proportions summed to 100%. The total number of data points was computed by subtracting the number of uncodable intervals from the original number, then each instance of each type of behaviour was summed and divided by the total number of data points. Uncodable behaviours occurred when the child was off camera, or when the coder could not see the child's activity to determine a code; an average of 2.69 intervals were uncodable for the children in the first session.

To create the non-social variables, the proportions of particular forms of behaviour were added together. *reticent* behaviour was comprised of the proportion of intervals in which the child engaged in onlooker and unoccupied behaviours; *solitary-passive* behaviour was computed by combining the proportion of intervals that the child engaged in solitary-constructive and -functional activities, *solitary-active* behaviour was comprised of the proportion of intervals spent in solitary-functional and -dramatic play.

Two aggregate variables were also created based on the work of Rubin (1993) for use in targeting the extreme groups: ISOPLAY, an index of isolated behaviour was created by combining the total proportions of all forms of solitary play (e.g., functional, constructive, exploratory, dramatic) in addition to onlooking and unoccupied behaviours; and SOCPLAY, and index of sociable behaviour was computed by combining the proportions of all forms of group activity as well as positive and neutral conversation.

In addition to the variables created based on the single coded behaviours, some variables developed based on the double coded behaviours were also utilized. The variables created from these behaviours were, aggression - created by summing the raw

score of all forms of aggression - and rough-and-tumble behaviour. Anxious behaviours were not utilized because there were very few indices of crying and automanipulatives.

Extreme Groups Targeting

Based on their behaviours in the laboratory situation, four groups of children were identified. Three of these groups were composed of children who exhibit the highest degree of: 1) *reticent* behaviours (onlooking unoccupied), 2) *solitary-passive* play (solitary-constructive and -exploratory behaviours), and 3) *solitary-active* play (solitary-dramatic and -functional play). A comparison group of behaviourally *average* children was also selected.

Groups were created by selecting children who ranked in the top 12%-14% of solitary-passive, solitary-active and reticent behaviour exhibited in the laboratory session for the Solitary-Passive, Solitary-Active and Reticent groups respectively. These children were selected *regardless* of their ISOPLAY score. Rubin and colleagues (Rubin & Coplan, 1993) used a similar procedure, selecting children who were ranked in the top 15% on the target variable (e.g., solitary-passive, reticent or social play) and in the bottom 75% on the other variables. For example, to be included in the Reticent group children had to be in the top 15% on reticent behaviour and in the bottom 75% on solitary-passive and sociable behaviour.

The Average comparison group was composed of the 12% of the children closest to the mean on both ISOPLAY and SOCPLAY indexes. Children who were located in more than one extreme group were excluded from participation in the second session (this

included two children who appeared in both the Reticent and Solitary-Active group and two children belonging to both the Solitary-Active and Solitary-Passive group).

Based on their play in the laboratory session, 83 children were targeted out of the original group of 163 (51% of entire group, 41% targeted as part of extreme groups): 22 children for the Solitary-Passive group; 21 children for the Solitary-Active group; 21 children for the Reticent group; and 19 children for the Average group. Of the 83 children targeted, 52 (63% of target group; 32% of entire sample) were then observed on the playground

Subject attrition

There was subject attrition from the targeting procedure to the playground observation session (37%); this is a problem inherent in research with children. The major cause of the overall rate of attrition was children transferring out of schools and being absent for long periods of time; attendance at daycare does not seem to be as stable as attendance at school. Moreover, the time frame of the study contributed to the attrition rate, as many children move/transfer to new schools, go on holidays, and move up to older programs in early summer. At one school, eight children included in the targeted groups were not observed on the playground because the school closed early for the summer.

The 31 children who were not observed on the playground did not differ from the other 52 children on the basis of age, sex, isolated play, reticent behaviour, solitary-passive, and solitary-active play. There was however significant differences on social play,

the children who were not observed in the playground were more sociable in the laboratory session ($M=.14$ versus $M=.09$).

Playground sample

The *Solitary-Passive* group was composed of 14 children: four females and ten males with an average age of 51 months. The *Solitary-Active* group was composed of 14 children: four females and ten males with an average age of 51.71 months. It is not surprising that four children from the *Solitary-Active* group belonged to other extreme groups as well: the *Solitary-Active* group was less extreme than the *Solitary-Passive* or *Reticent* groups. Behaviours comprising solitary-active play (dramatic and functional play) occur less frequently than the other non-social behaviours, resulting in a less extreme group of children chosen (i.e., may only spent 11% of their time in solitary-active play versus 24% or so for other groups). The *Reticent* group was composed of 12 children: seven females and five males with an average age of 48.42 months. The *Average* group was composed of 12 children: eight females and four males with an average age of 51.75 months.

Playground Observations

A decision was made to conduct naturalistic observations rather than videotaping for both theoretical and logistical reasons. Because observations could only be conducted on participating children, segregating these children from others would have created similar constraints on the social environment as were placed on the children indoors. To begin with, children would not have been free to play with whomever they chose, an

important aspect of the unconstrained play setting. Moreover, if children had merely been segregated on the playground (which was more likely), instead of electing to keep non-participating children indoors, then the children would have been constrained in their choice of activity as well; only part of the playground would have been available. In effect, videotaping children on the playground would have recreated a laboratory situation outdoors.

The logistical issue surrounds the problem of what to do with the children who did not participate in the research. If observations were to be completed only on the children with permission, all non-participating children would have had to be kept indoors or on a separate area of the playground. This would have caused a great inconvenience to the daycare teachers and may have affected their decision to participate in the research.

Observations

The researcher who conducted the playground observations was blind to the group membership of the targeted children. She would arrive at the school a few minutes prior to the scheduled time and spend time near the children, to become more familiar to them. Before the beginning of each day's observations the researcher approached a teacher and asked her to identify each target child, then each child was observed in a predetermined randomly selected order.

To conduct the observation of a child (without drawing attention to the act), the researcher oriented on the child, moved into earshot, and observed behaviour for a 10 second interval. For each interval, a written behavioural code and a written description

was recorded. The children were observed one at a time for one to two minutes, cycling through the list until the day's observations were completed (or the children went inside) this randomized sampling procedure has been used by Rubin (e.g., 1982; 1985) and others (e.g., Ladd & Price, 1993; Ladd et al., 1988). Children were observed for between three and five days during the week, although some children were observed an additional time a week or so later if the weather during their scheduled time was poor or if they were not available during the scheduled time.

Behavioural coding on the playground

Children's play behaviours on the playground were recorded using a modification of Rubin's taxonomy (Rubin, 1989). An adaptation was clearly necessary due to the probability that different forms of activities would occur across the two settings. For example, it is unlikely that children would have engaged in a high frequency of reading or completing puzzles on the playground, it is equally as unlikely that children would have been riding their bikes indoors. However, if both of these activities were engaged in alone, solitary-constructive activity was coded.

Unfortunately there is very little research available which has examined the social and cognitive aspects of children's playground play behaviours. To our knowledge, the present research represented the first to attempt to utilize the nested categories of solitary play to observe children's non-social play on the playground. A version of a play scale including only the categories of social participation (onlooker, unoccupied, solitary, parallel and group) has been used on the playground by Ladd (1983, Ladd et al., 1988).

Thus there was no existing taxonomy to compare our coding scheme with: this fact contributes to the questions surrounding the reliability and validity of the scale. Thus, the scale is virtually untried on the playground

The behavioural breakdown of behaviours exhibited on the playground was decided on by the experimenter and her advisor who discussed the role of each form of behaviour in question (see Appendix E, Playground Explanation form for a description of behaviours and examples; see Appendix F, Playground Coding form). The behavioural subsets and target categories were the same as those created for the indoor play session, and described above. The differences between the behaviours coded in the laboratory session versus the playground were rooted in the types of activities which occur outside: riding a bike, building a sand castle, swinging on a swing and throwing a ball were all coded as constructive activities on the playground, and these activities would not occur indoors.

Face validity was attained by the discussion between the researcher and her advisor, but unfortunately no other forms of validity were assessed. However, the properties of the original POS were widely reported, and because only necessary modifications were made, it may be possible to attribute the psychometric properties of the POS to this modified version

Reliability

Session 1: Videotape training and reliability

The data was coded by the primary researcher who had been trained on the use of this coding scheme, and had used it extensively in the past. Reliability coding for the sample was completed by a second research assistant trained by the primary researcher. The reliability sample was composed of a randomly selected group of about 20% of all of the children observed. Kappa's were calculated across all categories of social and cognitive play. The overall Kappa coefficient was .76 which is in the acceptable range.

Session 2: Naturalistic training and observations

The playground observations were coded by the primary researcher. The same research assistant who worked with the video tape data was used to code reliability data for the playground observations. The reliability sample was completed in four schools, collecting observations on approximately 10% of the total sample. Kappa's were computed for the playground session across all forms of behaviour. The overall Kappa coefficient was .71 which is in the acceptable range.

RESULTS

Session 1: Non-Social Play in the Lab

The proportion of intervals which children spent engaging in the forms of non-social behaviour in the laboratory session of this study (see Table 2) were compared to proportions reported by other research (see Table 3). The proportion of intervals in which

children engaged in solitary-passive play (solitary-constructive and -exploratory play; $M=.37$) was much higher than would be expected based on previous research ($M=.16-.29$). In general, the proportions of time spent in solitary-active play (solitary-dramatic and -functional behaviours; $M=.05$) was similar to that found in other studies ($M=.05-.10$). The proportion of reticent behaviour (onlooking and unoccupied behaviours; $M=.10$) was much lower than reported by other researchers ($M=.16-.20$).

The double coded variables observed in the laboratory session were very low in occurrence; for example there was no crying, one instance each of automanipulatives and bullying aggression and four occurrences of object aggression. Thus, anxious behaviours were not entered into analyses; for aggression, a composite variable was created based on all forms of aggression observed (see Table 2)

Interrelations within the non-social variables.

Based on the sample of 163 children available for the small group play session, the intercorrelations between the behavioural variables which made up the three subsets of solitary behaviour (solpass, solact, and reticent) were computed. The mean proportion of time children spent engaging in solitary-functional and -dramatic play was low in frequency (mean .01 and .04 respectively) and range restricted, thus caution will be exercised in the analyses involving these behaviours. Nevertheless, the components of *solitary-active* play; solitary-dramatic and -functional behaviour, were significantly and positively correlated ($r=.22$, $p<.01$). The components of *solitary-passive* play; solitary-

Table 2

**Means and standard deviations / - non-social behavioural variables and aggregates
(N= 163)**

Non-social play	Mean	SD
reticent behaviour	.10	.09
onlooking	.06	.06
unoccupied	.04	.05
solitary-passive behaviour	.37	.26
solitary-constructive	.26	.23
solitary-exploratory	.10	.08
solitary-active	.05	.09
solitary-functional	.01	.03
solitary-dramatic	.04	.08
total isolated play^a	.52	.27
total social play^b	.18	.18
Double-Coded Variables^c		
rough-and-tumble play	.07	.49
aggressive behaviours (object struggle, object aggression, physical aggression, and bullying)	.79	2.26

^a - equivalent to all categories of solitary play plus onlooking and unoccupied behaviours

^b - all categories of group play plus positive and neutral conversation

^c -raw totals

Table 3

Comparison of non-social variables between the present study and previous research

study:	area:	observations:	sample:	sol-pas	sol-act	reticent
Present research	small groups, lab session	coded from video tapes	normative preschool aged (N= 163)	.37	.05	.10
Coplan et al., 1994	small groups, lab session (two consecutive sessions separated by activity)	coded from video tapes	normative four year olds (N= 48) session 1 session 2	.16 16	.03 05	.20 19
Asendorpf, 1991	small groups, lab session (dyads)	coded from video tapes	normative preschool- aged (N=87)	.29	.07	.16
Wichmann, 1993	small groups, lab session (dyads)	coded from video tapes	normative preschool- aged (N= 110)	.04	.05	.16

constructive and -exploratory play, were also significantly and positively correlated ($r=.26$, $p<.001$). Moreover, the components of *reticent* behaviour; onlooking and unoccupied activities, were also strongly correlated, ($r=.40$, $p<.001$)

Relations between non-social variables

Results of the correlational analyses supported the prediction that solitary-passive, solitary-active and reticent behaviours would not be significantly related to each other (solact-reticent $r=.001$, solpass-solact $r=-.13$, reticent-solpass $r=-.14$, all n.s.)

Relations between non-social variables and social play

The observational scheme which was utilized in the present study involved a mutually exclusive coding methodology (only one behaviour could be coded in an interval); this manner of coding leads to intrinsically negative correlations between the variables coded. Due to this consideration, caution must be employed when reporting correlations between variables. Correlations were computed between the three behavioural subsets (reticent, solitary-passive, and solitary-active) and social play (see Table 4). All three form of non-social play (solitary-passive, solitary-active and reticent behaviour) were significantly negatively associated with social play ($r=-.61$, $p<.001$, $r=-.17$, $p<.05$, and $r=-.24$, $p<.01$, respectively)

Table 4

Relations between the non-social variables and social play for laboratory session (N=163)

	social play
reticent	- .24**
solitary-passive	-.69***
solitary-active	- .17*

*** $p < .001$

** $p < .01$

* $p < .05$

+ $p < .10$

Groups High in Non-Social Play

Behavioural observations

Based on the targeting procedure, 83 children were identified as engaging in the most solitary-passive, solitary-active or reticent play or as members of a group who engaged in an average amount of non-social and social play behaviours. Due to methodological considerations (such as subject attrition) 52 of these children were actually observed on the playground, findings regarding these children are reported in this section.

Means and

standard deviations of the behavioural variables for the laboratory session for the targeted children (by group) are presented in Table 5. Of the double coded variables over both sessions, only rough and tumble, discipline and the aggregated aggressive behaviours occurred frequently enough to be reported.

The three groups of children extreme in terms of the amount of non-social play they exhibited all showed only small amounts of social play ($M = .02, .09, \text{ and } .06$ for the Solitary-Passive, Solitary-Active, and Reticent groups respectively). The Average group engaged in social play during 19% of the intervals. A one-way ANOVA run with social play as the dependent variable revealed that the four groups of children showed significant differences in proportion of social behaviour exhibited ($F = 19.52, p < .001$). Post hoc analyses indicated that the Average group engaged in more social play than the Solitary-Passive group.

Table 5

Descriptives for the laboratory behavioural variables by group for the four target groups

	Reticent	Solitary- Passive	Solitary- Active	Average
	n=12	n=14	n=14	n=12
Variables:	<u>M (SD)</u>	<u>M(SD)</u>	<u>M(SD)</u>	<u>M(SD)</u>
Single-coded				
isolated play	.65(.13)	.90(.06)	.67(.19)	.49(.07)
social play	.06(.05)	.02(.03)	.09(.09)	.19(.04)
Non-social play				
reticent	.28(.07)	.06(.05)	.08(.05)	.11(.05)
onlooker	.15(.06)	.04(.04)	.04(.04)	.07(.05)
unoccupied	.14(.08)	.02(.02)	.05(.03)	.04(.03)
solitary-passive	.34(.13)	.82(.07)	.32(.20)	.34(.10)
sol-exploratory	.14(.08)	.15(.12)	.14(.08)	.11(.04)
sol-constructive	.20(.15)	.67(.14)	.18(.16)	.24(.10)
solitary-active	.02(.02)	.01(.03)	.24(.18)	.03(.03)
sol-functional	.02(.02)	.01(.03)	.03(.04)	.01(.01)
sol-dramatic	.01(.01)	.00(.01)	.20(.16)	.02(.03)
Double-Coded:^a				
rough-and-tumble	.00(0.00)	.00(.00)	.36(1.34)	.00(.00)
aggression^b	.75(1.76)	.36(.14)	.86(1.75)	.83(1.47)

^a -non-proportioned variables^b -aggression is a composite variable composed of object struggles, object aggression, physical aggression, and bullying

Differences in play as a function of membership in a target group. As a test of the classification procedure, the mean amounts of solitary-passive, solitary-active, and reticent play were compared for the four groups. As expected, the Solitary-Passive group demonstrated significantly more solitary-passive play (compared to the other three groups), the Reticent group more reticent behaviour, and the Solitary-Active group more solitary-active behaviour.

Differences among target groups for aggressive behaviour The occurrence of variables which were double-coded was low, and these variables were not normally distributed, thus Chi-square analyses were computed on these variables. Unfortunately rough-and-tumble play violated the assumption of at having a least five observations per cell for the expected frequency, so analyses were not computed. Because there was such a low frequency of aggression (there was not a minimum of 20 children engaging in these behaviours- to meet the assumptions) for the target group, analyses were run on the number of acts, not the number of children. Although this adds interdependence between each instance of aggression, it was deemed acceptable to compute the Chi-Square based on the fact that these were exploratory analyses.

Differences in observed aggression in the laboratory session were calculated for the four groups of targeted children ($N=52$). The Chi-square coefficient for this analysis tended toward significance ($X^2(3, N=33) = 6.78, p < .10$) indicating that the Solitary-Passive group engaged in fewer aggressive acts and the Solitary-Active children engaged in more aggressive acts than would be expected by chance.

Interrelations among variables comprising the non-social subsets

Correlations among the components of the non-social behavioural variables (e.g., onlooking and unoccupied behaviours) were not calculated on the play for the group of targeted children. The resulting correlation would have been less valid because of sample size restraints and because the composition of the groups was disparate -being comprised of several extreme subsamples of the original normative sample. Correlations run on a subsample of the group will be affected by the greater restriction on the range of behaviours exhibited. The correlation coefficients for the four groups were very different, this would cause an artificial change in the combined group (Mc Call, 1994). Moreover, because children were selected based on certain characteristics of their play there is little reason to expect that correlations observed in the larger unselected sample would be replicated in the target groups. It is possible that the subsets of non-social behaviour being examined in this research may not be applicable to extreme groups of children.

Session 2: On the Playground

Behavioural observations

In this section, findings based on the playground behaviour of the 52 children in the target group are reported. Means and standard deviations for the behavioural variables by group are reported in Table 6. Again, selected double coded variables were very low in occurrence. For example there were no instances of automanipulatives, and fewer than ten instances of pouting, object aggression, bossiness, tattling and crying. Thus, for

aggression a composite variable was created to utilize in analyses based on summarizing object-struggles, object-directed aggression, and physical aggression

Differences in playground play activities based on group membership. In this section, ANVOAs run between the target groups based on playground play are reported. The non-social variables of solitary-passive, solitary-active and reticent behaviour were maintained as aggregated variables for examining children playground behaviour based on the fact that several researchers have identified these three subsets of behaviour in their samples - providing a conceptual basis for utilizing these variables

An a priori decision was made to examine only particular behavioural variables on the playground. These variables included the three non-social behavioural variables (solitary-passive, solitary-active, and reticent behaviours) in addition to the aggregated indices of social and isolated play. Five ANOVA analyses were run with the four target groups as the independent variable and isolated play, social play, solitary-passive behaviour, solitary-active play and reticent behaviour as observed on the *playground* as the dependent variables. Because age accounted for significant proportions of variance in children's indoor play behaviour, and has been shown in the research to affect level of social play, this variable was entered as a covariate in the ANOVA analyses. There were no significant differences in children's exhibition of isolated play ($F(4, 46) = .20, n.s.$), and social behaviour ($F(4, 46) = 1.6, n.s.$) as a function of group membership. In terms of the non-social variables, there were no significant differences in reticent behaviour

Table 6

Descriptives for the playground session behavioural variables by group for the four target groups

	Reticent	Solitary- Passive	Solitary- Active	Average
	n=12	n=14	n=14	n=12
Variables:	<u>M (SD)</u>	<u>M(SD)</u>	<u>M(SD)</u>	<u>M(SD)</u>
Single-Coded				
isolated play	.42(.14)	.41(.15)	.44(.18)	.40(.11)
social play	.30(.12)	.29(.14)	.32(.15)	.41(.12)
Non-social play				
reticent	.16(.07)	.19(.08)	.14(.10)	.14(.11)
onlooker	.10(.07)	.10(.06)	.07(.06)	.08(.08)
unoccupied	.06(.02)	.08(.05)	.06(.06)	.05(.04)
solitary-passive	.21(.15)	.19(.11)	.24(.15)	.23(.10)
sol-exploratory	.03(.04)	.05(.04)	.06(.06)	.04(.04)
sol-constructive	.18(.14)	.13(.09)	.18(.12)	.19(.10)
solitary-active	.04(.03)	.04(.03)	.06(.07)	.03(.04)
sol-functional	.03(.03)	.02(.03)	.05(.05)	.01(.01)
sol-dramatic	.01(.01)	.01(.02)	.01(.02)	.02(.04)
Double-Coded:^a				
rough-and-tumble	1.33(3.70)	1.14(1.75)	2.07(3.08)	1.25(1.54)
aggression^b	.75(.87)	.93(1.82)	.93(1.82)	.50(.80)
discipline	.50(.80)	1.00(1.75)	1.29(3.07)	.08(.29)

^a-non-proportioned variables^b-aggression is a composite variable composed of object struggles, object aggression, physical aggression, and bullying

($F(4, 46) = 1.05$, n.s.), solitary-passive ($F(4, 46) = 3.0$, n.s.), or solitary-active play ($F(4, 46) = 1.16$, n.s.) as a function of group membership

Differences in double-coded playground play activities. Chi-Square analyses exploring group differences in aggression, discipline by the teacher for misbehaviour and rough-and-tumble play were computed for the 52 target children. Similarly to previous Chi-Square analyses, the frequencies referred to instances of behaviour, not to number of children.

These analyses revealed that there were no differences between expected and observed frequencies for any of the groups on playground aggression ($X^2(3, N = 41) = 3.39$, n.s.). For the variable of discipline by the teacher, the differences reached significance ($X^2(3, N = 39) = 18.13$, $p < .005$), indicating that Solitary-Active and Solitary-Passive children received more discipline (with Solitary-Active the highest) and Reticent and Average groups receiving less discipline (with Average children the lowest) than would be expected by chance. In terms of rough-and-tumble play observed on the playground differences between the expected and observed frequencies were significant ($X^2(3, N = 90) = 8.13$, $p < .05$). The Solitary-Active group engaged in more rough-and-tumble play and all other groups engaged in less of this behaviour than would be expected by chance.

DISCUSSION

This study contributed to the research concerning children's non-social play, providing further support for the non-social variables as well as moving the study of these behaviours into a new arena - the playground. It was important to examine children's behaviour across two disparate settings; this study will act as a first step in untangling the nature and validity of "risk status" as assessed in the laboratory and its connection to children's behaviour in a unconstrained familiar social setting. In addition, this study acted as an initial foray into the discovery of the meaning of children's behaviours on the playground

In the discussion several issues will be addressed. The non-social constructs assessed in the laboratory and the extreme groups which were created will be examined. Each subset of solitary behaviour -solitary-active, solitary-passive, and reticent play will be discussed as they apply to both observational sessions and cross-situational stability. The extreme groups will be re-addressed based on the knowledge concerning stability of behaviours and the behaviour of hypothetically extreme children will be presented. Then a summary of general findings will be provided. An examination of the limitations of this study will follow. Finally, directions for future research will be examined.

Non-Social Constructs in the Laboratory

Support for validity of the non-social behavioural constructs

In general, non-social play observations collected in the laboratory session of the present study supported the validity of the three constructs underlying non-social behaviours reported in previous research (e.g., Asendorpf, 1990, Coplan et al., 1994). The interrelations of the components *within* the non-social variables (solitary-passive, solitary-active and reticent behaviours) were strong, and associations *between* these variables were non-existent. These findings are meaningful because although an attempt was made to keep the lab session as similar to previous research as was possible, there were several very salient differences between the two settings.

One of the major differences between the present research and previous studies was that children were not placed with unfamiliar peers. In fact in the present research some children may have been playing with their close friends, while others were playing with less familiar peers (accomplished through random assignment to groups).

Further, the degree of situational novelty was lower in the present research than in previous examinations. The laboratory session was constructed to be as novel to children as possible in the following aspects: location, segregation of the children, the presence of an unfamiliar researcher, and the toys provided. However, the situation was much more familiar to children than previously reported. The fact that the non-social constructs of solitary-passive, solitary-active, and reticent behaviour were replicated in the present laboratory situation attests to the robustness of these behavioural constructs *indoors*.

Targeting children based on play observations

It was expected based on the work of Asendorpf (1991) and Coplan (1994) that the Solitary-Passive, Solitary-Active and Reticent groups would be mutually exclusive. The fact that the extreme groups *were* indeed virtually mutually exclusive (only four of the 68 children belonging to the three extreme groups appeared more than once in the three groups) is important, as the previous research relied on lack of correlation between the groups to indicate mutual exclusivity whereas in the present study an extreme groups procedure was utilized. In previous research, it was speculated that the children engaging in high proportions of solitary-passive, solitary-active and reticent behaviours would fall into separate groups, based on the lack of correlation between the three non-social variables (e.g., Coplan et al., 1994).

Recently, Rubin and colleagues (Rubin & Coplan, 1993) reported that groups of children could be created based on their behaviour in a laboratory setting; they examined the differences between children placed in Solitary-Passive, Reticent, Sociable, and Average groups. Heterogeneity in forms of behavioural solitude was reported; Solitary-Passive children could not be differentiated from Average children in terms of wariness or impulsivity; they did make fewer social initiations than average, although the ones they did make were as successful. These children excelled in task orientation although they gave a poor performance on a social task (speeches) versus average and sociable children: indicating a greater object versus person-orientation. Reticent children displayed social reticence in a number of different settings; they were found to engage in more hovering off-task unoccupied and anxious behaviours, and they were rated as more shy by mothers.

Summary

Observations of non-social behaviour in the present study were in line with predictions made based on previous research; solitary-passive, solitary-active and reticent behaviours were stable constructs across different social and non-social contexts for this normative sample. The differences in observed proportions of solitary-passive and reticent behaviour relative to previous research may have been due to the differences between the laboratory sessions of the present versus previously reported studies

Non-Social Behavioural Variables

Solitary-passive play

Laboratory observations. During the preschool years, *solitary-passive* behaviour is adaptive and normal. However, the incidence of solitary-passive behaviour in the present research was much *higher* than the incidence reported in previous studies. It is possible that the lab setting in the present study functioned to maximize children's exhibition of passive solitude. The children were observed in a room in their day care with a "teacher" present. This environment may have had certain expectations associated with it; children are encouraged by teachers to play in a quiet, constructive manner. There may have been a carry-over effect of the day care environment to the laboratory in the present research, functioning to increase the incidence of solitary-passive activity

Additionally, it is possible that children who engaged in solitary-passive behaviour in the present study may be a heterogeneous group of children (also postulated by Coplan et al., 1994). Initial support for this hypothesis has been provided by Coplan et al., (1994)

who reported that solitary-passive behaviour was less stable over two play sessions and was not associated with indicators of anxiety, nor with parental ratings of temperament.

Some children observed in the present situation may have felt social anxiety but were better able to regulate their emotions - thus retreating to passive solitude to cope with their anxiety - because the situation was not completely unfamiliar to them. Other children may have not been highly familiar (e.g., not have a close friend) with the children with whom they were placed, and so played quietly by themselves. If these children had been observed with other peers, they may have engaged in more sociable play. There may also be a group of children were concerned with their peers and may have been more object-oriented, electing to play with the toys provided rather than with the other children in the room (e.g., Coplan et al., 1994; Jennings, 1975). Solitary-passive behaviour would probably be more stable across situations for these children. If the children who engage in a high degree of solitary-passive play are a mixed group, then it becomes very difficult to detect situational stability of these behaviours (except for the object-oriented children).

Stability. Children chosen because they spent the majority of their time in passive solitude in the laboratory session were not found to engage in any more solitary-passive behaviours on the playground than Average children. Although supporting the prediction, this finding has done very little to elucidate solitary-passive behaviour. If the Solitary-Passive group was heterogeneous as hypothesized above, then the children in this group would have had different underlying reasons for engaging in passive solitude, and we have learned very little about these children. Additional research focusing solely on exploring the heterogeneity of a large group solitary-passive players is required to assess the validity

of the supposition that children who engage in passive solitude in a laboratory situation do actually come from different groups

Solitary-active play

Laboratory observations. The incidence of *solitary-active* play in this study was comparable to that reported in previous research (i.e., very infrequent, about 5%–7%). It appears that this form of active solitude is less affected by differences in social and non-social familiarity. Children seem to engage in similar amounts of solitary-functional and -dramatic play regardless of the context in which they find themselves; greater familiarity does not seem to breed an increase in active play engaged in apart from others. Interestingly, children in the Solitary-Active group were observed to engage in more aggressive acts than were expected by chance. These findings may be an indicator of the possible social behaviour problems which children who engage in a high degree of solitary-dramatic and -functional play have been hypothesized - and found - to exhibit (Coplan et al., 1994; Rubin, 1982b; Rubin & Mills, 1988)

Stability. Children who engaged in a high degree of solitary-active play while in the lab situation did not engage in significantly more solitary-active behaviour on the playground than the average child. Children who engage in the greatest amount of solitary-active behaviour in the laboratory session were expected to engage in a high degree of active solitude on the playground. This hypothesis was put forth based on findings from previous researchers who reported that solitary-active behaviour as exhibited by preschool-aged children was associated with parental rating of impulsivity

(Coplan et al., 1994), teacher-rated behaviour problems, and poorer peer acceptance (Rubin, 1982). Thus it was hypothesized that children who engage in these forms of behaviour would be exhibiting a behavioural trait which would carry over to playground play

The non-significant differences in solitary-active play between the Solitary-Active group and others may have been a result of targeting a less extreme group of Solitary-Active children based on the laboratory session. Perhaps there were few children in the present study who engaged in active solitude with a high enough frequency to be exhibiting a behavioural trait. On the other hand, dramatic behaviour and repetitive sensori motor activity when engaged in alone is a highly salient behavioural event; it is likely that children who engage in this form of behaviour more than a few times per session would become negatively salient to their peers. Interestingly, four of the top seven children ranked on solitary-active behaviour on the playground were from the Solitary-Active group.

In an examination of aggression, teacher discipline and rough-and-tumble play several interesting findings were revealed. Children chosen based on their exhibition of a high frequency of solitary-active play in the laboratory session were found to receive more teacher discipline and to engage in more rough-and-tumble play than would be expected by chance. In future research these findings need to be examined further. Rough-and-tumble play in this study was most closely linked to group chase games. These behaviours may be sociable; however, rough-and-tumble play may also lead to aggression if the children are less able to control their impulses. Solitary-Active children were also found

to be disciplined by teachers more often, indicating that these children may have more behaviour problems than other children. This may occur even though they do not engage in solitary-active behaviours on the playground which are linked to impulsivity and behaviour problems in the laboratory.

Reticent behaviour

Laboratory observations. Children were observed to spend an average of 10% of their time engaging in *reticent* behaviours in the laboratory session, while previous laboratory studies have reported children to engage in a much higher percentage of such behaviours (from 16%-20% of play). This difference may be due to situational differences between studies (as previously discussed), and in turn may have functioned to decrease the observed frequency of children's reticent behaviour in the present normative sample. Children were playing with others with whom they were previously acquainted and they (even the "shy" ones) may have felt less social anxiety, displaying a greater ability to cope in this situation by engaging in other behaviours (e.g., solitary-passive play).

Stability. Children chosen as socially reticent in the laboratory did not engage in any more reticent behaviour on the playground than the group of Average children. This study did not provide support for the hypothesis that children who engage in behaviours indicative of social anxiety in the laboratory will act similarly in other settings. It is possible that socially reticent children are actually just "shy" children who only experience anxiety with unfamiliar others, but have no difficulty interacting with friends. This factor

would protect the shy children from social and social-cognitive deficiencies which may arise as a result of not interacting with others in the social milieu

Originally it was expected that the children in the Reticent group would continue to engage in more reticent behaviour on the playground. It was expected that children who engaged in a greater amount of reticent behaviour in the laboratory session were exhibiting a disposition toward social anxiety; this would continue on the playground and children would engage in a high degree of reticent behaviours. However, the children targeted as Reticent in the laboratory session may have exhibited reticent behaviour with *less familiar* children, but experienced less social anxiety and were more social with their friends on the playground. It is also possible that children who are less involved and show more social fear in small groups may be able to blend in with others on the playground, where there are many activities occurring simultaneously and there is less pressure to fit in with any one group.

In a similar examination of the stability of behavioural inhibition, Paquette and St. Onge (1993) report that behavioural inhibition exhibited in a novel social (and non-social) situation was unrelated to teacher-rated withdrawal in preschool. These researchers conclude that there is a distinction between children's responses to the unfamiliar and their habitual response to the everyday environment (Paquette & St. Onge, 1993).

Based on the findings of this study, it appears that social anxiety as expressed in the laboratory may not be related to the exhibition of the same behaviours in other situations. This finding does not support the hypothesis that reticent behaviours are a reflection of an underlying trait toward social anxiety, and, if replicated, may have

important implications for the "risk status" of children identified as socially reticent and withdrawn based on laboratory research

Children who exhibit reticent behaviours and do not interact with unfamiliar peers in a strange situation, but who are able to interact competently with peers on the playground (or in other familiar social situations) may not be "at risk" for later developmental difficulties. These children would have the social-cognitive skills necessary for peer interaction, although they may not use them in all situations. This hypothetical group can be contrasted with children who may exhibit inhibited/reticent behaviours and a lack of interaction in familiar *and* unfamiliar situations. The children who do not interact in either situation are not likely to have the skills necessary to interact competently, for they do not exhibit social-cognitive competence in either situation. It would seem that this latter group of children may be "at risk" for developing social and social-cognitive incompetence, and could benefit from intervention.

Although children in the lab were not completely unfamiliar with each other, this may make a stronger case for behavioural instability. If children do not interact with somewhat familiar others - but do not show reticent behaviour with friends - then their behaviour with unfamiliar others may be more extreme.

Summary

In summary, the findings from the analyses concerning the cross-situational generalizability of the non-social behaviours did not support the idea that children will engage in patterns of behaviour across situations. This finding may lead to the question of

whether the indices identified as risk factors for social problems (e.g., reticent and solitary-active behaviour), based on laboratory research are indeed true risk factors.

In this section findings related to the non-social behavioural variables assessed in the laboratory and the stability of these behaviours across situations were examined. The predictions concerning the stability of Solitary-Active and Reticent behaviours were not supported, but there were several interesting issues addressed which may have impacted on these findings. Although the prediction concerning the instability of solitary-passive play was supported, very little new information concerning this form of behaviour was amassed.

Re-Examination of Extreme Groups

It appears that children who engage in a high degree of reticent and solitary-active behaviours (in a somewhat novel situation with less familiar peers) may not be exhibiting more of these behaviours on the playground than the average child. Perhaps the children identified in the laboratory are not "at risk" for social-emotional problems as was previously suggested, and so they have no more difficulty interacting with others on the playground than the average child. However, it may be that selecting 12%-14% of the children ranked highest on solitary-passive, solitary-active and reticent behaviours did not produce groups which were extreme enough. It may be that in a sample the size of the present study only the top 2% would comprise a true risk group

Case studies: the prototypical extreme group child

In an examination of the children ranked highest on solitary-passive, solitary-active and reticent behaviour on the playground, it became evident that there was at least one child ranked in the top seven on each behaviour who belonged to that target group. For example, one child who engaged a high degree of reticent behaviour on the playground also belonged to the Reticent group, two children ranked in the top eight on solitary-passive behaviour on the playground belonged to the Solitary-Passive group, and four children who ranked in the top seven on solitary-active behaviour belonged to the Solitary-Active group. Below hypothetical behavioural profiles for children who engaged in a high degree of non-social play in both observational situations is presented the behaviour of Johnny (reticent), Peter, (solitary-active) and Chris (solitary-passive) is described.

Indoors. A group of four year old children is being observed in the laboratory, Johnny, is sitting in the corner. Throughout the session, he alternates between play and periods in which he ceases all activity simply watches the other children. At times, he seems to be unfocused, staring off into space, not engaged in any activity at all. Peter, is presently playing with the cars on the other side of the room beside Chris. After a minute or two he breaks away from this activity and moves toward the airplane sitting in the middle of a pile of toys. He dives toward the plane yelling "Wow look at this neat toy!", and promptly begins to "fly" the plane, running around the room saying "Vroommm, vroommm, I'm coming in for a landing!" Before too long, he puts the plane down, his attention caught by the crayons placed in another corner. He walks over to the crayons

and sits down starting to colour. Within a minute or so, with the crayon in his fist he begins to make big swirls on the paper - making the crayon go 'round and 'round. It appears that he is not focused on the picture he is drawing, the action seems to be almost automatic. Throughout this session, although Chris does briefly watch Peter, and engage in play with Johnny, he spends most of his time in quiescent behaviour. He seems quite interested in the Duplo blocks provided, and spends the majority of the play session patiently building what looks like a robot out of these blocks. When he is finished this activity, he starts to colour a picture with the crayons and paper provided.

On the playground. About two months later, we find the same three children on the playground. Johnny can be seen digging in the sand, and playing on the swings. However, if one was to watch him for an extended period of time it would become obvious that he spends about a third of his time standing around watching the other children or without any focus to his gaze, (his eyes just darting around the playground). Peter is running around the playground with a group of children playing monster tag, he can also be seen digging in the sand, building a big sand pile, riding a bike and playing on the swings. However, during about a quarter of the observations, Peter is hitting the sand repeatedly with a shovel, with little or no attention to the activity. When he gets on the bicycle, he rides as fast as he can alternatively laughing and making car sounds as he zips around the bike path. Chris, on the other hand, is situated near a group of children playing with a pail and shovel. Although he engages in a short conversation with Mary, about one third of the time he plays alone digging in the sand, and riding a bike on the bike path.

Although these children represent hypothetical constructs based on a few extreme cases from the data, these may be the children who I attempted to target with the extreme group procedure. Chris seems to be more interested in manipulating objects than in playing with other children. Even on the playground where the possibility of social play is maximized, he continues to exhibit a tendency toward object-oriented play. It is possible that Chris will eventually play in a more social manner, discovering the lure of social interaction. If he continues to engage in quiescent solitary play, he may not develop the social and social cognitive competencies which will allow for subsequent successful interaction. He may begin to feel social fear and engage in a higher degree of reticent behaviour. This is congruent with the finding of Asendorpf (1991) of an increasing relationship between solitary-passive and reticent behaviours by the time children reach the age of eight years.

Peter is an active child who prefers large motions and indoors engages in more object struggles and other forms of aggression than other children. When he is observed on the playground where there are more children available to play with, he continues to engage in solitary-active activity and rough-and-tumble play. He is also disciplined by the teacher more often than other children. These behaviours are very salient to the peer group, and have been associated with peer rejection and teacher-rated behaviour problems (Rubin, 1982b). Peter may become increasingly rejected and isolated by peers, and due to the lack of prosocial interaction with others may not develop patterns of interaction which would lead to positive social experiences.

Johnny spends much of his time watching others and remaining inactive, he may not feel comfortable with the other children and may be anxious in laboratory situation. Even on the playground where there is a wide range of activities available and many children to play with, Johnny continues to sit/stand inactive and to watch other children. Due to the social anxiety he is hypothesized to be feeling, Johnny may not engage in sufficient quantity or adequate quality of interactions with peers. Eventually in middle-childhood, his behaviours will become salient to peers, and they may begin to reject him (Younger & Piccinin, 1989).

The Faces of Playground Play Behaviours

Finding specific forms of non-social behaviour assessed in the laboratory session were not stable constructs on the playground, inevitably leads to the question: do behaviours children exhibit in the laboratory have the same meaning on the playground? Does reticent (or solitary-active or solitary-passive) behaviour on the playground have the same underlying meaning as reticent behaviour in the laboratory?

Perhaps watching others and being unoccupied (having attention drawn by numerous things at once and not being engaged in any activity) outdoors indicates a high level of distractibility. There are many exciting and interest-arousing things happening on the playground to draw children's attention. Based on previous research, reticent behaviours seem to indicate social fearfulness, yet who is to say that these behaviours must indicate the same emotions outdoors. These behaviours may have a different underlying cause when expressed on the playground.

Solitary-Passive behaviour may also have a different meaning on the playground.

Children who spent the majority of their time riding bicycles, playing on the swing, and climbing on the climber may represent a different group of children than those who tend to engage more passive activities such as building sand castles, shoveling sand, and playing with cars quietly. The degree of physical activity may be a mediating factor in the meaning of passive solitude outside. It is therefore possible that the scheme utilized for this research does not truly tap into the *concept* of solitary-passive play although the operationalization of specific behaviours seems reasonable. Unfortunately because of the lack of research literature surrounding children's playground behaviours, there is no previous research to cite to support this supposition.

General Summary

There were many positive facets to the present research study. Using a large normative sample of children to replicate the behavioural constructs previously reported provided further support for robustness of the constructs of solitary-passive, solitary-active, and reticent behaviours in a laboratory setting. Moreover, the present research provided support for the idea that preschool-aged children who engage in a high degree of reticent, solitary-passive or solitary-active behaviour can be put in virtually mutually exclusive groups, with very little overlap (similar to Rubin & Coplan, 1993).

Another important aspect of this research was the attempt to link the previous findings concerning the non-social play of children to a new exciting arena, the playground. As previously mentioned, researchers seem to be moving toward the

observation of children in this venue, and initial findings support the idea that children's behaviour on the playground does relate to important indices of social competence and peer relationships (e.g., Ladd, 1983; Ladd & Price, 1993; Ladd et al., 1988; Serbin et al., 1993). Thus it appears that the future trends will be geared more toward playground observations.

Limitations

Session 1

Although the findings reported above did not provide support for the predictions, some mediating factors may have acted to reduce the likelihood that extreme groups would be chosen based on the laboratory session, and others may have reduced the likelihood of finding behavioural stability. Some of the drawbacks to this research which will be discussed include, issues that are an integral aspect of research with children - such as a non-representative normative sample, and subject attrition - and practical and theoretical issues which were out of the control of the present study.

Practical issues. The sample selected for this research was not representative of the population of preschoolers due to *sampling bias*. Firstly, the children involved in this study were enrolled in daycare; this research does not necessarily speak to the population of children who do not attend out-of-home care. Moreover, there was a bias introduced based on which daycares agreed to participate in the research; a further bias was introduced by the necessity of gaining parental permission.

There are almost endless possibilities involved in determining what motivates parents to allow their children to participate (or not) in research. It is possible that parents of shy children may be more reluctant to provide permission because they know their children will be caused some distress; overcontrolling and overprotective parents may have refused permission or not filled out forms (although their children may be withdrawn according to Rubin (Rubin & Mills, 1991). Parents who were uninvolved in their children's day to day lives may not have seen or signed the permission forms. Finally, parents interested in the behaviour of their "shy" children may have agreed to allow their child to participate in order to become "informed". There is really no way to assess or control for this drawback, it is an integral issue in research with children. However, it would seem that the major function of this selection bias would be to provide a less extreme sample of children in terms of shyness and behavioural problems, than would be expected in the normal population.

Another drawback to this research, and with research with children in general is the matter of *subject attrition* which occurred across all sessions. In the present study, 37% of the target children were lost from the laboratory phase to the playground observations. As reported previously, the only difference between the attrition sample and the children observed was that the children who were not available for observation were more sociable in the laboratory. As the major focus of this study was not sociability, this finding does not effect results to a significant degree (except to provide a more extreme group in terms of non-social play). An attempt was made to reduce the problem of

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attrition by making parents aware as to the dates when the researcher was coming to the school for both sessions

Theoretical issues. There were fewer theoretical drawbacks to the study, as it was designed as exploratory research. Familiarity and novelty were confounded in the present study, however, it was determined that the most important issue initially was whether children's solitary behaviours did generalize across situations. After it was determined whether or not behaviour patterns were detected, then further research could attempt to determine the source of differences. Unfortunately, this lack of experimental control may have contributed to an inability to interpret the findings (or lack thereof) concerning behavioural stability. All lab studies confound familiarity and situational novelty, it is possible that these two variables need to be untangled to provide a clearer picture of where to go on the playground.

Session 2

Issues surrounding the problems with the targeting of children and playground observations stem from several areas. Both practical and theoretical drawbacks have affected the likelihood that significant behavioural stability would be observed for the extreme groups of children observed on the playground.

Practical issues. The practical drawbacks associated with the targeting procedure and the playground observations affecting both the findings and interpretation of the results include issues which were beyond the control of the present research, and issues which need to be addressed in future research.

Sample size. The most important drawback to the observation of children's behaviour on the playground in this study was the small sample sizes of the targeted groups of children. The small samples reduced the likelihood of detecting significant differences in children's play, and resulted in the selection of less extreme groups; thus the power to detect a significant result in this study was low. However, due to the timing of the data collection in the present study (which could not have been altered) there was little that could be done to counteract the loss of subjects.

Targeting children. I believe that the children chosen through the extreme group targeting procedure were similar to the children discussed in the research extant. Moreover, I believe that the non-significant differences in playground behaviour for the four target groups were valid findings based on the assessments of behaviour which were made in the present study. However, there are targeting issues which should be addressed which may have effected the likelihood of attaining significant differences between groups, these will be discussed below.

The prediction that groups selected based on particular forms of laboratory play *should* in fact *differ* on playground behaviour was made based on extrapolating from Kagan and Rubin's research. Thereby postulating that social reticence and solitary-active play are a behavioural manifestation of underlying traits which children may be exhibiting. These behaviour. - a dispositional characteristic - should be visible in many different situations (e.g., Asendorpf, 1990; Coplan, 1995, Coplan et al , 1993; Garcia-Coll, et al., 1984; Kagan et al , 1984, Kagan et al , 1987, Kagan et al , 1988, Rubin, 1982; 1993, Rubin et al , 1993)

Group selection problems. The greater degree of social familiarity in this research may have led to the selection of a group of children who may not have been targeted in previous studies. Although the lab session in the present study was kept as similar to previous research as possible, the fact remains that children were in a less novel situation playing with more familiar children. If non-social play is more state affected, then it is possible that different children engaged in solitary-passive, solitary-active, and reticent behaviours in the present study versus previous research. The children targeted based on *previous research* would be ones who experienced social fear in an *unfamiliar* social situation. The children targeted *presently* would have exhibited reticent behaviour with *more familiar* children exhibiting tendencies toward social withdrawal. In the present study however, there was no way to assess if these groups of children would be equivalent.

Aside from the possibility that children's non-social behaviours are state related, another fact which might have affected the selection of extreme groups is presented by Dodge and colleagues (e.g., Dodge et al., 1986) who have found that children may have established behaviour patterns with familiar children that would not be in evidence with unfamiliars.

The above problems may be an important consideration in planning future research. There are several ways through which the equivalence - with previous research - of the Reticent, Solitary-Passive, and Solitary-Active groups could be examined and extremity of the groups could be determined (e.g., utilizing additional measures of child

temperament and personality as well as ratings of behaviour and behaviour problems) these will be discussed in the section on future research

Playground play observation scale. I believe that the weak link in this research was located in the observations of children's play outdoors. However, there was very little that could be done to compensate for this weakness as research focused on children's play behaviours on the playground is not available. When examining the drawbacks associated with the playground observations, two issues must be addressed: whether the Play Observation Scale was a valid instrument to utilize on the playground, and whether the behaviours assessed by the present research were too molecular to allow for the discovery of patterns of behaviour.

Because of the lack of previous research concerning children's outdoor play, the scale used in the present study was based on the POS - which assess indoor play. This scale may not have been suited to the observation of children's non-social play on the playground; research is needed to assess the reliability and validity. The psychometric properties would need to be established in a future study (see future directions for a discussion). Moreover, the constructs assessed on the playground in this study were based on research conducted indoors. It is possible that the *meanings* of solitary behaviours on the playground are *different* than in the laboratory. Furthermore, relations of these behaviours to other indices of child social and emotional development may not be the same as the relations reported based on laboratory research. Although based on previous research (e.g., Ladd, 1983, Ladd & Price, 1993, Ladd et al., 1988; Serbin et al., 1993), there is little doubt that children's behaviour on the playground is related to their

social-emotional and social-cognitive development, the specifics of how and why have not yet been determined. This is another aspect of children's play behaviours on playground which must to be addressed in order to accurately assess those children who are "at risk" because of shy, reticent or impulsive solitary-active behaviours

The *second issue* that must be addressed is whether the behaviours (solitary-passive, solitary-active, and reticent) assessed by the present research were suited to detecting differences in the playground behaviours of the extreme groups of children. Dodge and colleagues examined the cross-situational stability of peer group entry and response to provocation in elementary school-aged boys (Dodge et al., 1986, Pettit et al., 1987), and found that there was some generalization of children's behaviour patterns, particularly for *molar* behaviours such as ratings of overall competence. *Molecular* behaviours such as verbal greetings and hitting did not show stability.

It is possible that behaviours assessed in the present research were too specific to allow for the discovery of patterns of behaviour. Perhaps more global indices of behaviour would have been more appropriate tools. These indices could be determined through factor analyses of the structure of children's play on the playground in addition to an examination of previous research. For example, previous research conducted on the playground (e.g., Serbin et al., 1993) and studies on children's behaviour conducted indoors utilized indices such as number, sex and age of children's play partners (Serbin et al., 1993), latency to first request to play partners, behaviour-state changes (Asendorpf, 1990), teacher orientation (Coplan, 1995) and patterns of social initiation and successes (e.g., Rubin et al., 1993) to differentiate children in terms of their non-social behaviour (at

least indoors) and social status (outdoors). These indices could be examined on the playground

Theoretical issues. As the non-social constructs were reported based on analyses with a *normative* sample, these constructs may not be applicable to the behaviour of children who engage in *extreme* amounts of non-social behaviour. It is possible that it would have been easier to replicate the non-social constructs (previously reported in a normative sample) if all the children had been observed on the playground

An issue that needs to be addressed when examining theoretical drawbacks is the reason that a *normative sample* was not collected on the playground. In addition the rationale provided for utilizing extreme groups versus correlational analyses, there were several practical reasons. Because of the exorbitant amount of time needed to code one child, it would have been possible to observe only a small normative sample of children. This would have led to even greater difficulty detecting differences in children's behaviour, thus it was decided that observing children who were at the more extreme ends on the non-social variables as measured indoors would increase the likelihood of detecting significant differences between groups. This factor, in addition to the desire to collect a large normative sample of children indoors to compare to previous research, led to the decision to observe children targeted in an extreme groups procedure.

Playground setup. The specific setup of each playground may have affected children's behaviours differentially, but it was not possible to assess this issue in the present study due to the small number of children observed on any one playground. However, the setup of the playgrounds in the daycares of the present study were very

similar, a combination of contemporary and creative styles. The grounds were sculptured, and the structures were set up in an esthetically pleasing manner, providing novel forms and textures for children (Hartle & Johnson, 1993). Aspects of a creative playground were also incorporated: the structures were interesting, sand and sand toys in addition to bikes and other toys were available for children's use. Moreover, at most daycares special activities such as water, rice, and confetti play areas were set up. It has been found that creative playgrounds in comparison to traditional ones (metal swings, slides etc.) led to more complex social and cognitive behaviours in young children (as well as being more popular with children; Campbell & Frost, 1985; Strickland, 1979). Brown and Burger (1984) found that preschool children - on playgrounds with multifunctional play structures, more space for physical activity, more encapsulated spaces, and more riding vehicles - engaged in more desirable behaviours. Due to the similarity of the playgrounds in the present study, it is likely that analyses of differences in children's behaviour across daycares would have been non-significant. However, the fact still remains that particular characteristics of these playground (while seeming trivial) may have differentially affected children's behaviours. This possible effect could be accounted for in future research by observing all children on the same playground.

Summary

In summary, it is necessary that the drawbacks associated with the present research be addressed. Many of these issues were not within the power of the present study to deal with, some were presented as an integral part of research with children, others were

characteristic of the type of research conducted (e.g., in a laboratory situation) and still others were connected with the dearth of research available to base the present research on. This study represents an important starting point for observing children's play on the playground and assessing patterns of behaviour which may be observed across different social and non-social situations. However, becoming aware of the central issues that need to be addressed will allow for a discussion of directions for future research.

Suggestions for Future Research

There are two ways to look at suggestions for future research: improving on the present research, and the design of additional research which would be incorporated into a new study.

Targeting issues

There are several improvements that could be suggested based on the present research - although not possible to incorporate as part of a Master's thesis due to time and financial constraints. To increase the likelihood that differences in playground behaviour would be detected between the Solitary-passive, Solitary-Active, Reticent and Average groups - or to increase confidence in the finding of non-significant differences between groups - it should be determined that the extreme groups do in fact represent what we postulate they do. The selection of the target group must be streamlined and improved. Aside from the obvious need to utilize a larger sample of children, one way which this could be accomplished is through the use of *additional assessments* of child temperament and social behaviour (similar to Coplan et al., 1994 and Rubin et al., 1993) to accompany

the observations of children's play behaviour. Coplan and colleagues (1994) utilized the Colorado Child Temperament Inventory (CCTI, Plomin & Rowe, 1984) and Rubin (1982b) used teacher ratings of child behaviour problems as additional measures of child adjustment. Either of these, or similar measures would have been appropriate

Using an additional means to target children in the extreme groups would have functioned to increase confidence in the stability of the behaviours and traits of the targeted children. Moreover, linking behaviours in the lab to particular traits in children, which had been previously identified as differentiating characteristics, would have made interpretation of the findings concerning playground behaviour clearer. For example, a Solitary-Active group, with children who engaged in a high degree of solitary-active behaviour in the lab, as well as being identified as impulsive or having social behaviour problems by parents and teachers could be created. If children chosen in this manner did not engage in a high degree of solitary-active behaviour on the playground, concluding solitary-active behaviour is not a stable behavioural construct would have more explanatory power. If the extreme groups had been selected through this manner they would have been theoretically similar to the children discussed in previous research (e.g., Asendorpf, 1990, Coplan et al., 1994, Rubin et al., 1993) and differences detected in the laboratory in children's behaviour would be more likely to reflect "real life" differences in sociability.

The fact that the creation of these groups was based on a *single observation period* may have affected the validity of the groups. However, this drawback is characteristic of all the laboratory research conducted to date. Collecting behavioural

observations at a single time period makes the data highly susceptible to transient fluctuations in children's behaviour. Children may not be acting in a characteristic manner on the day the observations were collected. Thereby the groups which were created may contain children who may not have been targeted and missed some children who may have been targeted, if observations had been collected the next day. Thus future research should make a concerted attempt to get a more representative sample of children's indoor play behaviours. This could be achieved through collecting observations on children at more than one occasion.

Playground observations

In terms of the observations of children on the playground, it would have been advisable to examine children's behaviour on the playground prior to conducting the present research, either through a pilot study, or (preferably) through observations of a large normative sample. This initial study would have established the reliability and validity of the POS on the playground and provided an examination of behavioural constructs identifiable on the playground. Additional measures examining social and emotional functioning of the children could be utilized to determine if children's playground behaviour, particularly non-social, can be categorized into meaningful constructs relating to children's social and emotional development. After more detailed information was collected about the structure and meaning of playground play behaviour, then the present research could be conducted.

Moreover, collecting observations on a large normative sample both indoors and on the playground would have provided information on normative patterns of behaviour across situations, rather than just on the extreme groups of children. However, a very large group would be needed to obtain detailed information on children who might be seen as "at risk". Due to the amount of time which needs to be invested in collecting data on each child, utilizing a large normative sample would also involve a huge commitment in terms of both time and monetary expense.

The fact that observations both in the laboratory session and on the playground were very time consuming and difficult, leads to the suggestion that perhaps alternative measures to assess children's exhibition of non-social behaviour in both situations must be developed. In fact Coplan (1995) has developed a questionnaire - and provided initial psychometric data on - a teacher rating scale designed to assess the various forms of young children's non-social play behaviours. A measure such as this would save a great deal of time and be convenient for daycare teachers. Moreover, a scale of this sort would provide researchers with information concerning children's behaviour which is not dependent on a single observational period. With continued development of this scale, and later the development of a similar scale to assess non-social play on the playground, the present research study would no longer be a huge undertaking, but would more or less be a matter of paper and pencil scales for teachers to fill out.

In summary, several suggestions have been presented, directed at building on what has been accomplished by the present research. There is much work ahead of those who

wish to move the examination of children's non-social play onto the playground

However, I believe that this endeavor will prove to be fruitful and rewarding

General Conclusions

In the course of this discussion several issues have been addressed. findings concerning all phases of the research have been examined, positive aspects of this study have been addressed as well as the drawbacks associated with it, and finally directions for future research were discussed. An examination of these matters leads to the final question. Where do we go from here? How has the present research added to previous research base, and how do the findings impact on our view of children's non-social behaviours?

Where do we go from here?

The first question has been partially answered by the section on suggestions for future research. The answer we need to turn the focus onto the naturalistic setting of the playground. This suggestion makes intuitive sense, as it is in this type of environment in which children will engage in the majority of their peer interactions.

Impact of this study on the understanding children's solitude

I believe that taking the examination of non-social play onto the playground was an important first step in the examination of the real life "risk status" of children identified as "solitary players". Through the attempt to bridge findings concerning children's non-social behaviour in the laboratory with their behaviour on the playground, it was discovered that

there is no simple relationship between children's solitude expressed in a laboratory situation with peers who may not have been friends, and their behaviour on the playground.

It would appear that children identified as behaviourally reticent, solitary-passive, and solitary-active in the laboratory situation may not differ from average children in terms of the levels of interaction on the playground

Children on playgrounds are relatively unconstrained, have a wide range of activities to choose from - and most importantly - have the opportunity to play with many different children. On the playground children can showcase their abilities better than they can in almost any other environment. I believe that we should take advantage of this arena, because here, unlike any other environment, children can show us the best of themselves as well as the worst. I believe that the children we should be concentrating on as being "at risk" and as in need of intervention would be those children who do not interact with others in an environment - such as the playground - where the opportunity for social interaction would be maximized.

This research has helped to pave the way for researchers to move the examination of non-social behaviours onto the playground, and into other naturalistic settings. Many questions remain unanswered concerning children's play outdoors, but this study opened up an exciting area for new research.

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Appendices

The Development of the Scale

Early observational investigations of children's free play preferences often focused upon the formulation of social participation hierarchies. Thus, in a now classic study, Parten (1932) discovered that social participation among preschoolers increased with the child's age. Parten defined six sequential social participation categories: unoccupied behavior, solitary play, onlooker behavior, parallel play, associative play, and cooperative play. Preschoolers' modal play preference from 2 1/2 to 3 1/2 years was parallel play, and from 3 1/2 to 4 1/2 years was associative play.

A second major early source of information concerning children's play behaviours stemmed from Piaget's (1962) classification of three successive stages according to the degree to which play remains purely sensorimotor or has some bearing on thought itself. Smilansky (1968) elaborated upon the original Piaget categories and labeled them as follows: (a) **functional play**--simple repetitive muscle movements with or without objects; (b) **constructive play**--manipulation of objects to construct or to "create" something; (c) **dramatic play**--the substitution of an imaginary situation to satisfy the child's personal wishes and needs; and (d) **games-with-rules**--the acceptance of prearranged rules and the adjustment to these rules. The four types of play have been thought to develop in a relatively fixed sequence with functional play appearing ontogenetically first in infancy and games-with-rules last (during concrete operations). Recent studies, however, have indicated that constructive and dramatic play develop simultaneously and follow the same developmental course (Rubin, Fein, & Vandenberg, 1983).

The observational scale described in this manual represents an attempt to relate the two long-standing play hierarchies, the one social (Parten, 1932), the other cognitive (Piaget, 1962). In recent studies, the scale has proven useful in determining (a) age and sex differences in children's play; (b) SES differences in play; (c) effects of ecological setting of play; (d) individual differences in play; and (e) the social contexts within which the various forms of cognitive play are distributed. In addition, the scale has been used to identify both extremely withdrawn and aggressive children who are "at risk" for later psychological difficulties. An abbreviated and selective bibliographical list of studies in which the play scale has been used at the University of Waterloo as well as at other universities is included in this manual.

Definitions of Play and Non-Play Categories

When coding a child's behaviour the first decision the observer must make is whether the behaviour is play or non-play. The coding sheet is divided into play and non-play categories. The cognitive play categories (functional, constructive, dramatic and games-with-rules) are nested within the social play categories (solitary, parallel and group). Two non-play behaviours, exploratory and reading, are also nested within the three social play categories. Thus there are 18 possible nested behaviours (solitary functional, solitary-constructive etc.). The remaining non-play categories are unoccupied behaviour, onlooker behaviour, conversation with teacher or peers, transitional and aggressive behaviour.

1. Social Play

When coding the social play of the focal child it is important to note (1) the proximity of the focal child to any other children in the area, and (2) the attentiveness of the focal child to his/her playmates.

(A) **Solitary Play:** The child plays apart from other children at a distance greater than three feet. S/he is usually playing with toys that are different from those other children are using. The child is centered on his/her own activity and pays little or no attention to any children in the area. If the child is playing in a small area the three-foot rule is often not applicable. In such cases the observer must rely upon the relative attentiveness of the child to others in his/her social milieu.

(B) **Parallel Play:** The child plays independently; however the activity often, though not necessarily, brings him/her within three feet of other children. If the child is very attentive to others while playing independently, parallel play is coded regardless of the distance between the focal child and the other children. S/he is often playing with toys that are similar to those that the children around him/her are using. The child usually seems to be somewhat aware of and attentive to his/her playmates, and frequently engages in "parallel speech" (i.e., verbalizing his/her own thoughts for the benefit of the other children). In short, the child plays beside or in the company of other children but does not play with his/her companions.

(C) **Group Play:** The child plays with other children and there is a common goal or purpose to their activity. They may be following one another in a functional or rough-and-tumble type of activity, or they may be organized for making some material product, striving to attain some competitive goal, dramatizing situations of adult or group life, or playing formal games. Whatever the activity, the goals are definitely group-centered.

2. Cognitive Play

In order to code the cognitive play level of a given activity the observer must first decide upon the child's intent or purpose as s/he engages in that activity.

(A) **Functional Play:** This is an activity which is done simply for the enjoyment of the physical sensation it creates. Generally speaking, the child engages in simple motor activities (e.g., repetitive motor movements with or without objects). Specific examples are climbing on gym equipment; pouring water from one container to another; jumping on and off a chair; making faces; singing or dancing for non-dramatic reasons; ringing bells and buzzers, etc.

(B) **Constructive Play:** The definition of constructive play is the manipulation of objects for the purpose of constructing or creating something. Pounding on playdough for the sensory experience of the pounding is considered to be functional play; however, pounding on playdough for the purpose of making a "pancake" is coded as constructive. Similarly, pouring water in and out of containers is a functional activity; however, pouring water into a series of containers for the purpose of filling each container to the same level is a constructive play behaviour. It can be seen, therefore, that one major distinction between functional and constructive activity concerns the child's goal during play.

(C) **Dramatic Play:** Any element of pretense play is coded as dramatic. The child may take on a role of someone else, or may be engaged in a pretend activity (e.g., pouring pretend water into a cup and then "drinking" it). S/he may also attribute life to an inanimate object (e.g., making a doll talk).

(D) **Games-with-Rules:** The child accepts prearranged rules, adjusts to them and controls his/her actions and reactions within the given limits. These rules may be long-standing, time-honoured rules, or they may have been decided upon by the child and/or his/her playmate(s) prior to the onset of the game. There must be an element of competition either between the focal child and other children, or with him/herself. To illustrate, two children who are taking turns bouncing a ball against a wall are not necessarily engaging in a game-with-rules activity even if they have decided that dropping the ball constitutes the end of a turn. However, if these children are counting the number of bounces successfully completed before the ball is dropped and are trying to beat the other child's (or their own) previous score, then they are playing a "game-with-rules".

3. Non-Play Behaviours

The following behaviours are those which are not coded as play.

(A) **Exploratory:** Exploratory behaviour is defined as focused examination of an object for the purpose of obtaining visual information about its specific physical properties. The child may be examining an object in his/her hand or may be looking at something across the room. Also, if a child is listening to a noise or listening for something his/her behaviour is coded as exploratory. As previously mentioned, this behaviour has been nested within the social play categories because it can occur in solitary, parallel or group situations.

(B) Reading: Generally, reading is coded when a child is reading or leafing through a book, or is being read to by a teacher or other person. However, this category has also been expanded to include listening to a record or tape recording and counting objects (for example, counting the number of pictures on a wall or the number of cards in a deck).

Because reading activities can potentially fall under any of the three social levels (solitary, parallel or group), it has been nested within the social play categories.

(C) Unoccupied Behaviour: There is a marked absence of focus or intent when a child is unoccupied. Generally, there are two types of unoccupied behaviours: (1) the child is staring blankly into space; or (2) the child is wandering with no specific purpose, only slightly interested, if at all, in ongoing activities. If the child is engaging in a functional activity (e.g., twisting hair or fiddling with an object) but is not attending to the activity, then the child is coded as being unoccupied. If it is judged that the child's mind is on the functional activity, the behaviour would be coded as 'functional'.

(D) Onlooker Behaviour: When onlooking, the child watches the activities of others but does not enter into an activity. S/he may also offer comments, or laugh with the other children, but does not become involved in the actual activity.

(E) Transition: Transition is coded when a child is setting up a new activity, moving from one activity to another, or tidying up an activity. Examples are walking across the room to watch an activity or to get a drink of water, setting up a game, or searching for a desired object.

(F) Active Conversation: Conversation involves the verbal transfer of information to another person. Parallel and private-speech do not fall under this category as neither represent attempts at communication. Conversation is coded when a child is being spoken to by another child and is actively listening in order to respond or follow directions, and is also coded when more than one child shares laughter (eye contact must be made). However, a child who is listening to someone else's conversation but is not specifically being spoken to is coded as engaging in onlooker behaviour instead of conversation.

Conversation with a peer is differentiated from conversation with a teacher or adult by putting a checkmark in the appropriate coding space.

(G) Aggression: Aggression refers to **non-playful** physical contact with another child. It is almost always agonistic in nature. Included are hitting, kicking, grabbing, threatening, etc.

(H) Rough-and-Tumble: This is a specialized type of functional or dramatic play which involves playful or mock fighting, running around in a non-organized fashion, or playful physical contact (e.g., tickling). After coding the behaviour as either functional or dramatic play, the observer should indicate the rough-and-tumble nature of the play by noting "RT" on the corresponding line at the right-hand side of the coding sheet.

The following four examples are illustrations of behaviours for which **RT** is coded:

Example 1:

A group of children is riding on tricycles around a schoolyard. They are riding as a group and are travelling as fast as they can (this is actually "group running").

Example 2:

Two children are sitting on the floor. One leans over and playfully flicks the other on the head. The second child laughs and returns the gesture.

Example 3:

Two children are pretending to be "super heroes". At one point they engage in a "battle" and tussle together on the floor.

Example 4:

A group of children are playing "house". One child, who is pretending to be the family dog, has been "bad", and is being spanked by the mother.

In the first two examples the children are engaging in group functional activities, and the play should be coded as such. However, in Example 1, their functional play is of a "group running" nature, and in Example 2 they are engaging in playful, physical contact -- two markers of rough-and-tumble activities.

Similarly in the second two examples the children are involved in group-dramatic activities; however, the behaviours involve mock fighting or physical contact. Therefore, in all four cases the observer should place a checkmark in the appropriate group functional (for Examples 1 or 2) or group-dramatic (for examples 3 or 4) column and mark "RT" on the corresponding line at the bottom of the coding sheet.

Summary of Play and Non-Play Behaviours

BEHAVIOUR	GOAL OR INTENT
Solitary	- to engage in an activity entirely alone, usually more than three feet away from other children.
Parallel	- to engage in an activity beside (but not with) other children, usually at a distance of three feet or less.
Group	- to engage in an activity with another child or children, in which the cognitive goal or purpose is shared amongst all group members.
Functional	- to experience sensory stimulation through simple, repetitive muscular movements.
Constructive	- to create or construct something.
Dramatic	- to dramatize life situations or bring life to an inanimate object.
Games-with-rules	- to engage in a competitive game-type activity following pre-established rules and limits.
Exploratory	- to obtain visual or auditory information from an object.
Reading	- to receive cognitive information from books, records, etc.
Unoccupied	- there is a complete lack of goal or focus during this behaviour.
Onlooker	- to watch (or listen to) the behaviours and activities of other children.
Transition	- to prepare for, set out, or tidy up an activity, or to move from one activity to another.
Conversation	- to communicate verbally with others.
Aggression	- to express displeasure, anger, disapproval through physical means.
Rough-and-Tumble	- playful physical activity.

Directions

1. The observer should watch the target child for 30 seconds before beginning to record behaviours, in order to become familiar with contextual cues regarding the child's behaviours. The target child is observed for a 10 second interval. The next 5 to 10 seconds are spent coding the predominant activity observed by placing a checkmark in the appropriate column on the coding sheet. The observer should attempt to keep the length of this coding time (or "off" interval) as close to 5 seconds as possible. Thus, it will take one- and one-half to two minutes to obtain one minute of recorded observations. In order to obtain a valid measure of the child's general play styles, we recommend that only up to five minutes of the child's behaviour be recorded on any given day.

2. When the child is involved in any interaction with another child or children (i.e., group play, conversation, aggression, rough and tumble) the names of the focal child's playmates should be recorded in the appropriate space at the right-hand side of the coding sheet.

3. For any of the above-mentioned interactions the affect, whether the interaction was positive (+), neutral (o) or negative (-) should also be noted in the appropriate column.

A positive interaction is prosocial in nature and will ultimately leave the playmate with a good feeling. This includes help-giving, guidance, praise, affection, reassurance, protection, gift-giving, overt compliance or acceptance of directions and gifts, warm greetings, smiling and laughing, invitation to play, permission giving, promises of reward, joke telling, etc.

A negative interaction is defined as an agonistic or anti-social act which will make the playmate feel unhappy, bothered, frustrated, etc. Examples are overt noncompliance, disapproval, rejection, blaming, teasing, insults, quarreling, yelling, ignoring, taking or damaging property, physical attack, threats.

Neutral interactions are the everyday, common-place interactions between children that contain none of the above prosocial or agonistic behaviours. These interactions are frequently communicative in nature and often involve an exchange of information or ideas.

These affective categories are drawn from Furman, Rahe, and Hartup (1979).

Selecting the Dominant Behaviour

During each 10-sec interval, only one behaviour is coded. If more than one behavior occurs during a 10-sec interval, the longest lasting behaviour is coded. If the behaviours are of the same length, the observer "codes up" (i.e., s/he codes the most mature social and/or cognitive category).

The hierarchy for "coding up" is as follows.

1. Any Group behaviour supercedes all other behaviours.

Group games > group-drama > group-construction > group-reading > group-exploration > group-functional

2. Conversation

3. Parallel play

Within parallel play the same cognitive play hierarchy as in 1 is used (e.g., games > drama ...)

4. Solitary

Within solitary play the same cognitive play hierarchy as in 1 is used (e.g., drama > construction ...)

5. Onlooker

6. Unoccupied

7. Transitional

Aggression and rough-and-tumble play are not included in the above described hierarchy. They are both coded every time they occur. If aggression lasts longer than any other behaviour in a 10-sec interval, then only aggression is coded. However, if it lasts less than another behaviour, both aggression and the other behaviour is coded.

Rough-and-tumble play can only be coded in combination with either functional or dramatic play.

Reliability

Inter-observer reliability has been reported in many of the sources listed in the bibliography. Percent agreement has ranged from approximately 80%-95%. Kappas computed on various data sets have been uniformly high.

Some Helpful Hints

1. Solitary vs. Parallel Play: As previously mentioned, a distance of three feet is considered to be the dividing line between solitary and parallel play. However, the three foot proximity rule is not absolute. In some situations, the observer must consider other factors when deciding whether to code a behaviour as solitary or parallel. For example:

The focal child is playing at a table and a second child is playing on the floor within three feet of the focal child, but they are back to back and are paying no attention to one another.

In this situation the focal child's play would be called solitary because of the complete absence of attention to the other child.

If the play space is limited, i.e., if the children are playing in a very small room and/or there is only one table at which they can play, they may not have any choice but to be within three feet of one another. In this situation the observer must rely on other factors such as the attentiveness of the target child to nearby children, the presence or absence of parallel speech by the target child, and the child's position at the table relative to other children at the table.

2. Parallel vs. Group Play: In some situations it may appear as if a number of children are engaged in a group activity when actually they are playing in a parallel manner. For example:

Two children are going to build a house together out of "lego". One decides to take some lego and build a garage for the house, while the other works on the house itself.

In this example the children are actually engaging in parallel play because at this point they have two separate goals for building with lego. One child's goal is to build a house, while the other child intends to build a garage to attach to the house. When the time comes that they have finished their separate constructions and are joining the two together (i.e., when they have a common goal) they will be engaging in group play.

Similarly, in a dramatic situation when two children are play-acting the roles of "mommy" and "daddy", they are coded as engaging in group-dramatic play as long as they are together and their characters are interacting with one another. However, if the "daddy" goes to "work" and the "mommy" stays "home" their play may be reduced to parallel-, or even solitary-dramatic play for a while.

3. Parallel vs. Group Rough-and-Tumble Play: As previously discussed, rough-and-tumble play refers to playful physical contact or mock fighting with another child. This seems to imply that rough-and-tumble play, by definition, occurs in group situations only. However, in the following examples the behaviours of the focal children cannot be considered to be group play:

Example 1:

The focal child rushes over to another child (who is colouring a picture) and pretends to engage in a sword fight with him. The second child completely ignores the focal child and continues drawing.

Example 2:

The focal child has a paper airplane and is throwing the airplane at children around her. She throws the airplane at a passing child, runs, picks it up and throws it at another child.

In both of these examples there is no common goal or purpose between the focal child and his/her playmates; consequently, the activities are not coded as group play. However, in both cases the target child is definitely engaging in rough-and-tumble behaviours. Therefore, the first example would be coded as parallel-dramatic rough-and-tumble, and the second as parallel-functional rough-and-tumble. If, during these intervals, the second child had joined the focal child in the rough-and-tumble play behaviour group-dramatic or group-functional rough-and-tumble play would have been coded.

4. Constructive Play vs. Transition: While setting up or getting ready to do an activity is generally considered to be transitional behaviour, sometimes the setting-up stage constitutes a type of play in itself. For example, if a child elects to play with a toy hospital s/he may spend a great deal of time putting the hospital beds and equipment in specific places in the hospital before commencing dramatic play. Indeed, this "setting up" may be the only activity the child does with the hospital. In this case constructive play is coded instead of transitional activity. It may be said, therefore, that setting-up which is not merely preparation but does, in fact, involve some creativity, is considered to be constructive play. Other examples include dressing dolls, snapping together train tracks or road pieces on which a car or train will "drive".

Secondly, some constructive activities have transitional behaviour nested within them. For example, when drawing, painting, or building with blocks a child has to take some time to select new markers, refill his/her paint brush, get another block, etc. If these activities last for very short periods of time in between long constructive periods then they are not considered to be transitional. Rather, they are considered to be part of the constructive activity. However, if, for example, a child draws for three or four seconds but then spends the rest of the 10 second interval selecting a new colour, transitional activity is coded. In other words, if this type of behaviour is predominant in a 10 second interval it is considered to be transitional.

5. Dramatic vs. Functional Play: It is sometimes very difficult to tell if a child is engaging in dramatic or functional play; (e.g., a child is pushing a toy car around the floor). In this example, the observer must use contextual cues to help make a decision regarding the type of play behaviour to code. The most obvious clue is whether the child is making any playful sounds -- engine noises, tires squealing, etc. If so, then the behaviour is coded as dramatic. Similarly, if the child seems to be driving the car along a "road", or is driving the car over to pick up some "passengers", then dramatic play is coded. However, if there are no contextual cues available, or if the action seems to be for sensory stimulation only (as in an aimless pushing and pulling of a truck along the floor), the observer should code functional play.

6. Dramatic vs. Constructive Play or Transition: In some situations a child is engaging in an activity which would normally be coded as constructive or transitional [e.g., putting plates out on a table (constructive); putting playdough into a cupboard (transitional)]. However, if the child is, at that point, in a dramatic role or is engaging in some types of pretense play, then these behaviours are coded as dramatic. In the above two examples, this applies if the child is in fact pretending to be a "mommy" who is setting the table, or is actually putting the playdough in the "oven". Again, it is important to try to discern the purpose behind the child's actions.

7. Games-with-Rules: There is a tendency to code any activity that involves a board game as a game-with-rules. However, a child can use a board game in a number of ways which do not involve competition or following pre-established rules. For example, if the game has a buzzer or a bell, the child may spend time "buzzing" or "ringing" merely to enjoy the sound. This would be coded as functional behaviour.

A child who finds the actual games-with-rules aspect of a board game too complex or difficult may simplify his/her use of the board game to a constructive type of activity. For example, one game currently on the market requires children to put a number of varied shapes into corresponding places on a board during a set period of time. If the child does not stop the game timer before "time has run out", then all the pieces which have been put into their designated positions are ejected. A child who tries to "beat" the timer or his/her or others' previous completion times is engaging in a game with-rules. However, if the child is merely putting the pieces in their appropriate positions without the use of the timer, then s/he is treating the game as a puzzle rather than as a game; his/her behaviour is coded as constructive.

Also, some board games must be set up before game-playing can commence. There may be cards or pieces, etc., which must be put into specific locations, or a piece of equipment may need to be wound or set in some way. If these activities are done in preparation for playing with the game in some manner then "transition" is coded; if the activities are carried out for their own sake then constructive is coded.

8. Games-with-Rules vs. Onlooker: A child will watch an on-going game for one of two reasons: (1) S/he is not actually playing the game him/herself but is interested in watching it; (2) S/he is involved in the game-playing and is waiting for his/her turn. In the first example the child is not an active participant; therefore s/he is coded as onlooking. However, in the second example the child is actively involved in the game, in spite of the fact that s/he is, at that point in time, merely watching the others take their turns. Group-game is coded.

On the other hand, if, instead of watching the game while waiting for his/her turn, the child in the second example is watching some other activity or engaging in some other behaviour, then that other behaviour is coded.

9. Conversation:

A. Parallel Speech: As previously mentioned, parallel speech, or verbalizing one's thoughts and/or actions to no one in particular, is not coded as conversation. It is sometimes difficult to tell if a child is merely verbalizing to him/herself or is, in fact, attempting to speak with another child. Some clues that may help the observer to decide if a child is communicating are:

- 1) the focal child refers to the other child by name or by the pronoun "you";
- 2) the focal child asks a question or makes a demand of the other child;
- 3) the focal child establishes eye contact with his/her playmates when speaking.

B. Dramatic and Game Speech: In group situations some forms of speech may be communicative in nature but are required for the maintenance of the ongoing group play activity. For example, in group-dramatic play it is necessary for the play characters to talk to one another. This is referred to as "dramatic speech". Similarly, during a group game activity, there is a certain amount of talking that goes on in order to maintain the interest in and momentum of the game (e.g., "It's your turn."; "I got a four."; "You always beat me."; etc.). This is called "game speech". In spite of the fact that incidences of dramatic and game speech are communicative they are not coded as conversation because they are an implicit part of the group activity. On the other hand, if the target child, while engaged in a group-dramatic or group-game session, speaks to a child about a totally unrelated matter, then this conversation is coded because the communication is over and above the requirements of the ongoing group activity.

C. Active Listening: In order to code active listening (i.e., conversation), the observer must be certain that the focal child is being spoken to and is listening for the purpose of replying or following directions. Some clues that the child is actively listening are:

- 1) the focal child establishes or maintains eye contact with the speaker;
- 2) the focal child responds in some manner to the other child when that child has finished speaking.

10. Exploratory vs. Onlooker Behaviour: As previously mentioned, the major distinction between these two behaviours is that exploration involves receiving visual or auditory information from an object, while onlooking refers to receiving visual information regarding another person. In the following situation it is possible to confuse the two behaviours:

The focal child is watching another child draw a picture. The 'artist' stops drawing and moves his hand back from the picture, while the focal child continues to look at the drawing.

In this example the target child is at first engaging in onlooker behaviour. When the second child stops drawing, however, the behaviour of the focal child becomes exploratory in nature because s/he is no longer watching the person, but is instead examining the picture. If the focal child's attention had moved with the other child himself when he stopped drawing, then this behaviour would represent a continuation of onlooking.

11. Simultaneous Activities: It is possible for a child to engage in two activities simultaneously. For example, a child may be walking toward a group of children (transition) and watching them at the same time (onlooker). Similarly, a child may be drawing a picture (constructive) and singing (functional) all at once. In a situation such as this it is important that the observer try to establish where the child's attention is. In the first example the child is probably concentrating on the activity of the children s/he is watching; therefore onlooker is coded.

The second example is more difficult to code and depends on contextual cues (i.e., is the child just lightly humming bits of songs while drawing or is s/he singing loudly and pausing in his/her picture making to sing choruses). At any rate, the observer should make a strong attempt to determine the focus of the child's attention. If this is impossible, the "code up" rule should be invoked.

Similarly, a child may converse with another child and engage in another behaviour simultaneously. This does not present a problem because of the fact that conversation is "double-coded"; i.e., it is coded whenever it occurs. Therefore, in this situation both conversation and the predominant behaviour are marked on the coding sheet.

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Appendix B Addendum to POS

NON PLAY	behaviors that are not included under play categories
unoccupied	child appears to be unfocused and is not oriented on a toy or another child.
onlooker	child may not be in close proximity to the others she/he is focused on-also code focal children
transitional	this may be confused with unoccupied-watch carefully and take into account what the child does immediately afterwards
teacher	child is in interaction with the teacher(I), oriented on the teacher(O) or in conversation(C) with the teacher
SOLITARY	children are engaged in activities more than three feet away from other children. They may be within 3 feet only if it is apparent that they are unaware of the other children (i.e. child's back is to the other)
occupied	unsure exactly what is occurring although it is obvious that the child is playing alone
functional	non goal-directed activity, without real purpose or intent- can include gross motor play such as twirling around- if done for the physical sensation
exploratory	examination of objects/ environments to learn about it
constructive	goal directed- use of objects for a purpose (most often the purpose it was made for -i.e., driving a truck
dramatic	either the child can be the object or a toy as long as it involves the use of pretend. If an object is used in the context of imaginary play the activity becomes dramatic--adding "truck" noises
games	rules are an important aspect of this-even if the rules change. Note that in a group of children who appear to be in games- not all children will necessarily be in that state-clues-they play no attention to the rules that the others are using (but do not seem to have their own either)
PARALLEL- occupied	activity engaged in within three feet of another child (may be farther away on playground if the child's behaviour is obviously being affected by other children's activity) *note that behaviour is affected by others play/behaviour
GROUP-occupied	at least one other child is included in the interaction/activity
conversation	child is involved in either speaking (C) or being spoken to/listening (L)
affect	code the tone of each interaction : positive, prosocial/ leaves good feeling (+) neutral, common place interactions (0) or negative more agnostic/leaves more negative feelings(-)
uncodable	child is off playground or out of room, or not visible on tape
ADDITIONAL	
rough and tumble	playful physical contact (see Rubin (1989) for further distinction
aggression (I/B)	differentiate into bullying aggression (to intimidate; B) versus instrumental (to take away toy etc.; I.) versus tantrum aggression (not directed a person but perhaps at an object; T)
automanipulatives	nail biting, hair pulling and other behaviors that seem to indicate anxiety
hovering	child is within 6 ft of others -watching without subsequently trying to join in interaction
crying	any stage of crying, that may indicate discomfort with the situation

Appendix C Coding Form for POS

Subject _____ Sex _____ Quartet # _____ Date _____

Time:						
NON PLAY						
unoccupied						
onlooker						
transitional						
teacher /researcher						
SOLITARY						
occupied						
functional						
exploratory						
constructive						
dramatic						
games						
PARALLEL						
occupied						
functional						
exploratory						
constructive						
dramatic						
games						
GROUP						
occupied						
functional						
exploratory						
constructive						
dramatic						
games						
ADDITIONAL						
conversation						
affect						
uncodable						
rough & tumble						
aggression (I/B)						
auto-manipulatives						
hovering						
crying						
FOCAL CHILDREN						

Comments

Other children in group:

Appendix D- Toy List for Lab Sessions

- 1- Hungry Hippo game (included for 8 sessions)
- 1- Doll who cries/talks and Cradle (with blanket)
- 1- Tonka type trucks
- 8- children's books with neat pictures
- 4- puzzles
- 1- set Duplo blocks
- 6- small cars
- 1- doctor set (with needles, stethoscope, etc)
- 1 Farm set with animals
- 1- Peg board (which can be used to stack pegs, as a game, or to create coloured patterns)
- Art supplies- 1 pr. scissors, 1 pkg crayons, construction and white paper, glue stick

Appendix E Guide to Playground Observations

OI Onlooker watching others, not interacting with them, listening to others but not included in the conversation (*looking at toys of others is exploratory)
 *child may be sitting on a bike or on the swing--but if the main focus of the activity is watching other children code onlook

Unoc Unoccupied wandering around with no focus, standing around-no focus
 *again child may be on a bike or swing or other apparatus

Trans Transitional focus predominantly on changing activities

(T) Teacher any activity in which the teacher is involved--may be applied to any behavioural category
 *if coding onlooker- teacher must be the focus of the attention

(n) #Children number of children included in the interaction

Social Participation

S Solitary unaffected by the play of those around them, the child may be on a swing with others but have no focus on the children, they may be sitting beside each other at a table or even sometimes on a tire swing (only if no focus on the others-no glances or conversation etc.)

P Parallelinfluenced by others- but not have shared goals--there is focus on another child (or child's activity for exploratory) and there may or may not be interaction between them
 e.g. two children on a swing-look over at each other as they swing
 two children playing in the sand-looking over at each other but not building the same structure

G Group shared goal, interaction
 e.g. code group if one child is pushing another on wagon, or swing etc

Cognitive Level of Play

Occ Occupied not fit into any known category

Fn Functional repetitive sensori-motor activity--
 examples: singing, hitting ground or pail with shovel, repeatedly kicking sand, hopping up and down, running or engaging in an activity

with frenzy, riding trike (doing physical activity) in a frenzy
(as fast, often, or hard as possible)

Exp Exploratory focused examination of something

examples: exploring new toys
looking at bugs, in the sand
listening to music

Cn Constructive playing with toys in a constructive manner

examples: building with blocks
shovel sand into a pail
climbing up stairs, rope, sliding down slide
(if doing these activities with no goal or in frenzied way may be
functional; also be aware of speech- may be engaging in dramatic play)
riding trike engaging, pulling wagon, swinging on swing
setting up a dramatic or other activity

Drm Dramatic use of pretense in play (*be aware that this category is not easy to
code)

examples: filling up pail to make a meal for someone; playing racecars
with the trikes
playing house
playing Superman, etc

** try not to assume too far, but also try to get to the crux of the play

**setup is constructive

**monster games are coded group dramatic with rough and tumble

Gam Games playing games with rules--(be aware of words like your turn, I win,
you're winning) but also be aware that in a group of children not
all may be playing games- or they may not be using the same

examples: tag- regular forms
baseball (with rules-not just pitching the ball and trying to hit it)

Conv Conversation talking with others code with additional (l) for listening or (t)
talking --if possible. Also code as +, -, or 0 (neutral- or leave neutral blank)-see
POS manual for description of affect in conversation

**be aware that conversation in the context of group play is not coded as
Conv- unless it is unrelated to the play at hand (i.e. talking about breakfast
while playing with cars)

*can be double coded- if the alternate activity (i.e. solitary-
constructive with conversation) is unrelated to the play

(RT) Rough&Tumble double-coded
 physical contact-playful
 chase games, playful pushing

UC uncodable just not sure what's happening

Forms of AGGRESSION

PA Physical Aggression; hitting

BA Bullying Aggression-assert dominance over another child

OS Object Struggle (can be coded as neutral or negative)

Auto Automanipulatives (nailbiting, hand wringing, hairpulling (own))

Cry Crying

Appendix F Playground Coding Form

School

Date:

am pm

Weather:

Name

Wearing

Special activities:

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

Comments: (about environment, children etc)

END

0|4-06-9|6

FIN