

RELATIONS BETWEEN DIMENSIONS OF
TEMPERAMENT AND STYLES OF PLAY IN FIVE-
AND SIX-YEAR-OLD CHILDREN

by

Lisa Natalie Robson Geary

B.Ed. University of British Columbia 1991

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
in the Faculty
of
Education

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SIMON FRASER UNIVERSITY

October 1997

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0-612-24136-X

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APPROVAL

NAME Lisa Natalie Geary
DEGREE Master of Arts
TITLE Relations Between Dimensions of Temperament and
Styles of Play in Five- and Six-Year-Old Children

EXAMINING COMMITTEE:

Chair Philip Winne

Lucy LeMare, Assistant Professor
Senior Supervisor

Judith Scott, Associate Professor
Member

Dr. Lanna Kanevsky, Associate Professor, Faculty of
Education, Simon Fraser University
Examiner

Date: October 29, 1997

ABSTRACT

The purpose of the present study was to examine the relationship between various dimensions of temperament and various styles of play. Both teachers and parents completed questionnaires on play and temperament respectively for 137 students (85 boys and 52 girls) ranging in age from 60-83 months. 83 students were in kindergarten and 54 students were in grade 1. Correlational and canonical techniques were employed in the analyses which showed a significant relationship between selected temperament dimensions and play variables. 2 profiles emerged from the canonical analysis. The first suggests a shy and hesitant child who watches the play of others but is reluctant to join in; while the second profile suggests a socially oriented and skilled player who is able to sustain attention, inhibit impulses and is positive in mood. These results supported 4 recommendations for teachers. First, the importance of knowing and understanding the typical play in order to teach and plan most effectively was clearly demonstrated. Secondly, a needed awareness of gender differences was evident due to a clear difference between boys and girls with respect to temperament and play behaviour. Thirdly, teachers need to be sensitive to children's grade level and more specifically the children's developmental level. The last point illuminated by this study is that while some children achieve in a play centered, non-directive teaching environment, some children's temperament presents the need for a component of direct instruction. Thus, an eclectic approach utilizing both play and direct instruction is much more likely to address all students' individual needs.

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank Dr. Lucy LeMare for her never-ending support and expertise as she guided me through this Masters program. I feel privileged to have had the opportunity to work with her in both the capacity of student and research assistant.

I would also like to thank my husband, Brad, for his amazing assistance and patience in helping me achieve a personal goal. He was able to keep me focussed and on track, without losing sight of what really matters in life.

Lastly, thank you to the members of my examining committee. Your comments and discussions were academically challenging and interesting to consider.

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Introduction

Overview

To the lay person, temperament is often viewed as synonymous with personality. This view, however, is not entirely correct. Temperament is the foundation of personality, but is an important construct when considered on its own. Temperament is considered to be a subclass of personality traits which are inherited and appear during the first year of life (Buss, 1989). Knowledge of temperament offers insight into individual differences and how these differences play out within the context of social interactions (Bates, 1989). Academics have long recognized the potential significance of temperament to further understanding children. Educators need to realize this as well.

Under the umbrella term of temperament, there is an array of dimensions. Examples of temperament dimensions include attentional shifting and focussing, anger/frustration, inhibitory control, perceptual sensitivity, fear, sadness, shyness, smiling/laughter, low and high pleasure and activity level (Goldsmith & Rothbart, 1991). Although the number and label of dimensions vary according to the measurement tool used, the commonality among dimensions of temperament is that they all offer insight into how a child goes about whatever is done (Lerner, Lerner & Zabski, 1985).

The appeal of temperament research has, in large part, been due to its ability to explain individual differences among children. Understanding individual differences is of interest for not only the researcher, but for the practitioner within the school system as well. Children bring enduring dispositions to school with them that are not necessarily modifiable. As educators become aware of these individual differences, they can work with

rather than against children's temperaments and assist children to channel their dispositions in adaptive, constructive ways (Rutter, 1989).

During the early childhood years, one of the most salient behavioural features of children is their play. The trend has been for research on play to have a developmental focus, for play is both a "driving force of development and a behavioural window for developmental processes and outcomes" (Piaget, 1962). The developmental focus in play research has yielded findings that are valuable for researchers and educators alike; however, it has told us little about individual differences in play. Within a developmental level or age group some variability inevitably exists. Thus, although a Grade one teacher will have a general idea of what play behaviours she will see from her students, those students will not play in exactly the same way. Individual differences will exist, which a teacher will need to understand in order to teach and enable each of her students most effectively.

Very few studies have used knowledge about temperament to learn more about individual differences in children's play behaviours. Due to temperament's primal nature, it is likely to influence a naturalistic activity such as play. To illustrate, I will use the temperament dimension of attentional focussing. How might different levels of attentional focussing affect the different play behaviours? Perhaps, attentional focussing has an impact on how long a child is able to attend to one task or play theme. Moreover, limited attentional focussing could also affect play interaction or social play because other players may tire of someone who frequently changes activities or the opportunity might not develop for actual interactions and discussions to take place before the focus is lost. Other temperament dimensions likely influence play behaviours as well. Pertinent

temperament/play relationships will be outlined later in this section.

Amid the research available on the constructs of temperament and play, a gap exists. There has been limited consideration of how temperament relates to or influences children's play. The purpose of the present study is to specifically examine the relationship between various temperament dimensions and various forms of play, in the hopes of offering additional insight into individual differences of young children within the school setting.

Temperament

The construct of temperament is an integral part of a child's being, so much so, that in infants, temperament explains almost all of their personality or behaviour (Rothbart, 1989). It is a fundamental construct which begins in infancy and appears to be biologically rooted (Bates, 1989). As children grow and mature, temperament remains a major determining force of their personality, although the quality and number of temperament traits will undergo some changes (Rothbart, 1991). For example, during the newborn period identifiable temperament dimensions include negative emotionality (ie. how prone a child is to distress or how easily soothed), activity level, orienting and alertness and approach-withdrawl (Rothbart, 1989). In early infancy, smiling and laughter are added to the newborn dimensions. In late infancy, effortful control develops. Effortful control allows for active planning and focus upon the task or goal at hand. As a child continues to mature and develop through the preschool years and beyond, so does his/her effortful control. Thus, even though changes and additions to temperament dimensions occur with development, the core of a child's temperament characteristics (identified in the newborn period) remain consistent over time

(Thomas & Chess, 1977). Evidently, temperament is considered by many researchers to have primacy within a child's development and to be considered a foundational construct which begins in infancy.

Once children reach school age, temperament becomes an important consideration in their school behaviour. Teachers and peers react differently to different temperaments. For example, children with negative moods and lower threshold and intensity levels are more withdrawn and interact less often with peers and teachers (Bullock, 1993). Since temperamental effects have an impact on a child's school experience (Keogh, 1986), teachers may benefit from knowledge about a child's temperament. Keogh (1986) reviews how teacher perceptions of their student's temperament can affect decisions about grades, pupil abilities as well as the amount and nature of time spent with a particular student. The goal of learning about temperament is not to change or reject it, but to try to prevent or prepare for any obstacles in the temperament-environment interaction (Thomas & Chess, 1977).

Temperament is typically examined with parent report measures. These measures tend to ask questions pertaining to a child's individual behaviours. For example, a usual temperament questionnaire establishes dimensions by asking how a child does certain things (Goldsmith & Rothbart, 1991). Sample questions might include ratings of the number of times certain behaviours are exhibited. Thus, when looking at activity level, researchers look at whether a child moves actively (runs, climbs, jumps) when playing in the house or if she plays games slowly and deliberately (Goldsmith & Rothbart, 1991). The questions focus on how the child does particular activities or how the child behaves. Because temperament is only observable through its effect on a child's behaviours the concern is not what the child is doing, but how

they are doing it.

As noted, temperament develops with the child. It remains an important factor from infancy to adulthood. Unlike personality which is affected by external variables such as parenting and societal and cultural values, a child's temperament remains relatively the same. Whether a child is working, playing, singing or walking, temperament influences whatever activity is done. A central goal of this study is to link temperament to childhood's main activity - play.

Play

When people talk about 'playing' they usually think of child's play. Child's play can be thought of as the most natural and intrinsically motivated aspect of childhood. Children like to play both in and out of school, whether on their own, with friends, with blocks or with dress up clothes. Play involves a wide range of behaviours from purposeful to purposeless and continues to be a major area of study approached from a variety of perspectives ranging from ecological to psychoanalytic to cognitive (see Herron & Sutton-Smith, 1971). For the purpose of this study, play is defined through the two chosen play measures. These play measures provide information about eight play behaviours which will be defined further in the study. Play is an important part of the early childhood curriculum in British Columbia and will continue to play a part (see Primary Program Foundation Document, 1990, p. 26 as supplemented by the Integrated Resource Package, 1995). In fact, it is now widely assumed that play has a central role in adaptability, learning, cognitive and socio-emotional development and the early education of the young child (Caruso, 1988). Consequently, play warrants continued thorough study.

How to observe play and what to observe has been the focus of a large amount of research. Even though play behaviours are observable, play is not easily categorized or defined (Wood & Attfield, 1996). For example, play classified as constructive “may be motoric in some studies and representational in others” (Christie & Johnsen, 1987, p.450). A variety of terms for dramatic play such as imaginative play, make believe play, or fantasy play tend to be used interchangeably (Fein, 1981). There have been reviews of play research which highlight aspects of play types, such as reviews of constructive play by Christie and Johnsen (1987) and of dramatic play by Fein (1981) and Mellou (1994). Even though the definition debate continues, enough parallels exist between studies about what the general construct of play involves to form a level of agreement and coherence.

The observation and categorization of play behaviours has been shaped by numerous influential works (Piaget, 1962; Smilansky, 1968; Parten, 1932). The observation process is being continually refined and updated with the ongoing research (ie. Rubin, 1982; Coplan, 1995; Coplan, Rubin, Fox, Calkins & Stewart, 1994).

A variety of play observation scales have been developed (e.g. Smilansky, 1968; Coplan, 1995; Rubin, 1977). Generally, the examiner observes or reports on the frequency and type of play behaviour exhibited noting both social and non-social play. The following section on Play and Development provides a more detailed explanation on what might be assessed.

Play and Development

For the most part, play research has had a developmental focus. For example, play style has normative sequences or stages outlined from the developmental studies of Piaget (1962), Parten (1932) and Smilansky (1968)

among others. Children's play behaviours are significant to their cognitive, social and affective development and adjustment. To illustrate, Piaget (1932) saw play to be connected to cognitive development with three stages emerging: practice play during the sensorimotor stage (first 24 months); symbolic play during the pre-operational stage (2 years through 7 years); and games with rules during the concrete operational stage (7 years to 12 years). Therefore, according to Piaget, five and six year old children display mainly symbolic play.

Building on Piaget's work, Smilansky also linked play to cognitive growth. Smilansky expanded on Piaget's work to categorize play as functional, constructive and dramatic. Functional play is defined as the repetitive manipulation of materials. It corresponds to Piaget's level of play known as practice play. Constructive play occurs when children use play materials to build something while dramatic play involves using materials in a make believe manner (Christie & Johnsen, 1987). The games with rules stage describes play with a predetermined set of rules or structure.

Parten's (1932) focus on children's social development contributed another perspective for observing and examining children's play. Her six types of social play in order of increasing complexity are: unoccupied, onlooker, solitary independent play, parallel activity, associative play and cooperative or organized supplementary play. According to Parten, solitary play is at the beginning of the social play levels and is considered to decrease with age since it indicates immaturity. In turn, a child's social participation increased with age.

Rubin (1976, 1978, 1982) extended the work of Parten and Smilansky by nesting Piaget's (1962) and Smilansky's (1968) cognitive categories within each

of Parten's social categories enabling researchers to simultaneously consider the cognitive and social aspects of play. The observation of children's play was greatly enhanced with Rubin's approach. Rubin (1978) also pooled together the two categories of associative play and cooperative play to form group play because of difficulty distinguishing between cooperative and associative play. Both the category of group play and the combination of social and cognitive play behaviours allowed for more accurate observations of play activities.

In later work, Rubin further refined solitary play into solitary passive and solitary active (Rubin, 1982). Solitary passive play involves the quiescent exploration of objects and/or constructive activity while playing alone. Solitary active play describes solitary sensorimotor activities and dramatizing. Asendorpf (1991) further differentiated solitary behaviours with the distinction of reticent behaviour. Reticent behaviour involves onlooking behaviour (no play) and unoccupied behaviour demonstrated in the face of social stimuli (Coplan & Rubin, in press). Reticent behaviour differs from Parten's (1932) notion of onlooker and unoccupied behaviour because it is believed to reflect social fear and anxiety and an approach/avoidance conflict (Asendorpf, 1990).

Another pivotal figure in play theory is Vygotsky (see Berk & Winsler, 1995). Within Vygotskian theory play is considered the preeminent educational theory. He emphasized the development enhancing and forward moving consequences of play with an emphasis on make believe play and rule based play. Key concepts are scaffolding and zone of proximal development. Scaffolding is the use of a support system that is sensitively tuned to a child's needs and allows an adult to offer the necessary assistance for mastery while prompting the child to take responsibility. The zone of

proximal development is defined by the distance between what a child can accomplish on his own and what he can do with the help of an adult or more competent peer. Although Vygotsky's ideas are thought provoking, compared to other play writers Vygotsky wrote relatively little on play and this in turn has impacted somewhat on Vygotskian - inspired research (Berk & Winsler, 1995). Nevertheless, Vygotsky's ideas regarding the function of play in a child's life and the role of adults and peers to scaffold and nurture play within their 'zone of proximal development' have impacted not only the use of play within the classroom but also have impacted views and beliefs about play. Vygotsky's (1933) special emphasis on make believe play, rule based play and the role of an adult or a more competent peer to scaffold play experiences and provide support, adds an additional perspective to the observation of play behaviours and provides powerful support beyond Piaget (1932) regarding what happens within and following the symbolic and games with rules stages.

The process of observing play behaviours, which is being continually refined as summarized in the preceding paragraphs, has enabled that examination of play's connection to child development. Specifically, play is viewed to serve a causal role in the development of a wide array of such skills as role-taking, quantitative invariance, language acquisition, problem solving, creativity and divergent thinking (Rubin, Fein & Vandenberg, 1983; Vygotsky, 1933) . Play is connected with the whole child's development. For example, play provides a conceptual framework for developing social competence (Wood & Attfield, 1996). It provides opportunities for rehearsal of social conventions and rituals, appropriate forms of behaviour and moral and ethical issues (Bruner, 1991). Play also supports cognitive development in

a variety of curricular areas. Thus, the interaction between play and the developmental function (Weber, Bell & Summers, 1994) partly accounts for the value of play as a research focus.

The research focus on play and development has most importantly provided educators with information about what play is common for particular age groups. For instance, fifty percent of five year olds' play is constructive (Christie & Johnsen, 1987). Both interactive and solitary dramatic play account for thirty percent of a five year old child's play, while functional play comprises twenty percent of the five year old child's time (Rubin, Watson & Jambor, 1978). Positive relationships between age and amounts of dramatic play (Tizard, Philps & Plewis, 1976) and rule-governed games (Eifermann, 1971) exist. Older children tend to demonstrate more dramatic and rule governed play than preschoolers. Moreover, older children's play is more social than younger children's play. Instead of objects as the focus, the objects provide a context for social roles (Bodrova & Leong, 1996).

Play and Individual Differences

As discussed in the preceding section, most play research has had a developmental focus and has been concerned with forms of play that are typically observed in given age groups. The present study takes a different approach. Here the concern is with individual differences in play among children of the same developmental level - the same age group. Although early developmental models of play were sequential and hierarchical (eg. Piaget & Smilansky), more recent work does not support this view. Rogers and Sawyers (1988) for instance, offer a perspective on play which considers the presence of individual differences. They challenge the hierarchical developmental approach by noting that "practice play and symbolic play do

not drop out with subsequent stages” of development (p.13) as implied by this view. If this was the case, the pinnacle of development could be considered when children reach the stage of games with rules and they no longer exhibit constructive or dramatic play. Obviously, this is not the case. Variations among play behaviours exist within all age groups. Consequently, play types are not necessarily linear or uni-dimensional, rather play is multi-dimensional with overlaps occurring amongst and between the stages or types of play. Play within age groups is multi-dimensional. This considered, researchers need to examine play as play types rather than play stages (Rogers & Sawyers, 1988) and consider the issue of why children of the same age differ in terms of the types of play they typically engage in. Researchers must realize that although functional play, constructive play, dramatic play and games with rules offers a framework, flexibility within the framework should exist.

Other studies challenge Parten’s (1932) hierarchical notion of social play (e.g. Moore, Evertson and Brophy, 1974; Rubin, Maioni, & Hornung, 1976). Instead of a hierarchy, they argue that all age levels continue to have a limited proportion of solitary play. However, exactly how the social play quality changes with age is unclear as indicated by several contradictory studies (Pellegrini, 1985; Heatherington, Cox & Cox, 1979).

These findings suggest a need for play studies that focus on individual differences among children in the same age group. Within the developmental approach, researchers have made some attempts to look at individual differences, however, these attempts are often limited to the study of group differences rather than individual differences. For example in Fein’s (1981) review of pretend play she notes that individual differences have been discussed with respect to fantasy predispositions, child rearing or social class.

Other reviews (e.g., Christie and Johnsen, 1987) have focussed on gender and social class as sources of individual difference.

More recent research is making gains in the study of individual differences by looking at factors such as the role of peer relationships within children's interaction style (Park, Lay & Ramsay, 1993). Park et al. examined individual differences within preschoolers' friendships. They hypothesized that preschoolers may have a particular style of relating with their best friends that has been established over time. In this study, children were put into clusters or groups depending on their interaction style. The use of cluster analysis to identify subgroups with similar profiles has been supported by some with respect to individual differences (Kareev, 1980; Risher, Cross & Ware, 1995, Park et al., 1993). However, because children ended up in groups, the specifics of how one child's style differs from another or what factors contribute to a particular style were not delineated to the extent that temperament dimensions would allow. From this study we know that the friends within the dyads tend to be similar, but we don't know the source of the similarities. As noted by Park et al., future research is needed to understand the individual behaviours. They suggest that information about the personalities of the dyad members may help separate out the individual contributions that maintain stability. As discussed in previous sections, temperament is the foundation of personality. Because temperament itself refers to how individuals differ in otherwise identical behaviours, temperamental knowledge would give a more truly individualized perspective to Park et al's study.

The Temperament/Play Relationship

When considering what accounts for differences in play among

children of the same age, one obvious factor to investigate is temperament. Surprisingly, although much information on temperament's early development, little empirical literature has addressed the relationship between temperament and what is considered early childhood's leading activity - play (Berk & Winsler, 1995). Knowledge of temperament's relationship to play will offer additional insight into young children's play, but from a more individualized perspective. Generally all young children play, but their play behaviours may differ due to their particular temperaments.

Although the link between temperament and play has rarely been directly addressed, several studies contain information that bears on this relationship. For example, Jennings (1975) characterized young children as either person or object oriented. Dramatic play was found to be associated with a people orientation and constructive play with an object orientation. Different motivations may encourage a child to be person or object oriented. For example, students may give up their social interest after repeated rejections or social failures and become object focused instead (Asendorpf, 1991) or particular settings may be more conducive to a particular orientation. Moreover, different temperaments may direct a child to be person or object oriented. For example, a high temperament rating on smiling and laughter may indicate a more social, people oriented disposition - someone who enjoys social play.

Another area of research that explores a child's personal way of interacting or doing things is cognitive style research (Saracho, 1985, 1994). Saracho (1985) defines a person's cognitive style as an "individual's different approaches to understanding, remembering and thinking" (p. 2).

Consequently, cognitive style affects both academic behaviour and play behaviour. This research classifies children's cognitive style as either field dependent, FD, (people-oriented) or field independent, FI, (object-oriented). Saracho and others (eg. Rubin & Maioni, 1975; Rubin, Maioni & Hornung, 1976) suggest that children's play preferences (ie. social play versus solitary play) may be related to cognitive style (FD/FI). For example, FI children may prefer solitary play because they are socially detached with an analytic nature rather than a social nature. Rubin et al. (1976) also suggest play types are affected by FD and FI. FD children possibly prefer dramatic and physical play and FI may prefer block and manipulative play. Even though same age children tend to exhibit similar play behaviours, play behaviours can be affected by cognitive style or orientation. Developmentally, five year old children, on average spend approximately thirty percent of their time in dramatic play, yet one boy might spend eighty percent of his time in dramatic play. This five year old is most likely a field dependent, people oriented child. He also is likely to rate high on temperament dimensions of approach and smiling/laughter and low on shyness, fear and anger/frustration. As shown, studies of cognitive style (FD/FI) complement and connect to both studies of people/object orientation effects. Both of these areas of research are suggestive of a relationship between temperament and play style which is the focus of the present study.

Although aspects of temperament are embedded within these theories describing children's cognitive style or orientation, they are not dealt with explicitly. For instance, it can be hypothesized that within people/object orientation theories the temperament dimensions of smiling/laughter, shyness, high intensity pleasure or low intensity pleasure may affect whether

a child is people or object oriented. Perhaps a child who exhibits higher levels of smiling/laughter and enjoys high intensity activities will fall into a people orientation grouping whereas an object orientation better describes children who exhibit shyness and low intensity pleasure.

A temperament dimension salient to cognitive style appears to be activity level. FD children are described as showing low activity in play while FI demonstrate high activity in their play. It could be suggested that high intensity and low intensity pleasure also may play a role. Moreover, it is noted that FD children have more acts of aggression (Saracho, 1985, 1994) that might be explained by the temperament dimension of anger/frustration.

Unfortunately, it is difficult to decisively say if temperament affects ones' orientation or style because researchers have failed to examine between temperament and orientation and cognitive style. Within the current study, I hypothesize that temperament plays a central role in the style of play that individual children prefer and exhibit.

Additional research that alludes to the role of temperament in children's play style is research on infants' exploratory style (see Power, Chapieski & McGrath, 1985; Rusher, Cross & Ware, 1995; Tamis-LeMonda & Bornstein, 1991). Exploratory style refers to stylistic differences in the way infants at the same developmental level explore and play (Power et al. 1985). The ability to focus and sustain attention are key descriptors used in defining exploratory style (Ruff & Saltarelli, 1993). Attentional focussing, persistence and intensity are temperament dimensions which directly relate to exploratory style. The way infants explore and play when at the same developmental level is similar to the concept of individualized play behaviours. As expected, Power et al.'s measures of play's developmental

level are highly correlated with age. However, their measures of exploratory style, which include temperamental dimensions concerning attention, bear no relation to age. (Statistically controlling for infant age had little effect on the stability of an infants exploratory style.) Different aged infants exhibited different exploratory styles that were not attributable to age differences. Hence, exploratory style, (ie. the way infants play), refers to individualized differences that are not age related.

Table 1 summarizes the characteristic behaviours associated with people/object orientation (Christie & Johnsen, 1987; Jennings, 1975; Rubin, 1982), cognitive style (Rubin & Maioni, 1975; Saracho, 1985, 1994) and exploratory style (Power, Chapieski & McGrath, 1985; Rusher, Cross & Ware, 1995; Tamis-LeMonda & Bornstein, 1991) as it pertains to play behaviours/types.

Table 1

Summary of People/Object Orientation, Cognitive Style, Dramatists vs. Patterners and Exploratory Style

Field-Dependent/People Oriented Dramatists	Field-Independent/Obj.Oriented Patterners
<ul style="list-style-type: none"> -prefer play with at least two children -prefer parallel, cooperative and associative play -enjoy group dramatic play -usually add a symbolic element -favourite play area is dramatic play play -boys prefer social play in block or doll corner -<i>low activity</i> during play -girls prefer social activities of playing house or doll play -strongly <i>interactive, interpersonally dependent</i> -<i>acts of aggression</i> -<i>approaching</i> 	<ul style="list-style-type: none"> -prefer solitary play -<i>educative, goal and task oriented</i> -enjoy onlooker and exploratory roles -enjoy to play on own -explore relationships of objects ie.. size -favourite play area is manipulative area, area & like physical constructive play -block play is detailed -boys prefer table tasks -<i>high activity</i> during play -girls choose activity other than house play with periodic interaction ie.. blocks -appear socially <i>detached, distant</i> -<i>withdrawing</i> -<i>sustained attention</i>

Note the references to temperament variables (emphasized with italics) found in these lists. Phrases and words such as activity, interactive, interpersonal, approaching, aggression, sustained attention and task oriented describe how a child behaves.

Some studies have examined the temperament/play relationship more directly. These studies are reviewed in the following paragraphs.

Hack (1990) examined the relationship between symbolic play and a number of factors such as: toddler temperament, a toddler's capacity to organize her world and represent it symbolically, mother's facilitation of this capacity, mother's attitude toward her child and the play style of the child. Temperament was assessed with the Toddler Temperament Scale (Fullard, McDevitt & Carey, 1984 as cited in Hack, 1990). This is a questionnaire format

completed by parents. Play style was measured with the Play Style Scale (developed for this study) while symbolic play was measured by the Lowe-Costello Symbolic Play Test. For the 24 toddlers, Hack found that the temperament dimensions of attention span and persistence were predictive of and correlated to symbolic play and complexity of play based on correlational and multiple regression analysis. This study was limited by the fact that Hack only looked at symbolic play. A more complete analysis of the relationship between temperament and play would include consideration of other types of play in addition to symbolic play. In the present study a variety of forms of play are considered.

In a second relevant study, the temperament dimensions of threshold, intensity, and approach/withdrawal were all found to relate to the play tempo of 40 full term infants (Wenckstern, Weizmann & Leenaars, 1984). Play tempo refers to a child's style in how she attends and interacts with her environment. Fast tempo children are considered impulsive with difficulty sustaining attention whereas low tempo children are described as reflective (Wenckstern et al., 1984). The study examined whether infant play behaviour reflects an underlying stylistic consistency in behaviour and if so whether it is related to more general temperamental variables. Mothers completed the Infant Temperament Questionnaire (ITQ), (Carey, 1970 as cited in Wenckstern et al.) and infants were observed playing in a lab setting. Wenckstern et al. found play tempo to be stable and that infants of varying tempos could be identified relatively well on the basis of temperament. This research supports the notion of behavioural consistencies found both in infants (from this study) as well as older children (e.g., Constantini, Corsini & Davis, 1973 as cited in Wenckstern et al.) Although Wenckstern et al.'s study

focusses on infants, because temperament dimensions remain relatively stable, the results of the study are suggestive of a link between temperament and play at older ages.

Both Hack's (1990) and Wenckstern et al.'s (1984) studies include the constructs of temperament and play. As well, both studies indicate that a relationship between temperament and play exists. The present study aims to extend these findings by examining a wider range of play behaviours and dimensions of temperament in a sample of school aged children.

A final study that is relevant to the present research is Coplan and Rubin's research (in press) in which they devised a teacher rating scale for play - the Preschool Play Behaviour Scale (PPBS). Temperament dimensions of shyness, negative emotionality, sociability, activity level and attention span were examined in relation to play behaviours as assessed by the PPBS. Coplan et al's results indicated a number of significant correlations. Emotionality, shyness and sociability correlated positively with reticent behaviour. Activity level and shyness were positively related to solitary active play. Shyness and sociability related significantly and negatively with social play and activity level, attention span and shyness related to rough play. Of all the temperaments, shyness appeared to have the most effect on play behaviours. In addition to these relationships, a significant gender difference was found on the rough play scale. Males rated higher than females on rough play. In this study temperament was measured with the Colorado Child Temperament Inventory (CCTI, Buss & Plomin, 1984).

Although the CCTI measure is well respected and commonly used, it measures relatively few dimensions of temperament. Rothbart and her colleagues have developed a new temperament measure, the Child

Behaviour Questionnaire (CBO, Goldsmith and Rothbart, 1991). The CBO examines 16 temperament dimensions. Understandably, a broad approach and measure allows the researcher to “capture developmental transitions that might be missed if temperament is defined too narrowly” (Rothbart, 1989, p188).

In the current study, I hope to replicate Coplan and Rubin’s (in press) findings concerning temperament and play’s relationship. As well, I hope to extend the literature on the temperament play link by utilizing a multi-method approach to the study of play behaviours and the comprehensive temperament measure - the Child Behaviour Questionnaire. The two play measures to be used are the Penn Interactive Peer Play Scale, (PIPPS) (Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning & Debnam, 1995) and the PPBS (Coplan & Rubin, in press). The PPBS was used in the Coplan study and measures a variety of play types including reticent, solitary passive, solitary active, social play and rough play. The PIPPS focusses on peer interaction (social play) and measures disrupted play, disconnected play and play interaction. Combined together, these two play scales enable a more thorough assessment of play behaviours. The two play report scales were specifically designed for teacher use. The temperament measure will give extensive data on temperament dimensions. In addition, unlike Coplan et al’s focus on preschool children, the current study examines a sample of early primary students. Subsequent study in this area will not only expand on this existing research, it will also provide additional information on how a child’s temperament is viewed through a key behaviour such as play. This kind of information gives pertinent knowledge to teachers and researchers when they are considering individual differences.

The Present Study

The purpose of the present study is to examine relations among a wide variety of temperament dimensions and types of play in a sample of early primary students. Specific correlations are predicted as outlined in the following research questions. By exploring and establishing a relationship between temperament and play, teachers and researchers are alerted to the fact that not all behaviour is learned. Children bring to school enduring dispositions. Educators need to work with these dispositions rather than against them in order to provide the most enabling and productive situation for students. With the exception of Coplan and Rubin (in press), no other study has looked at parents perceptions of temperament and how they relate to teacher's reports of play behaviours. By itself, temperament cannot explain all of children's behaviour (Hack, 1990); it is but one component of children's behaviour.

In examining the relationship between temperament and play behaviours in young children, this study will address the following questions:

1. Are certain temperament dimensions predictive of or related to particular play behaviours?

On the basis of research reviewed in the previous section, I expect to see some specific correlations. This study will examine both relationship and predictability. The expected correlations are discussed in the following paragraphs.

The PIPPS (1995) provides three subscales of peer interactive play - disrupted, disconnected and interactive. Disrupted play is defined as the inability to successfully enter play situations and maintain interactions with others (Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning & Debnam, 1995).

It is characterized by aggressive, easily frustrated and anti-social behaviours. Given Fantuzzo et al.'s definition, I expect to see a positive relationship between disrupted play and the following temperaments: anger/frustration, impulsivity and possibly activity level. Expected negative correlations include those between disrupted play and inhibitory control, smiling/laughter and attention.

Disconnected play also involves the inability to successfully enter play situations and maintain interactions with others but characteristic behaviours include non-participation in social play, quiet, withdrawn, hovering, aimless wandering and a child who is ignored by others (Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning & Debnam, 1995). Shyness, sadness, fear, low smiling/laughter and attention are possible correlates of this behaviour. However, given recent views of distinguishing social inhibition as not necessarily indicative of maladaptive behaviour (Asendorpf, 1991; Coplan, Rubin, Fox, Calkins & Stewart, 1994), disconnected play is likely to also relate to low intensity pleasure -or some sort of social disinterest from a motivational view (Coplan et al, 1994) for some children.

The final PIPPS factor is play interaction which assesses play strengths and leadership. Play interaction is characterized by behaviours which are active, animated and happy. Consequently, play interaction will likely negatively relate to shyness, anger/frustration, attentional shifting, impulsivity and sadness. Play interaction is hypothesized to positively relate to smiling/laughter, attentional focussing, and high inhibitory control.

The PPBS assesses five play types. Each play behaviour is discussed in the following sections along with the hypothesized temperament correlations.

Reticent behaviour is similar to PIPPS disconnected play. It involves watching others, prolonged looking, unfocussed and unoccupied behaviours. Similar correlations to disconnected play are expected. As well, similar correlations to results found by Coplan & Rubin (in press) are expected for all the PPBS factors. For example, correlations are hypothesized between reticent play and shyness, smiling/laughter, attentional focussing, attentional shifting, fear, low intensity pleasure and sadness.

Solitary passive play which involves the exploration and construction of objects is characterized by social disinterest. It is different from reticent behaviour as it involves social disinterest and high emotional regulation. It is not considered maladaptive or indicative of social fear or wariness. Hypothesized relationships between solitary passive play and activity level are low intensity pleasure and attentional focus.

Another PPBS factor is solitary active play. This describes solitary sensorimotor activities and dramatizing but occurs quite infrequently (less than 3 % of the time). This behaviour is linked to immaturity and impulsivity, thus it is expected to correlate positively with impulsivity and activity level but negatively with shyness and inhibitory control.

The fourth play behaviour assessed by the PPBS is social play. This involves group play, sociodramatic play and peer conversation. All of these types of play involve pro-social behaviours because they are largely interactive. Temperament dimensions conducive to pro-social behaviour may relate to this social play such as low shyness, low anger/frustration, low impulsivity and high smiling/laughter and high inhibitory control.

The last play behaviour assessed by the PPBS is rough play. Many of the expected correlations are self evident when considering rough and tumble

play and are supported with existing research on rough and aggressive play (Coplan & Rubin, in press; Neill, 1976). Possible correlates include: activity level, attention, shyness, anger/frustration, impulsivity, high intensity pleasure and inhibitory control.

Expected correlations or relationships are listed in the following Table 2.

Table 2

Hypothesized Temperament/Play Relationships

Temperament	Play							
	Disr.	Disc.	Inter.	Retic.	Sol. P.	Sol. A.	Soc.	Rou.
Activity level	+				-	+		+
Shyness		+	-	+		-	-	-
Anger/frust.	+		-				-	+
Smiling/lau.	-	-	+	-			+	
Att. Focus	-	-	+	-	+			-
Att. Shifting	-	-	-	-				-
Fear		+		+				
HI Pleasure								+
Impulsivity	+		-			+	-	+
Inhib. Control	-		+			-	+	-
LI Pleasure		-		+	+			
Sadness		+	-	+				

Note. For play the following abbreviations mean: Disr. - Disrupted, Disc. - Disconnected, Inter. - Interactive, Retic. - Reticent, Sol.P. - Solitary passive, Sol. A. - Solitary Active, Soc. - Social, Rou. - Rough. The meaning of temperament abbreviations are as follows: Anger/frust. - Anger/frustration, Smiling/lau. - Smiling/laughter, Att. Focus - Attentional focussing, Att. Shifting -Attentional shifting, HI Pleasure - High intensity pleasure, Inhib. Control - Inhibitory control, LI Pleasure - Low intensity pleasure.

Although not central to the present study, separate grade analyses was included due to the developmental changes that occur between Kindergarten and Grade 1 students. The differences in development and experience between Kindergarten level and Grade 1 level students is easily apparent to the classroom teacher. Because the Grade 1 student has completed a year of school, both their outlook and behaviour toward school is different from the Kindergarten student who is still relatively unfamiliar with the school environment.

Methodology

Participants

The participants were young children enrolled in four public schools within the Surrey School District. The schools were located in primarily white middle to upper class areas with both residential and commercial areas relatively close by. The 137 students ranged in age from 60 months to 83 months. The mean age was 70 months. There were 85 boys and 52 girls. 83 students were enrolled in Kindergarten and 54 students were in Grade 1.

Data were collected from both classroom teachers and parents. Nine teachers were involved in the study. They were all female with overall teaching experience that ranged from 9 years to 22 years. The average years of teaching was 16 years. The teacher's levels of training varied from a teaching certificate ($n=2$) to Bachelor's degree ($n=6$) to a Master's degree ($n=2$). The majority of contributing parents were mothers.

Procedure:

Participation in the study was voluntary. Once ethical approval was received from Simon Fraser University, recruitment involved approaching the head of research for the Surrey School District for District level approval. Principals of 10 schools were approached initially with 4 schools agreeing to take part. Each principal was sent an information packet describing the intent and purpose of the study. Because this study was part of a larger research project, the recruitment of participants was conducted for measures beyond what was used within this smaller study. Principals let teachers know about the nature of the study either in person or in a staff meeting situation. Interested teachers were then provided with individual information packets. Principal and teachers were also talked to individually regarding the

expectations and requirements of the study. Ten teachers agreed to participate, with one teacher deciding to leave the study after the first phase of data collection.

Information letters with consent forms were then sent home to 214 parents. 64% of those approached agreed to participate.

In order to ensure that the study followed ethical guidelines, the study followed certain procedures. To begin, approval and support was received from both the School District and School Principal as well as at the University level. Information letters and discussions with teachers took place to inform them of the nature of the study. As well, a letter was sent home to inform parents of the nature and purpose of the study. Written Guardian Consent was received. Participants were asked to complete questionnaires and observation scales with the knowledge that their participation is voluntary. In addition, all participants have access to sample measures for their information. None of the data collection exposed participants to any risk of physical stress, psychological stress or harm from electrical or mechanical devices. As noted, one teacher (and consequently her students) withdrew halfway through data collection, thus a total of nine teachers participated to completion.

Once approval and ethical protection procedures were completed, data collection began. As mentioned, participation was determined by the returned, signed consent forms. The temperament questionnaire was then sent home to parents with individual students and returned to school upon completion. Each questionnaire takes approximately 30 - 45 minutes to complete.

Play scales were delivered in person to teachers and completed as

teacher report measures - both the measures are based on the teachers' history with and knowledge of each child. Classroom teachers were familiar with the selected students as school had been in session three months. In turn, the students were familiar with the teachers and class setting.

Data collection took approximately two months to complete.

Instruments

To measure play style, a multi-method approach was chosen. The two play measures used were the Penn Interactive Peer Play Scale, (PIPPS), (Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning & Debnam, 1995) and the Preschool Play Behaviour Scale, (PPBS), (Coplan & Rubin, in press). The PIPPS focusses on peer interaction (social play) with two of the three factors assessing negative play behaviours. The PPBS examines cognitive and social categories of play as well as additional non-interactive behaviours. Combined together, the two scales give a thorough view of a child's play behaviour. Both play report scales were specifically designed for teacher use and are described in greater detail below.

1 Preschool Play Behaviour Scale, PPBS, (Coplan & Rubin, in press)

This measure assessed social categories of play behaviours - onlooker, unoccupied, solitary, parallel, and group play - as well as cognitive types of play - functional, dramatic, exploratory and constructive. In the development and validation of the scale, ratings of children's behaviour were significantly correlated with direct observations of children's behaviour. Overall, the results clearly show the PPBS to be a reliable, valid measurement for assessment of young children's social and non-social free play behaviour.

Teachers are asked to respond to a series of items on a Likert type rating scale which varies from *never* (1) to *very often* (5) . Coplan and Rubin (in

press) report that factor analysis produced a five factor solution with Cronbach's Alpha above .80 for all factors. Item factor correlations were all above .40. The five factor solution included social play, reticent, solitary-passive, rough play, and solitary - active. Social play measures group and sociodramatic play as well as peer conversation. Reticent behaviour describes onlooker behaviours that are unfocussed and unoccupied. Solitary passive play involves the quiescent exploration and construction of objects whereas solitary active play includes solitary sensorimotor activities with a component of solitary dramatizing. The last factor, rough play, is rough and tumble type play. Scores for these five play types are calculated by adding the items together based on the factor groupings. The sum was then divided by the number of answered items to give an average for each participant. The 5 point PPBS is presented in the Appendix A.

2 Penn Interactive Peer Play Scale, PIPPS, (Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning & Debnam, 1995)

This play report measures the interactive play behaviour of children. Three underlying dimensions are assessed - play interaction, play disruption and play disconnection. Play interaction assesses the degree of children's play strengths and leadership. Play disruption describes an inability to successfully enter play situations and maintain interactions with others and is characterized with aggressive, anti-social behaviour. Play disconnection is also indicative of the inability to enter play and maintain interactions but involves quiet, withdrawn, non-participation. All three factors were found to be highly reliable with reliability coefficients of .89 and above using Cronbach's Alpha. Item loading was above .40 as well.

The PIPPS' focus on interactive play repertoires of children offers

potential insight into learning about social functioning and general success in school. This is often the same focus of temperament research (Keogh, 1986). The combination of the two play measures are complementary and offer a more complete picture of play styles.

The PIPPS, which can be found in the Appendix B, uses a 4 point scale which was modified to a 5 point scale for ease of data collection. The scale ranged from *never* (1) to *very often* (5).

3. Child Behaviour Questionnaire, CBO, (Goldsmith & Rothbart,1991)

Children's temperament is assessed with Rothbart's Child Behaviour Questionnaire, (Goldsmith & Rothbart,1991). The 195 item questionnaire measured the following temperament dimensions:

activity level - level of gross motor activity

anger/frustration - amount of negative affect related to the interruption of ongoing tasks or goal blocking

approach - amount of excitement and positive anticipation for expected pleasurable activities

attentional focussing - the tendency to maintain one's attentional focus upon task related channels

discomfort - amount of negative affect related to sensory qualities of stimulation

falling reactivity and soothability - recovery rate from peak distress, excitement or general arousal

fear - amount of negative affect, including unease, worry or nervousness related to anticipated pain, distress or potentially threatening situations

high intensity pleasure - amount of pleasure or enjoyment related to situations involving high stimulus intensity,

rate, complexity, novelty and incongruity

impulsivity - speed of response initiation

inhibitory control - the capacity to play and to suppress inappropriate approach responses under instructions or in novel or uncertain situations

low intensity pleasure - amount of pleasure or enjoyment related to situations involving low stimulus intensity, rate, complexity, novelty and incongruity

perceptual sensitivity - amount of detection of slight, low intensity stimuli from the external environment

sadness - amount of negative affect and lowered mood and energy related to exposure to suffering, disappointment, and object loss

shyness - slow or inhibited approach in situations involving novelty or uncertainty

smiling/laughter - amount of positive affect in response to changes in stimulus intensity, rate, complexity and incongruity

(Definition as supplied by Rothbart, 1997)

All sixteen dimensions had reliability coefficients of .67 and above using Cronbach's Alpha. Rothbart (1997) notes that the temperament questionnaire is still in a preliminary phase of development, although initial item analysis has been conducted. However, the questionnaire is considered established and valid for use in its present development stage and has been successfully used in past research (e.g., Rothbart, Ahadi & Hershey, 1994).

The use of questionnaires to measure temperament is a long established and economical approach (Goldsmith, Briggs & Reisner-Danner, 1991). The items are scored using a 7 point scale ranging from extremely *untrue of your child* (1) to *extremely true of your child* (7). Some items involve reverse scoring as indicated on the scoring sheet which is available

in Appendix C along with the temperament questionnaire.

Results

Results are presented in three main sections. First, descriptive information about the 16 temperament variables and 8 play scales is reported. Second, analyses regarding the correlations between temperament dimensions and play behaviours are presented. Finally, the significant correlations are explored with canonical analyses.

Descriptive Information

Tables 3 and 4 presents the means, standard deviations and observed ranges for the temperament dimensions and play subscales. The temperament variables have a possible range of 1 to 7. All the play variables have a possible range of 1 to 5.

Item means for temperament dimensions tended to fall just above the midpoint of 4 indicating no floor or ceiling effects.

With respect to the play scale means, there was considerable variability. Play interaction and social play were the highest at 3.5 and 4.1 respectively. Means for disconnected and reticent play were the lowest at 1.7 and 1.8 respectively.

Table 3

Means, Standard Deviations and Ranges for Temperament Dimensions

Temperament Dimensions	<u>M</u>	<u>SD</u>	<u>N</u>	range
AL	4.6	.83	131	2.38 - 6.31
AF	4.3	1.00	132	1.77 - 6.85
AA	5.1	.64	130	3.46 - 6.77
Attf	4.9	.81	131	2.44 - 6.33
Attsh	4.1	1.10	133	1.60 - 6.40
Disc	3.9	.90	131	1.42 - 5.67
FRS	5.0	.83	131	2.92 - 6.42
Fear	3.7	.92	130	1.25 - 5.83
HIplea.	5.0	.79	131	2.46 - 6.62
Impul.	4.5	.83	128	2.77 - 6.46
Inhco	4.9	.97	130	1.58 - 6.54
LowIpl.	5.7	.60	131	3.92 - 6.69
PS	5.1	.83	129	1.00 - 6.67
Sadn.	4.1	.85	129	2.00 - 6.08
Shyn.	3.3	1.31	130	1.08 - 6.62
SL	5.8	.64	130	3.69 - 6.92

Note. AL - activity level, AF - Anger/frustration, AA - Approach/Anticipation, Attf - Attentional Focussing, Attsh - Attentional Shifting, Disc -discomfort, FRS - falling reactivity soothability, HIplea - High intensity pleasure, Impul - Impulsivity, Inhco - Inhibitory control, LowIpl - Low intensity pleasure, PS - perceptual sensitivity, Sadn - Sadness, Shyn - shyness, SL - Smiling/laughter.

Table 4

Means, Standard Deviations and Ranges for Play Subscales

Play Subscales	<u>M</u>	<u>SD</u>	<u>N</u>	range
Disruption	2.1	.61	119	1.29 - 4.29
Disconnection	1.7	.62	122	1.00 - 3.80
Play interaction	3.5	.66	122	1.75 - 4.75
Reticent	1.8	.63	122	1.00 - 3.75
Solitary passive	2.8	.53	123	1.50 - 4.25
Solitary active	2.3	.60	123	1.00 - 4.00
Social	4.1	.66	121	2.33 - 5.00
Rough	2.5	1.1	123	1.00 - 5.00

Gender and Grade Differences

In order to examine possible sex and grade differences in play style and temperament, a series of 2 (gender) X 2 (grade) ANOVAs were conducted for each of the 16 temperament dimensions, 3 PIPPS subscales and 5 PPBS subscales.

Gender Differences

Temperament

A significant gender difference was found for 7 of the 16 temperament dimensions. Boys were rated higher on activity level than girls, ($F(1,131) = 5.799, p=.02$), and also on anger/frustration, ($F(1,130) = 5.964, p=.02$).

Results indicated higher scores for girls on attentional focussing, ($F(1,131) = 5.211, p=.02$), attentional shifting, ($F(1,133) = 5.680, p=.02$), inhibitory control, ($F(1,130) = 5.259, p=.02$), low pleasure, ($F(1,131) = 8.443, p=.004$) and smiling and laughter, ($F(1,130) = 7.460, p=.007$).

PIPPS

For play interaction there was a significant difference between boys and girls. Girls were rated as exhibiting these behaviours more frequently than boys, ($F(1,122) = 14.350, p < .001$). For disruption and disconnection there were no significant group differences.

PPBS

Results showed no significant group differences between boys and girls in terms of reticent, solitary-passive, solitary-active and social play. A significant difference was found between boys and girls on the rough play subscale, ($F(1,123) = 5.515, p < .001$). Boys were rated as exhibiting more rough play than girls.

Grade Differences

Temperament

Main effects for grade were found for 2 temperament variables. Grade 1 students were rated as more impulsive than Kindergarten students, ($F(1,128) = 4.524, p = .04$), while Kindergarten students were reported to exhibit more shy behaviours than Grade 1 students, ($F(1,130) = 8.510, p = .004$).

PIPPS

A significant main effect for grade was found for play disconnection with Kindergarten students having higher scores than Grade 1 students, ($F(1,122) = 7.464, p = .007$).

PPBS

Results showed a significant grade difference for Reticent play with Kindergarten students having higher scores than Grade 1 students, ($F(1,122) = 10.457, p = .002$).

A main effect was also found for rough play with Kindergarten students receiving higher ratings than Grade 1 students, ($F(1,123) = 21.683, p < .001$). Means for the significant results are displayed in Table 5. Table 6 displays significant effects.

Table 5**Means for Gender X Grade ANOVAs for Significant Variables**

Variables	Boys				Girls			
	K	(N)	Gr.1	(N)	K	(N)	Gr.1	(N)
Temperament								
AL	4.83	(51)	4.68	(31)	4.55	(29)	4.22	(20)
AF	4.40	(51)	4.57	(31)	3.95	(29)	4.16	(21)
Attf	4.71	(50)	4.98	(31)	5.08	(29)	5.22	(21)
Attsh	3.83	(52)	3.97	(31)	4.34	(29)	4.32	(21)
Impul.	4.32	(48)	4.65	(30)	4.33	(29)	4.63	(21)
Inhco.	4.75	(50)	4.86	(30)	5.10	(29)	5.31	(21)
LowIpl.	5.58	(51)	5.57	(30)	5.93	(29)	5.82	(21)
Shyn.	3.60	(51)	3.08	(31)	3.56	(27)	2.66	(21)
SL	5.61	(51)	5.73	(29)	5.91	(29)	6.04	(21)
Play								
disconnection	1.92	(50)	1.56	(28)	1.69	(28)	1.46	(16)
play interact.	3.29	(50)	3.50	(28)	3.83	(28)	3.79	(16)
reticent play	2.02	(50)	1.59	(28)	1.87	(28)	1.59	(16)
rough	3.11	(51)	2.38	(28)	2.16	(28)	1.25	(16)

Note. AL - activity level, AF - Anger/frustration, Attf - Attentional Focussing, Attsh - Attentional Shifting, Impul - Impulsivity, Inhco - Inhibitory control, LowIpl - Low intensity pleasure, Shyn - shyness, SL - Smiling/laughter.

Table 6

Significant Main Effects from Gender X Grade ANOVA

	gender		grade		genderXgrade	
	<u>F</u>	<u>p</u>	<u>F</u>	<u>p</u>	<u>F</u>	<u>p</u>
Temperament						
activity level	5.80	.02	ns		ns	
anger/frust.	5.96	.01	ns		ns	
attention foc.	5.21	.02	ns		ns	
attention shift.	5.68	.02	ns		ns	
impulsivity	ns		4.52	.04	ns	
inhibitory con.	5.26	.02	ns		ns	
low pleasure	8.44	.004	ns		ns	
shyness	ns		8.51	.004	ns	
smiling/laugh	7.46	.01	ns		ns	
Play						
disconnection	ns		7.46	.01	ns	
play interact.	14.35	.00	ns		ns	
reticent play	ns		10.46	.002	ns	
rough	35.42	.000	21.68	.00	ns	

Correlational Analyses

Intercorrelations Between Play Measures

It was expected that some overlap would exist between the play behaviours measured by the PIPPS and those measured by the PPBS. The results supported this expectation. Results indicated that disrupted play (PIPPS) was significantly and positively correlated with rough play (PPBS) ($r = .47, p < .001$) and solitary active play (PPBS) ($r = .28, p = .002$).

Disconnected play (PIPPS) positively correlated with reticent behaviour (PPBS) ($r = .78, p < .001$), solitary passive (PPBS) ($r = .23, p = .01$), solitary active (PPBS) ($r = .32, p < .001$), and rough play (PPBS) ($r = .37, p < .001$). Disconnected play (PIPPS) negatively related to social play (PPBS) ($r = -.55, p < .001$).

Results for play interaction (PIPPS) indicated a significant positive relationship with social play (PPBS) ($r = .67, p < .001$) and negative correlations with reticent (PPBS) ($r = -.49, p < .001$), solitary active (PPBS) ($r = -.19, p = .04$), and rough play (PPBS) ($r = -.40, p < .001$).

Table 7 displays the intercorrelations among the play measures.

Table 7

Intercorrelations Between PIPPS and PPBS Play Measures

<u>PPBS</u>	<u>PIPPS</u>		
	Disrupted	Disconnected	Interaction
Reticent	ns	.78***	-.49***
Solitary passive	ns	.23**	ns
Solitary active	.28**	.32***	-.19*
Social	ns	-.55***	.67***
Rough	.47***	.37***	-.40***

($p < .05$ *, $p < .01$ **, $p < .001$ ***)

Temperament/Play Relationship

This section of analyses pertains to the relations between temperament and play. Specifically, Pearson product moment correlations were computed between the CBO temperament dimensions and the play subscales (PIPPS & PPBS). Since all variables were computed as continuous scores, Pearson is appropriate.

I decided to combine all subjects in the correlational analyses, even though grade and gender differences were found for some variables. Conceptually, mean differences on variables do not necessarily suggest differences in relationships between variables. I believed a combined correlation would give a clearer indication of which temperament variables related to particular play behaviours for all children.

Results of the correlational analyses are presented in Table 8.

PIPPS

Disrupted play was significantly and positively correlated (all correlations 2-tailed) with anger/frustration ($r = .26, p = .006$), high intensity pleasure ($r = .23, p = .01$), and impulsivity ($r = .34, p < .001$) and was significantly but negatively associated with attentional focussing ($r = -.27, p = .004$), attentional shifting ($r = -.32, p < .001$), falling reactivity soothability ($r = -.23, p = .01$), inhibitory control ($r = -.39, p < .001$), and low intensity pleasure ($r = -.24, p = .01$).

Disconnected play significantly and negatively correlated with five temperament dimensions. These included attentional focussing ($r = -.28, p = .003$), attentional shifting ($r = -.19, p = .04$), inhibitory control ($r = -.33, p < .001$), low intensity pleasure ($r = -.22, p = .02$), and smiling/laughter ($r = -.20, p = .03$).

Play interaction was positively correlated with attentional focussing ($r=.31$, $p=.001$), attentional shifting ($r=.22$, $p=.02$), inhibitory control ($r=.30$, $p=.001$), low intensity pleasure ($r=.36$, $p<.001$), and smiling/laughter ($r=.24$, $p=.009$). Negative correlations were found for play interaction and activity level ($r=-.20$, $p=.04$), and anger/frustration ($r=-.20$, $p=.03$).

PPBS

Reticent behaviour was negatively correlated with attentional focussing ($r=-.23$, $p=.01$), inhibitory control ($r=-.24$, $p=.01$), and smiling/laughter ($r=-.20$, $p=.03$). It positively correlated with shyness ($r=.33$, $p<.001$).

Solitary passive play negatively correlated with smiling/laughter ($r=-.22$, $p=.02$).

Social play was positively associated with attentional focussing ($r=.23$, $p=.02$), inhibitory control ($r=.24$, $p=.01$), and smiling/laughter ($r=.19$, $p=.04$).

Solitary active play was not found to be correlated with any temperament variables.

The last PPBS subscale of rough play was negatively correlated with attentional shifting ($r=-.23$, $p=.01$) and inhibitory control ($r=-.25$, $p=.008$), but positively associated with activity level ($r=.19$, $p=.05$) and anger/frustration ($r=.19$, $p=.04$).

Table 8

Correlations for Temperament and Play

Temperament	Play							
	DISR	DISC	PI	RB	SP	SA	SOP	RP
AL			-.20*					.19*
AF	.26**		-.20*					.19*
Attf	-.27**	-.28**	.31***	-.23**			.23*	
Attsh	-.32***	-.19*	.22*					-.23**
FRS	-.23*							
HIplea.	.23**							
Impul.	.34***							
Inhco	-.39***	-.33***	.30***	-.24**			.24**	-.25**
LowIpl.	-.24**	-.22*	.36***					
Shyn.				.33***				
SL		-.20*	.24**	-.20*	-.22*		.19*	

($p < .05$ *, $p < .01$ **, $p < .001$ ***)

(Note: AL -Activity level, AF -Anger/Frustration, Attf - Attentional Focussing, Attsh - Attentional Shifting, FRS - Falling Reactivity Soothability, HIplea - High Intensity Pleasure, Impul.- Impulsivity, Inhco - Inhibitory Control, LowIpl - Low Intensity Pleasure, Shyn. - Shyness, SL - Smiling Laughter, DISR - Disrupted, DISC - Disconnected, PI - Play Interaction, RB Reticent Behaviour, SP - Solitary Passive, SA - Solitary Active, SOP - Social Play, RP - Rough Play)

Canonical Correlation

A canonical correlation analysis was performed between the set of play variables and the set of temperament variables, with the use of SPSS MANOVA, to determine the dimensions along which play variables were related to temperament variables. Canonical analysis produces theoretically rich results which capture some of the complex nature of educational reality (Thompson, 1984). The goal of canonical analysis is to analyze the relationships between two sets of variables. The play set included all eight play subscales. The temperament set included all sixteen temperament dimensions. Canonical analysis generates pairs of linear combinations of variables which are called canonical variates. The first canonical variate maximizes the correlation between the linear combination of one set and the linear combination of a second set. The second canonical variate is uncorrelated with the first and maximizes the correlation between linear combinations of variables after the variance due to the first is removed. Other aspects of canonical analysis include 'percent of variance' which is the amount of variance the canonical variate extracts from its own set of variables and 'redundancy' which indicates how well one set of variables can be reproduced from or explained by the other variable set (Thompson, 1984).

To determine the number and importance of canonical variates, the significance levels of the canonical variates were examined using the Wilks Lambda multivariate test of significance for F . Canonical variates with significance levels greater than .05 were not considered. Next, I looked at the canonical correlations, r_c , and squared canonical correlations, r_c^2 , which indicate the variance overlap between each pair of canonical variates. A

canonical variate pair is comprised of a play set linear combination and a temperament linear combination. Generally r_c values of .30 or less are not reported. High canonical correlations indicate a more substantial relationship than lower correlations. The remaining variance relationships to consider are percent of variance and redundancy. Percent of variance is the sum of the squared loadings on a variate divided by the number of variables in a set and it tells how useful each variable was in defining the canonical solution. Redundancy scores indicate how well the dependent set of variables (i.e. play variables) can be reproduced from or explained by the covariate set of variables (i.e. temperament variables). The final stage of analysis was to examine the canonical variates to assess the importance of the canonical structures and function coefficients (loadings). The canonical structure coefficients indicate the correlations of the original variables of a given set with the canonical variables of that set. The last step was to examine the standardized coefficients which are called function coefficients. The function coefficients are similar to beta weights in multiple regression analysis. The size of the function coefficients indicates the direct contribution of each variable to the composite canonical variate.

The first two canonical variates account for the significant linkages between the two sets of variables. Using Wilks Lambda, dimension reduction analysis showed that both the first canonical variate was significant, ($F(128) = 1.59, p = .000$); (Wilks Lambda = .10), as was the second canonical variate, ($F(105) = 1.35, p = .02$); (Wilks Lambda = .19). The remaining canonical variates were non-significant.

The canonical correlations (r_c) and squared canonical correlations (r_c^2)

indicate that the first canonical correlation was .70, and represented 49% of the overlapping variance between the first pair of canonical variates ($r_C = .70$, $r_C^2 = .49$); the second canonical correlation was .67, and represented 48% of the variance ($r_C = .67$, $r_C^2 = .48$). Thus, both of the canonical correlations represent a substantial relationship between the play and temperament variables and are highly significant.

Analyses of the two pairs of canonical variates that accompany the first two canonical correlations appear in Table 9. Shown in the table are the structure and function coefficients, the total percent of variance, the total redundancy and canonical correlations.

Total percent of variance (i.e. within set variance) and total redundancy indicate that the canonical analysis is efficient for all sets of variables - first and second canonical variate's (CV's). The size of the canonical correlations indicate that interpretation of both pairs of canonical variates is warranted.

The first CV which includes 1) function coefficients - standardized canonical coefficient (the size of the coefficient indicates the relative contribution of the original variables in the combined CV, i.e. loadings), and 2) structure coefficients - canonical correlations between the variable set and the canonical variable, is now presented. The first number is the structure coefficient and the number in brackets represents the function coefficients (loadings).

With a cutoff correlation of .3 for interpretation of the structure coefficients, the variables relevant to the first CV in the play set were, in order of magnitude, reticent .74 (.34), disconnected .50 (.91), not social play -.48, (-.12) and not interactive -.30 (.30). ("Not" is used when the structure coefficients

are negative). Results for the first temperament CV indicated that the following temperament variables were relevant - shyness .63 (.43), not impulsivity -.57 (-.51), not approach/anticipation -.44 (-.34) and not sadness -.42 (-.41).

Taken as a pair, the first CV suggested that a combination of frequent reticent and disconnected play, but relatively little social and interactive play corresponded to a combination of high levels of shyness, little impulsivity, little approach and little sadness.

The second play CV was composed of not disrupted -.72 (-.83), play interaction .70 (.31), social play .69 (.62), not disconnected play -.59 (-.29) and not rough play -.43 (.06). The corresponding canonical variate from the temperament set were inhibitory control .66 (.31), not impulsivity -.58 (-.36), attentional focussing .55 (.24), attentional shifting .47 (.15), not high pleasure -.47 (-.47), low pleasure .45 (.09), not anger/frustration -.37, (-.16), not activity level -.34 (.25), and smiling/laughter .32 (.45).

Taken as a pair, these variables suggest that those students who display little disrupted play, high levels of interactive and social play but little disconnected and rough play, temperamentally have high levels of inhibitory control, attentional focussing, attentional shifting, a preference for low pleasure and a lot of smiling laughter. Impulsivity, high pleasure, activity level and anger frustration all negatively relate to this CV.

Table 9
Canonical Results Between Play and Temperament Variables

	First Canonical Variate		Second Canonical Variate	
	structure	function (loadings)	structure	function (loadings)
Play set				
disrupted	--	--	-.72	-.83
disconnected	.50	.91	-.59	-.29
interaction	-.30	.30	.70	.31
reticent	.74	.34	--	--
social	-.48	-.12	.69	.62
rough	--	--	-.43	.06
percent of variance		.16		.26 Total = .42
redundancy		.08		.12 Total = .20
Temperament set				
AL	--	--	-.34	.25
AF	--	--	-.37	-.16
AA	-.44	-.34	--	--
Attf	--	--	.55	.24
Attsh	--	--	.47	.15
HIplea.	--	--	-.47	-.47
Impul.	-.57	-.51	-.58	-.36
Inhco	--	--	.66	.31
LowIpl.	--	--	.45	.09
Sadn.	-.42	-.41	--	--
Shyn.	.63	.43	--	--
SL	--	--	.32	.45
percent of variance		.04		.06 Total = .10
redundancy		.09		.14 Total = .23
canonical correlation	.70		.67	

Note. Abbreviations are as follows: AL - activity level, AF - Anger/frustration, AA - Approach/Anticipation, Attf - Attentional Focussing, Attsh - Attentional Shifting, HIplea - High pleasure, Impul - Impulsivity, Inhco - Inhibitory control, LowIpl - Low pleasure, Sadn - Sadness, Shyn - shyness, SL - Smiling/laughter.

Discussion

The focus of this study was on the relation between temperament dimensions and play behaviours in young children. The results have both replicated and extended the literature concerning a temperament/play relationship. They have also provided evidence to support play's developmental norms, as well as illuminating significant gender and grade differences for this group of five and six year old children.

The discussion of the data is structured so that first the descriptive analyses are highlighted, followed by the correlational and canonical correlational results which address the main focus of the study - the relationship between temperament and play.

Descriptive Information

Social play had the highest mean of all the eight play subscales. The mean for play interaction was also quite high. In terms of what each of these scales assesses, play interaction is somewhat similar to social play in that both scales assess the interactive quality of play. However, rather than considering the types of play such as sociodramatic play, this PIPPS play factor assessed play strengths and leadership. Based on the questions that comprised each scale, it can be concluded that the majority of students in this study were strong at sharing ideas, helping, encouraging and leading other children during play. Mean scores for reticent behaviour and disconnected play were lowest of all the play subscales. These similar play factors were both measured with questions about unoccupied, onlooker behaviours.

A number of factors may explain the higher ratings on social/interactive play relative to reticent/disconnected behaviours in this particular sample. The sample is comprised largely of middle to upper class

children. Past research has shown that social class is positively related to amounts of social/interactive play (Rubin, Maioni & Hornung, 1976).

Children from higher social class settings tend to have more opportunities for developing the necessary skills for social play. As well, mid-high class children are often familiar with the materials found within the school setting and thus are more likely to use the supplies in an interactive fashion rather than in an exploratory fashion. Hence, a child's play experiences are affected by his/her socio - economic status.

With regards to the mean scores for social/interactive play, in addition to social class, the age of the children is likely to affect the amount of social play (Rubin et al., 1976; Parten, 1932). In the present study, overall, six year old children's scores were higher for social play than five year old's scores. This finding is consistent with results obtained by Parten (1932) who found that social participation among preschoolers increased with age.

Other grade differences were also addressed in the present study. It was hypothesized that two factors would influence differences between Kindergarten and Grade 1 students - experience and development. First, a child's level of experience was thought to have an impact on ratings of temperament and play which are potentially sensitive to experiential factors. For example, temperament dimensions related to social wariness or novelty such as shyness, fear or discomfort were expected to be higher for the younger Kindergarten students because they are less familiar and experienced within the school setting. Reticent and disconnected play were expected to be affected by the child's grade level with younger students showing higher scores for both these play types based both on experience and development. For the most part, the results supported these expectations. Specifically, Kindergarten

children scored significantly higher in shyness as well as disconnected and reticent play. As mentioned previously, past research has found that social play increases with age (Parten, 1932) which is supported by the present study's results

Secondly, a child's development and grade level were predicted to affect his/her expression of activity level, impulsivity, inhibitory control and attention. Higher levels of inhibitory control were expected of Grade one students. With respect to temperament, the expectation that the older children's greater development would influence temperament dimensions which are salient to aspects of self regulation such as activity level, impulsivity and inhibitory control, was not supported. In fact, Grade one children were rated higher on impulsivity than Kindergarten children - a direct contradiction of the hypothesis. The actual age range between Kindergarten and Grade one students is possibly not large enough for inhibitory control to impact significantly on the expression of other temperaments. For example, more development and maturation time and distance between the ages would accord a more distinct examination of possible differences. Future research might examine students with a larger age or grade span in order to better consider the development of inhibitory control.

Kindergarten students did demonstrate significantly more rough play than the Grade one students. This likely reflects the fact that the Kindergarten environment provides more opportunities for rough play to occur than the grade one classroom.

In terms of gender differences, boys were rated higher on activity level and anger/frustration. These findings are consistent with other work

showing activity level to be a factor in boys' and girls' play. The play of boys has been found to be more active than girls' play (Eaton & Enns, 1986; Keogh, Pullis & Cadwell, 1982; Rowe & Plomin, 1977; Ballantine & Klein, 1989). A sex difference for activity level is also supported by Buss (1989) who found boys' activity level to be higher than girls' activity levels. This difference in activity level may be due to socialization processes which encourage boys to be more active and for girls to enjoy quiet, calm pursuits (Smith & Dagliesh, 1977). With regards to anger/frustration, Buss and Plomin (1984) note that it is well documented that boys express increased anger due to both societal influences and role training. Research into socialization influences on temperament speaks to the age that children are when sex differences first emerge. If the sex differences are not present in infancy but appear later on, then a socialization cause is favoured over a biological explanation (Buss, 1989). Generally, research has found that sex differences in temperaments do not emerge until children reach preschool or school age (Rothbart, 1989).

Not only were boys rated higher on activity level and anger/frustration, they were also rated higher on rough play. Their increased expression of anger and activity level, which has been linked to aggression (Rothbart, 1989), offers support for the gender differences found in rough play since rough play can also be associated with active, aggressive behaviours. The present study's finding that boys exhibit more rough play than girls is not a new finding and is well documented within existing research (e.g., Coplan & Rubin, in press; Dipietro, 1981; Macoby & Jacklin, 1974; Whiting & Edwards, 1973).

Differences between boys and girls are often attributed to socialization influences, however, the present findings also suggest that gender differences

may be attributed to biological differences as indicated by significant temperament differences between boys and girls. For example, researchers such as Buss and Plomin, (1984), assume that inherited individual differences in temperament exist. These differences in temperament are considered to be individual differences not gender differences. The argument can be made, however, that socialization agents may encourage biological differences so that as boys and girls mature, the differences become greater over time. Existing research on sex differences support this claim. For example, data on young infants of four months (Thomas & Chess, 1977) indicate no temperament sex differences however, preschool aged children demonstrate marginally significant sex differences in temperament (Thomas & Chess, 1977). The present study on school aged children demonstrates sex differences. The best assessment of developing gender differences would be a longitudinal study which examined for sex differences at set times over development and maturation. The present study is definite evidence for developing gender differences within temperament traits based on early temperament individuality.

The present study's findings regarding activity level and rough play offer additional support for the connection among temperament, gender and socialization. Boys' higher scores on rough play might be explained by their higher scores on activity level. This idea is supported by the observed correlation between rough play and activity level in this study and in the work of others (ie. Coplan & Rubin, in press). This is a good example of how temperament can affect play.

Girls were rated higher on play interaction than boys. Play interaction has been found to be associated with prosocial behaviour and is related to self

control, interpersonal skills and verbal assertiveness (Fantuzzo, Sutton-Smith, Coolahan, Manz, Canning & Debnam, 1995). Girls higher ratings on play interaction can be explained by a number of possible reasons: 1) maturation - girls at this age are generally more mature than boys 2) parental socialization practices and 3) teacher expectations and beliefs. Teacher's expectations and beliefs affect how students are viewed and accepted and may explain why girls were rated higher on play interaction. For example, based on my teaching experience and knowledge of teacher's views, certain temperament dimensions are viewed as more positive and are more valued than others, such as attention levels, inhibitory control and smiling /laughter. Moreover, characteristics of the instructional environment demand particular temperament dimensions (Martin, 1989). Thus, girls who have high scores on temperament dimensions such as attentional dimensions, inhibitory control and smiling/laughter may be viewed by teachers to be positive and with prosocial behaviours within the school setting. The boys' high temperament scores were on dimensions which tended to be linked with behaviours which teachers consider to be anti-social or negative such as increased activity level and high anger/frustration. Girls had higher scores than boys on both attentional shifting and attentional focussing. Girls scores for inhibitory control were also higher than boys. Attention factors and inhibitory control appear to be linked as is indicated by the strong correlation between these two dimensions. Past research does not indicate a gender difference for attention and inhibitory control but it does indicate that a child's attention system is an important component of their level of inhibitory control (Diamond, 1981; Posner & Rothbart, 1981). Hence, girls' high scores on both attention and inhibitory control are consistent with

past research indicating that the two dimensions are linked.

Sex typing influences may also explain the result that girls exhibit more inhibitory control than boys. From my experience, girls are expected to be in control, reserved and responsible; whereas, boys are allowed to be reckless and free-spirited.

The gender difference on the smiling/laughter temperament dimension is difficult to explain. Girls rated higher on smiling and laughter than boys. Perhaps this difference is attributable to pressure on girls to be pleasing as supported by numerous studies which find girls to be more compliant (Minton, Kagan & Levine, 1971; Smith & Dagiessh, 1977). Girls are expected to smile and laugh. Boys are often encouraged to be physical and assertive (Maccoby & Jacklin, 1974). Another possible reason relates to boy's higher scores on anger and frustration. One wouldn't expect that this particular sample of boys would likely show both high anger/frustration and high amounts of smiling/laughter at the same time.

The many socialization pressures for girls to be more physically restrained (Sanson, Smart, Prior, Oberklaid & Pedlow, 1994) and more sedentary (Rubin, Maioni & Hornung, 1976; Fein, 1981) than boys possibly explain girls' higher score on low intensity pleasure. Girls are generally encouraged to enjoy low intensity activities such as being sung to, snuggling or looking at picture books which explain their rating on low intensity pleasure. As mentioned, it is possible that the reason we socialize boys and girls differently is because in fact they are different. Differences in temperament likely offer support for the notion of a biological basis for the individual gender differences between boys and girls.

The Temperament/Play Relationship

To restate the main purpose of this study, the aim was to explore relations among temperament and play in a sample of early primary students in the hopes of establishing links which might alert teachers and researchers that children have predispositions which are likely to influence their actions and reactions.

Insofar as temperament-play relationships are concerned, the general hypotheses that the two are interrelated was supported, although the specific hypotheses based on matching specific temperaments directly to specific play behaviours appears to have been somewhat less accurate. Nonetheless, the majority of research questions were supported and the results provide ample evidence to reinforce the notion that children bring their own distinct dispositions to school with them, which in turn, affect their individual play behaviours (Rothbart, Ahadi & Hershey, 1994).

In the following paragraphs, I discuss the various hypotheses that were and were not supported.

Prior to discussing the specific temperament/play relationships, it is interesting to note the correlations and links between the PIPPS and the PPBS play scales.

Disrupted play (PIPPS) was significantly related to the PPBS subscale of rough play. Both scales assess play behaviours which are often considered anti-social such as rough and tumble play, play which is disjointed and interrupted as well as aggressive behaviours.

Interestingly, disconnected play (PIPPS) was positively correlated with reticent, solitary passive, solitary active and rough play while social play was negatively correlated. Hence, all of the PPBS play behaviours were linked to

disconnected play. The strong correlation between disconnected and reticent play is attributable to similarities in the actual items of each play scale. Both disconnected and reticent play involve onlooker, inhibited behaviours. Due to the solitary nature of disconnected play, it is not surprising that both solitary passive and solitary active play were linked to disconnected play. All three play behaviours have a strong component of solitary play. Because of the solitary nature of disconnected play, it is non-social; hence, its negative correlation with social play. Perhaps disconnected play's relationship with rough play is explained by their respective correlations to inhibitory control. Inhibitory control is the only dimension that both rough and disconnected play have in common. Thus, unlike disrupted play which is very similar to rough play, the commonality between disconnected and rough play is that both of these type of players are low in inhibitory control.

The PIPPS scale of play interaction, which describes play strengths and leadership, was negatively correlated with reticent, solitary active and rough play, while it was positively correlated with social play. A child who is high on play interaction is not likely to display reticent or rough play since the first is onlooker behaviour and the latter is often counter-social. Perhaps because play interaction involves the social, interactive component of play, these children do not take part in as many solitary activities such as would be the case with solitary active play. This may explain the negative correlation to solitary active play. Social play was highly correlated with play interaction and the results indicated similar respective correlations with temperament for both play scales. Positive sociability describes people who react positively to sharing and find interchanges with people very rewarding (Buss & Plomin, 1984). This description of social people incorporates aspects of both social and

interactive play thus lending support to the relationship between social play and play interaction.

The number of correlations between play behaviour and the temperament dimensions of inhibitory control, attentional shifting, attentional focussing, smiling/laughter and low intensity pleasure suggest that these temperament areas are particularly important for behaviour in the primary school setting. Not only do teachers expect children to be able to suppress inappropriate behaviours (ie. high inhibitory control) and focus on the task at hand (ie. high attentional focussing), while remaining happy and positive (ie. high smiling/laughter), it also appears that these temperament dimensions play a key role within a number of play behaviours. Hence, these noted temperaments are important not only for child -teacher relationships but also for child - child interactions. Children who demonstrate positive amounts of inhibitory control, attentional shifting, attentional focussing, smiling/laughter and low intensity pleasure are likely to do well in the school setting which demands and values these characteristics. Conversely, children who are low on these temperament dimensions are likely to have trouble in school and play. For example, low key activities (ie. low pleasure) are the norm rather than the exception in many classrooms (e.g., Martin, 1993) thus those students who enjoy high pleasure pursuits will likely have difficulty.

To better understand the relationship between play and temperament, the following paragraphs highlight the significant correlations. The results discussion addresses the correlated play scales where appropriate and discusses similarities and differences amongst play scales.

Based on correlational results, a child who exhibits disrupted play tends

to be impulsive and have difficulty shifting her attention between activities. Moreover, she lacks the ability to plan and contain inappropriate responses either when asked to or in a new or uncertain situation (ie. low inhibitory control). The anti-social behaviour connected with disrupted play is related to the temperament characteristics of much anger/frustration and little capacity to settle or calm down after becoming distressed (ie. falling reactivity soothability). In addition, a disrupted player is unlikely to stay focussed on an activity and prefers fast paced situations (high intensity pleasure) rather than low stimulus settings (low intensity pleasure). Interestingly, activity level was not related to disrupted play. Often for teachers, high activity level is considered a negative quality and is linked to less desirable behaviours, yet for a disrupted player, numerous other temperament dimensions show higher correlations than activity level. Hence, teachers are cautioned not to think that all high activity levels are negative or less desired and that high activity is necessarily problematic.

All the temperament dimensions which were significantly related to rough play such as attentional shifting, inhibitory control and anger/frustration, were related to disrupted play as well. Rough play and activity level were slightly more highly correlated than disrupted play and activity level. Coplan and Rubin (in press) also found a positive correlation between rough play and activity level and rough play and attention. In addition, past studies have reported links between inhibitory control and aggressive behaviours sometimes exhibited in rough and tumble play (Kochanska, 1991).

The strongest temperament correlate of disconnected play is the dimension of inhibitory control. A child who is low in inhibitory control is

considered poor at following directions and has difficulty with games such as “Simon Says” or “Mother May I”. She has trouble waiting her turn or resisting the ‘wrong’ thing to do. Perhaps, this is why the disconnected player, who is defined by Fantuzzo et al (1995) as lacking the ability to successfully enter and maintain play interactions, is ignored by others and ends up withdrawing as described by questions from the PIPPS play measure.

Rothbart, Ahadi and Hershey (1994) noted that inhibitory control, which is part of effortful control, may be related to negativity such that children who are low in effortful control perceive they lack control over ‘success’ in new activities and therefore avoid new situations. Disconnected play’s strong negative correlation with inhibitory control indicates that a disconnected player is likely to have a low level of inhibitory control. Hence, as Rothbart et. al. (1994) suggest, a disconnected player may deliberately avoid play interactions rather than merely lack the ability to interact as is implied by Fantuzzo et al’s (1995) definition.

In addition to inhibitory control, little smiling/laughter, limited attentional focus, poor attentional shifting and a negative correlation with low pleasure activities describes the disconnected player. Shyness is marginally linked with disconnected play. Given these correlations, the disconnected player is not likely to do well in the school setting with regards to how they are perceived by teachers and peers, as well as how easily they will cope with school imposed expectations and structure. A disconnected player’s problem’s with attention are related to possible problems with distractibility and task persistence. Distractibility and task persistence are temperament characteristics found to be most related to achievement in the primary grades (Martin, 1993).

As mentioned, disconnected and reticent play are intercorrelated and measure somewhat similar play behaviours. However, unlike with disconnected play, shyness is strongly linked to reticent behaviour. Hence, for reticent play the underlying temperament appears to be shyness, whereas for disconnected play the foundational temperament is likely inhibitory control. We know that a disconnected player 'refuses to play when invited' whereas this is unknown about the reticent player. The items assessing reticent play simply describe what the child's behaviour is and do not address how a child responds to others' overtures. Perhaps the disconnected player is deliberately withdrawing from play because of past play failures and her difficulty with inhibitory control related issues. The reticent player, on the other hand, may be withdrawing from play situations because of shyness. The reasons why both types of players have difficulty in play situations may merge with age and connect with later peer rejection and passive withdrawal. In early childhood, passive withdrawal involves quiet, constructive or exploratory and often sedentary behaviour (Rubin & Mills, 1988). In later childhood, however, passive withdrawal may be an indication of social anxiety and negative self-perceptions of competence based on past experience with social failures among peers (Rubin, 1985). To link this with the present research, although the disconnected player appears to consciously withdraw from play largely due to rejection and the reticent player withdraws due to shyness, the factors underlying withdrawal may become intertwined as the children develop so that over time the differentiation between disconnected and reticent play becomes blurred. Further study on older children from a longitudinal standpoint is needed to determine if both reticence (as suggested by Coplan et al.) and disconnected play are predictive of peer rejection and

passive withdrawal in later childhood.

Reticent play negatively correlated with attentional focussing, inhibitory control, and smiling/laughter. Given that all three of these temperament dimensions also correlate with disconnected play and given the intercorrelations between reticent and disconnected play, these results are not surprising. It is possible that because the reticent player has fewer opportunities to play (largely due to her shyness), the temperament areas of attentional focussing and inhibitory control may have fewer occasions to develop. For example, when and if a reticent player does become actively involved in a play situation, she may simply not have the development and experience comparable to her peers. Furthermore, her play and actions are likely to be quieter, hence the lower score on smiling/laughter.

The temperament dimensions of attentional focusing, attentional shifting, inhibitory control, low intensity pleasure and smiling/laughter were all positively related to play interaction. Activity level and anger/frustration were negatively correlated with play interaction. The strongest correlation existed between low intensity pleasure and play interaction perhaps because both teachers and peers find low intensity pleasure activities desirable within the school setting. Interestingly, a low activity level is strongly correlated with low intensity pleasure. This connection supports the reasoning that a temperament of low intensity pleasure is conducive and favoured within the school environment and is likely to be positively reinforced. Similarly, a low activity level is reinforced and is consequently connected with higher achievement (Martin, 1993).

Attentional focusing, inhibitory control and smiling laughter were all positively related to social/interactive play. The only distinguishing

correlation between social and interactive play was that play interaction correlated with low intensity pleasure and social play did not. The absence of any correlation between social play and low intensity pleasure might be because it has been found that sociable children are less likely to be satisfied with low intensity processes, rewards and the mere presence of others (Buss & Plomin, 1984; Saracho, 1985, 1994). Also, unlike play interaction which focusses more specifically on the interaction taking place, social play merely reports on whether a child “engages in group play”, or “plays make believe with other children” (PPBS, Coplan & Rubin, in press). Based on the social play questions, we do not know whether the group play or pretend play is high or low intensity, hence, no correlations with low intensity pleasure are likely.

Even though solitary passive play behaviours represented an average amount of the children’s play behaviours, the only correlation, which was negative, with solitary passive play was the temperament dimension of smiling/laughter. The hypothesized relationships with activity level, attentional focus and low intensity pleasure were not supported. Because of the possibility that this play behaviour is representative of social disinterest (Coplan, Rubin, Fox, Calkins & Stewart, 1994; Rubin & Asendorpf, 1993), temperamental effects should have some bearing on this play behaviour. In addition, given research on person/object orientation (Jennings, 1975) and cognitive style (Saracho, 1985, 1994), I expected to see some evidence compatible with an object orientation or a field independent style (eg., Saracho, 1985, 1994). The negative relationship with smiling/laughter could be interpreted as indicative of social disinterest or someone who was socially detached or withdrawing. It is clear that further studies which consider a

child's social motivation may offer insight into solitary passive play. It is possible given the present study's results and Coplan and Rubin's research (in press), that solitary passive play is more related to social motivation issues and not individual temperaments or people/object orientations. However, even though social motivation (i.e. sociability) is considered by some (e.g. Buss & Plomin) to be a temperament as discussed by Thomas and Chess (Goldsmith et al. 1987), behaviour is sometimes better explained from a motivational standpoint rather than with temperament which may be the case for solitary passive play.

Canonical Correlations

Canonical correlation analysis was performed to further analyze the relationship between temperament and play. The strength of canonical analysis is that the results reflect the reality that variables are seldom represented in isolation when considering people. This type of analysis reflects the reality that a child does not exhibit only one temperament or play behaviour, but rather displays a combination of play behaviours and temperaments.

The canonical correlation analysis indicated two significant canonical variates (CV) or two independent and meaningful clusters of play and temperament variables.

The first CV demonstrated an interrelationship between the play and temperament variables. Specifically, the variables relevant to the first canonical variate were a combination of frequent reticent and disconnected play, but relatively little social and interactive play, corresponding to a combination of high shyness and little to no impulsivity and little to no approach/anticipation and sadness.

The intercorrelations between the variables within the temperament and play sets and the consequent multicollinearity make interpretation a challenge, however because so many research situations involve multiple predictors and multiple criteria, these canonical results remain a potent analysis tool.

The structure coefficients indicate the order of variables of the first CV to be reticent before disconnected followed by social play before play interaction. Reticent play contains a substantial proportion (74%) of the predictive information represented in the four play variables. Thus, the first CV is largely dominated by first reticent play and then disconnected play. The prevalent temperament variable is shyness. Hence, this first CV captures a dynamic involving a child who is highly shy and who exhibits mainly reticent/disconnected play at the expense of interactive/social play. Interestingly, impulsivity, approach and sadness were seldom noted - hence, the negative scores for these variables within the first CV. The strong relationship between the temperament and play variables in the first CV is supported by the canonical correlation of .70, and is consistent with the bivariate correlational data from the present study and Coplan and Rubin (in press) and Coplan, Rubin, Fox, Calkins & Stewart (1994) regarding reticence's relationship to shyness. The temperament variables of impulsivity, approach and sadness, however, were not found to be correlated with either reticent/disconnected play or social and interactive play within the present study's correlational analyses. Nevertheless, logically, the CV composite makes sense. A child characterized by high levels of shyness is probably not very impulsive or overly sad. They are merely shy. Moreover, a shy individual is not likely to outwardly exhibit high levels of excitement and

positive anticipation for expected pleasurable activities, thus approach is negatively scored for the first CV. It appears that both the play variables and the temperament variables of the first CV naturally cluster together to form a strongly shy - reticent/disconnected composite.

It is important to note before moving on to the second CV, that the function coefficients reveal the need for caution. It is not a good idea to base interpretation solely on the structure coefficients. The size of the function coefficients indicate the relative contribution of the variables which offer additional pertinent information. It seems reticent play's contribution is suppressed or hidden by disconnected play and that social play's contribution is possibly hidden by play interaction. For example, because reticent and disconnected play are similar and correlated, once disconnected play is entered into the CV, reticent's contribution may possibly not add much more unique or different information. The function coefficients do not indicate extreme suppression within the temperament variable set. Even with a degree of suppression occurring within the play set, however, the outcome of the first CV remains the same and consequently the above interpretation remains sound.

The second canonical variate indicated that those who display little disrupted play, high levels of interactive and social play but little disconnected and rough play also have high levels of inhibitory control, attentional focussing, attentional shifting, a preference for low pleasure and a large amount of smiling/laughter. Impulsivity, high pleasure, activity level and anger/frustration all negatively relate to this canonical variate.

As with the first canonical variate, multicollinearity between the variables make interpretation of the second canonical variate challenging.

However, generally the second canonical variate addresses the remaining play behaviours in the study with the exception of solitary active and solitary-passive play. In this second CV, disconnected play appears to account for any additional contribution both reticent play and the solitary nature of solitary active and solitary passive play would make. In the correlational results, disconnected play was strongly correlated with reticent, solitary active and solitary passive play. In a real life setting, both social and interactive play are likely with little to no disrupted, disconnected and rough play. Disrupted play appears to suppress much of rough play's contribution, while findings from the correlational data from this study support the presence of both disrupted and rough play.

The temperament set of the second canonical variate indicates inhibitory control, attentional focussing, attentional shifting and low pleasure along with little to no impulsivity, high pleasure, anger/frustration and activity level best match the play set which has a strong showing of social/interactive play. Considered as a composite, this canonical variate well matches the correlational research presented earlier in this paper about social/interactive play and the conclusion that inhibitory control, attentional focussing, attentional shifting and low pleasure are particularly salient to successful play situations within the school setting.

It is clear that the second CV addresses a social versus anti-social dynamic. The strong lack of disrupted play along with little disconnected and rough play, coupled with the high positive scores on play interaction and social play indicate that the second CV reflects positive social play behaviours paired with the opposite type of play behaviours. The temperament set indicates temperament dimensions which are largely positive and social. For

example the temperament set describes a child who possesses positive amounts of attentional focus, attentional shifting, inhibitory control, low pleasure and smiling/laughter along with a low activity level, little anger/frustration, little high pleasure, and little impulsivity. As noted earlier in the discussion section of this paper, this temperament set describes traits which are valued and encouraged by both teachers and peers. They are considered to be prosocial and conducive to positive behaviours.

In conclusion, the canonical analyses offered additional insight into how the play and temperament variables relate when considered altogether. Not only are the results interesting and powerful, they also are generally supported with past research and the present study's findings. Moreover, the CV's make sense when considering a child's reality.

Implications for Practice

Based on this research, four recommendations for teachers are evident:

- 1) the importance of knowing the typical play type of this age group,
- 2) the needed awareness of gender differences,
- 3) the necessary sensitivity to grade levels (i.e. children's developmental level), and
- 4) the direct implications of the temperament/play relationship and how this affects our teaching.

Social play is increasingly more common for both this age group and social class level. Instead of building more structure into the classroom, teachers need to provide opportunities for social and interactive play. Providing more play opportunities does not have to mean using centers or choosing time, although both these options would work very well. Cooperative tasks and a chance to work with peers also allows for social and

interactive play to occur.

This study clearly demonstrated a difference between boys and girls with respect to temperaments and play behaviours. However, I want to caution teachers from using this information to label or stereotype their students. As noted, often the reasons a gender difference exists are due to socialization and sex typing influences. Teachers need to be aware that by the time children begin school, they have been exposed to a variety of influences which may lead to gender differences. Rather than perpetuating a continued gender split, a well balanced curriculum and environment can encourage and work with the temperaments and play behaviours of individual children.

The third recommendation for teachers involves the findings about grade differences. Kindergarten children were found to be more shy with higher amounts of disconnected, reticent and rough play behaviours. Teachers need to be tolerant, sensitive and patient as children adjust to the school setting. It is unrealistic to expect Kindergarten students to immediately conform to a school's rules and structures. Most early primary teachers are aware of this need and adapt their teaching accordingly. However, a related concern is that Grade One teachers often expect students to be ready for more structure and that students will be ready for paper/pencil tasks once they enter Grade One. The present research indicates that although students have experienced one year of school, their developing self control or inhibitory control is not necessarily significantly different than a Kindergarten student's self regulatory abilities.

A final issue which arose, based on the findings of temperament's repeated relationship to play, affects a teacher's total approach to teaching. Specifically, the expectation that all children will learn in a play based

environment is both unrealistic and potentially detrimental (eg. Van Hoorn, Nourot, Scales & Alward, 1995; Weber, Behl & Summers, 1994). Because some children's temperament dimensions may be indicative of high activity level, low attentional focus or low inhibitory control, it is likely that these students will not learn if left to their own devices. These students may need considerable direct instruction to complement their play opportunities. Clearly, different players will benefit from different environments in different ways. To illustrate, I will consider play and literacy. The role of play in literacy development is well documented (eg., Berk & Winsler, 1995; Christie, Roskos, Enz, Vukelich & Neuman, 1995; Pellegrini & Galda, 1993). Literacy development has been examined with respect to sociodramatic play (Dever & Wishan, 1995; Soundy & Geniso, 1994) as well as with regards to print rich environments (Vukelich, 1993). Often the classroom environment is considered critical to children's literacy learning (Neuman & Roskos, 1991). The inherent danger of advocating literacy learning through play is the possibility that a teacher will choose play as the primary means for literacy development. Undoubtedly, certain children would not learn in this environment as evidenced by the impact of temperament on play behaviours. A child exhibiting disrupted, disconnected or rough play is unlikely to learn without intervention given their play behaviours. Consequently, the need to consider each child's individual profile and how these differences will affect her learning can not be overemphasized.

Ironically, at the outset of this study, I believed that play was an ideal method to teach children and provide a motivating, risk free environment. As I conclude this study, however, I realize that play might very well be an ideal teaching approach, but only for selected children. Some children's

temperaments present the need for a component of direct instruction. Thus, an eclectic approach, utilizing play and direct teaching, is much more likely to address all student's individual needs given the relationship which exists between temperament and play in early primary children.

The implications of how temperament contributes to school performance is not well understood, but this research suggests that temperament contributes to school outcomes through its' impact on play. Researchers and teachers need to understand that play is an important, if not the most important, learning activity of early childhood. Children's playful interactions with objects and people shape a child's learning of cognitive, language and social skills. As well, given the first canonical profile of a shy-reticent/disconnected player, this player may likely miss out on learning and or may be overlooked in a play-based curriculum. The second profile of a social, interactive player is likely to be ideally suited to a play-based environment. With these points in mind, researchers and teachers need to understand how temperament influences play, coupled with an appreciation of play, in order to take the important step towards maximizing the education and supporting the development of young children.

Related directly to supporting young children's learning is Vygotskian theory which views the role of an adult or more capable peer as pivotal in a child's learning and development. This research directly supports the need for some intervention for particular learners as described by the first canonical profile (shy-reticent/disconnected).

Moreover, this research directly supports research by Coplan and Rubin (in press), which is discussed earlier in the study.

Although past research indicates that developmental determinants of

play exist, the present research demonstrates that play is also influenced by a more fundamental nature - temperament. In as much as temperament is biologically based, play behaviours are biologically based as well. In demonstrating this relationship, I have made a contribution to play theory.

Limitations and Future Research

I strongly recommend that future researchers replicate and extend the current study attending to the issues summarized in the following paragraphs.

A larger sample size would be beneficial in order to guard against problems which occur from missing data. For example, canonical analyses usually requires five to ten subjects per dimension studied. Hence, for this study a minimum of 130 subjects are necessary. A smaller sample than 130 subjects means that the analyses can only be considered exploratory and that the stability of the canonical functions and subsequent interpretations are possibly jeopardized.

Other sampling issues to be cognizant of are attaining a sample that is socio-economically diverse in order to avoid results which may be to SES.

The use of cluster analyses or factor analyses for the variable sets would offer additional insight into play/temperament's relationship. Because intercorrelations and multicollinearity make interpretation a challenge in canonical analyses, factor analyses might minimize the intercorrelations by combining some of the similar play behaviours and temperament dimensions. Furthermore, a cluster analyses would offer additional support for existing studies like those of Rothbart, Ahadi and Hershey (1994) and Thomas and Chess (1977) in which the temperament variables are grouped into clusters in order to look at individual differences.

Researchers should carefully consider the manageability of their chosen measures. In this study the CBO was chosen to measure temperament because of its' thorough, comprehensive nature; however, some parents did find the questionnaire to be too long (195 items) and at times difficult to complete due to the format of a 7 point Likert scale. Hence, researchers need to allow time and information for parents completing this valuable measure.

A straightforward replication with a different sample is also likely to provide additional insight and support into how these two constructs relate. Moreover, a qualitative component would possibly give additional insight into the relationship. For example, some direct observations of children's play in the free play setting would support the teacher report measures; as well, interviews with the students would provide a personalized view of their temperaments in an isolated setting.

Lastly, even though two strong profiles emerged from the canonical analyses, the first profile accounted for 42 percent of the variance, whereas the second profile accounted for only 10 percent of the variance. Hence, it needs to be understood that this research is only one step toward understanding the relationship between temperament and play.

Evidently, both play and temperament are powerful constructs to explore and are strongly relevant to both classroom teacher and researchers alike. As with much research, this study is one step towards learning more about these two constructs. There are many aspects yet to be discovered and uncovered in future research within the areas of play and temperament.

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Appendix A

Preschool Play Behaviour Scale

The following items examine various play behaviours that children may engage in during **indoor free play**. Please rate the child on each item and **COMPARE HIM/HER TO OTHER CHILDREN OF THE SAME AGE THAT YOU CURRENTLY TEACH AND HAVE TAUGHT**. Although it is true that children's behaviours may be quite variable, please try to make a general evaluation of the child's "everyday" or typical behaviour since being in your class.

In making your judgements, use the scale below to indicate **HOW OFTEN** the child engages in each behaviour during **indoor free play**.

	1	2	3	4	5
	Never	Hardly ever	Sometimes	Often	Very often
1. Talks to other children during play	1	2	3	4	5
2. Plays by him/herself, examining an object or toy.	1	2	3	4	5
3. Plays 'rough and tumble' with other children.	1	2	3	4	5
4. Takes on the role of onlooker or spectator.	1	2	3	4	5
5. Plays 'make-believe', with other children.	1	2	3	4	5
6. Engages in group play.	1	2	3	4	5
7. Engages in pretend play by him/herself.	1	2	3	4	5
8. Plays alone, building things with blocks or other toys.	1	2	3	4	5
9. Wanders around aimlessly	1	2	3	4	5
10. Plays in groups <i>with</i> (not just beside) other children	1	2	3	4	5
11. Plays 'make-believe', but not with other children	1	2	3	4	5
12. Watches or listens to other children without trying to join in.	1	2	3	4	5
13. Engages in playful/mock fighting with other children.	1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 14. Plays by him/herself drawing, painting or doing puzzles. | 1 | 2 | 3 | 4 | 5 |
| 15. Engages in active conversation with other children during play. | 1 | 2 | 3 | 4 | 5 |
| 16. Engages in pretend play with other children | 1 | 2 | 3 | 4 | 5 |
| 17. Plays alone, exploring toys or objects, trying to figure out how they work. | 1 | 2 | 3 | 4 | 5 |
| 18. Remains alone and unoccupied, perhaps staring off into space. | 1 | 2 | 3 | 4 | 5 |

Appendix B

Penn Interactive Peer Play Scale

The following items examine various play behaviours that children may engage in during **indoor free play**. Please rate the child on each item and **COMPARE HIM/HER TO OTHER CHILDREN OF THE SAME AGE THAT YOU CURRENTLY TEACH AND HAVE TAUGHT**. Although it is truer that children's behaviours may be quite variable, please try to make a general evaluation of the child's "everyday" or typical behaviour since being in your class.

In making your judgements, use the scale below to indicate **HOW OFTEN** the child engages in each behaviour during **indoor free play**.

	1	2	3	4	5
	Never	Hardly ever	Sometimes	Often	Very often
1. Helps other children				1	2 3 4 5
2. Starts fights and arguments				1	2 3 4 5
3. Is rejected by others				1	2 3 4 5
4. Does not take turns				1	2 3 4 5
5. Hovers outside the play group				1	2 3 4 5
6. Shares play materials with other children				1	2 3 4 5
7. Withdraws during free play				1	2 3 4 5
8. Demands to be in charge				1	2 3 4 5
9. Wanders aimlessly				1	2 3 4 5
10. Rejects the play ideas of other children				1	2 3 4 5
11. Is ignored by the other children				1	2 3 4 5
12. Tattles				1	2 3 4 5
13. Helps settle peer conflicts				1	2 3 4 5
14. Destroys others things				1	2 3 4 5

15. Disagrees without fighting	1	2	3	4	5
16. Refuses to play when invited	1	2	3	4	5
17. Needs help to start playing	1	2	3	4	5
18. Verbally assaults others	1	2	3	4	5
19. Directs others actions politely	1	2	3	4	5
20. Cries, whines, shows temper	1	2	3	4	5
21. Encourages other children to join play	1	2	3	4	5
22. Grabs other children's things	1	2	3	4	5
23. Comforts others who are hurt or sad	1	2	3	4	5
24. Is confused in play	1	2	3	4	5
25. Verbalizes stories during play	1	2	3	4	5
26. Needs teacher's direction during free play	1	2	3	4	5
27. Disrupts the play of others	1	2	3	4	5
28. Seems unhappy	1	2	3	4	5
29. Shows positive emotions during play (eg. smiles, laughs)	1	2	3	4	5
30. Is physically aggressive during play	1	2	3	4	5
31. Shows creativity in making up play stories and activities	1	2	3	4	5
32. disrupts class during transition between activities	1	2	3	4	5

Appendix C

Scoring Procedure - Children's Behaviour Questionnaire

Scale scores for the Children's Behaviour Questionnaire represent the mean score of all scale items applicable to the child during the last 6 months, as judged by the caregiver. Scales' scores are to be computed by the following method:

1. Sum all numerical item responses for a given scale. Note that:

a) If caregiver omitted an item, that item receives no numerical score;

b) If caregiver checked the "does not apply" response option for an item, that item receives no numerical score;

c) Items indicated with a R are reverse items and must be scored in the following way:

7 becomes 1	3 becomes 5
6 becomes 2	2 becomes 6
5 becomes 3	1 becomes 7
4 remains 4	

2. Divide the total by the number of items receiving a numerical response. Do not include items marked "does not apply" or items receiving no response in determining the number of items. For example, given a sum of 40 for a scale of 17 items, with one item receiving no response, two items marked "does not apply", and 14 items receiving a numerical response, the sum of 40 would be divided by 14 to yield a mean of 2.85 for the scale score.

CBQ SCALE ASSIGNMENTS

Changes in original composition of scales made on the basis of initial item analysis, Northwest Mothers of Twins Study (NMOTS), N = 262, have resulted in addition of new items to Discomfort, Fear, Perceptual Sensitivity and Sadness scales, which are not included in the current questionnaire. Note that the original Attentional Focusing scale did not hold together in this analysis. I have therefore added items to create two scales: Attentional Focusing and Attentional Shifting. These items have not been added to the questionnaire itself.

ACTIVITY LEVEL (AL), N = 13 Alpha = .81

My child:

1. Seems always in a big hurry to get from one place to another.
25. Tends to run, rather than walk, from room to room.
- 41R. When outside, often sits quietly.
48. Moves about actively (runs, climbs, jumps) when playing in the house.
- 88R. Sometimes sits quietly for long periods in the house.
- 102R. Prefers quiet activities to active games.
- 123R. Rarely runs or moves quickly in the house.
- 126R. Plays games slowly and deliberately.
- 145R. Sits quietly in the bath.
153. Plays actively outdoors with other children.
172. Is full of energy, even in the evening.
187. Has difficulty sitting still at dinner.
- 192R. Likes to sit quietly and watch people do things.

ANGER/FRUSTRATION (AN), N = 13 Alpha = .76

My child:

2. Gets angry when told s/he has to go to bed.
- 19R. Rarely gets irritated when s/he makes a mistake.
34. Has temper tantrums when s/he doesn't get what s/he wants.
62. Gets quite frustrated when prevented from doing something s/he wants to do.
73. Gets mad when even mildly criticized.
78. Gets angry when s/he can't find something s/he wants to play with.
- 120R. Rarely gets upset when told s/he has to go to bed.
128. Becomes easily frustrated when tired.
140. Gets irritable about having to eat food s/he doesn't like.
- 156R. Rarely protests when another child takes his/her toy away.
173. Easily gets irritated when s/he has trouble with some task (e.g., building, drawing, dressing).
181. Gets angry when called in from play before s/he is ready to quit.
193. Gets mad when provoked by other children.

- 84R. Doesn't usually comment on people's facial features, such as size of nose or mouth.
- 98. Is quickly aware of some new item in the living room.
- 105. Usually comments if someone has an unusual voice.
- 122R. Does not seem to notice parents' facial expressions.
- 142R. Doesn't usually react to different textures of food.
- 154. Notices even little specks of dirt on objects.
- 170R. Doesn't usually notice odors, such as perfume, smoke, cooking, etc.
Rubs fabric or other soft material.

SADNESS (SD), N = 12 Alpha = .67

My child:

- 18. Cries sadly when a favorite toy gets lost or broken.
- 39. Tends to feel "down" at the end of an exciting day.
- 44. Tends to become sad if the family's plans don't work out.
- 55. Seems to feel depressed when unable to accomplish some task.
- 64. Becomes upset when loved relatives or friends are getting ready to leave following a visit.
- 72R. Does not usually become tearful when tired.
- 81. Her/his feelings are easily hurt by what parents say.
- 94. Becomes sad when told to do something s/he does not want to do.
- 109R. Rarely cries when s/he hears a sad story.
- 112R. Rarely becomes upset when watching a sad event in a TV show.
- 127. Sometimes appears downcast for no reason.
- 149R. Rarely becomes discouraged when s/he has trouble making something work.
Seems to feel sorry for her/himself when things are going badly.

SHYNESS (SH), N = 13, Alpha = .94

My child:

- 7. Sometimes prefers to watch rather than join other children playing.
- 17R. Is comfortable in situations where s/he will be meeting others.
- 23R. Seems to be at ease with almost any person.
- 37. Gets embarrassed when strangers pay a lot of attention to her/him.
- 45R. Acts very friendly and outgoing with new children.
- 57R. Joins others quickly and comfortably, even when they are strangers.
- 74. Is sometimes shy even around people s/he has known a long time.
- 89. Sometimes seems nervous when talking to adults s/he has just met.
- 106. Acts shy around new people.
- 119R. Is comfortable asking other children to play.
- 129R. Talks easily to new people.
- 143. Sometimes turns away shyly from new acquaintances.
- 158R. Seems completely at ease with almost any group.

APPROACH/ANTICIPATION (AP), N = 13 Alpha = .76

My child:

- 10. Gets so worked up before an exciting event that s/he has trouble sitting still.
- 24. When s/he sees a toy s/he wants, gets very excited about getting it.
- 35. When s/he wants to do something, s/he talks about little else.
- 69. Has strong desires for certain kinds of foods.
- 82. Looks forward strongly to the visit of loved relatives.
- 96. Becomes very excited while planning for trips.
- 117. Becomes very excited before an outing (e.g., picnic, party).
- 131R. Is usually pretty calm before leaving on an outing (e.g., picnic, party).
- 148. Gets very enthusiastic about the things s/he does.
- 166. Shows great excitement when opening a present.
- 175R. Doesn't become very excited about upcoming television programs.
- 188R. Remains pretty calm about upcoming desserts like ice cream.
- 191R. Looks forward to family outings, but does not get too excited about them.

ATTENTIONAL FOCUSING (AF), N = 9, Alpha = .74

My Child:

- 16. When picking up toys or other jobs, usually keeps at the task until it's done.
- 38R. When practicing an activity, has a hard time keeping her/his mind on it.
- 47R. Will move from one task to another without completing any of them.
- 125. When drawing or coloring in a book, shows strong concentration.
- 144. When building or putting something together, becomes very involved in what s/he is doing, and works for long periods.
- 160. Has difficulty leaving a project s/he has begun.
- 171R. Is easily distracted when listening to a story.
- 186. Sometimes becomes absorbed in a picture book and looks at it for a long time.
- 195R. Has a hard time concentrating on an activity when there are distracting noises.
 - R. Has trouble concentrating when listening to a story.
 - R. When watching TV, is easily distracted by other noises or movements.
 - R. Is distracted from her/his projects when you enter the room.
 - R. Often shifts rapidly from one activity to another.
 - Will ignore others when playing with an interesting toy.

ATTENTIONAL SHIFTING, N = 13

My child:

- 6R. Is hard to get her/his attention when s/he is concentrating on something.
- 29. Can easily shift from one activity to another.
- 95R. Has a lot of trouble stopping an activity when called to do something else.

180. Has an easy time leaving play to come to dinner.
 184R. Sometimes doesn't seem to hear me when I talk to her/him.
~~195.~~ Has a hard time concentrating on an activity when there are distracting noises.
- R. Has a hard time shifting from one activity to another.
 Is good at games with rules, such as card games.
 Can easily leave off working on a project if asked.
 - R. Often doesn't seem to hear me when s/he is working on something.
 - R. Sometimes has a "dreamy" quality when others talk to her/him, as if s/he were somewhere else.
 - R. Needs to complete one activity before being asked to start on another one.
 - R. Seems to follow her/his own direction, even when asked to do something different.

DISCOMFORT (DS), N = 13, Alpha = .74

My child:

- 5R. Is not very bothered by pain.
- 21. Becomes quite uncomfortable when cold and/or wet.
- 61. Is quite upset by a little cut or bruise.
- 87. Is bothered by light or color that is too bright.
- 97. Finds rough materials uncomfortable, such as wool against his/her skin.
- 101R. Is not very upset at minor cuts or bruises.
- 115. Is bothered by bathwater that is too hot or too cold.
- 132. Is likely to cry when even a little bit hurt.
- 141. Becomes distressed when hair is combed.
- 157. Cries when given an injection.
- 178. Is bothered by loud or scratchy sounds.
- 190R. Hardly even complains when ill with a cold.
 Dislikes having splinters removed or other painful procedures.

FALLING REACTIVITY & SOOTHABILITY (SO), N = 13, Alpha = .80

My child:

- 14R. Has a hard time settling down for a nap.
- 27. Calms down quickly following an exciting event.
- 42. Can be "cheered up" by talking about something s/he is interested in.
- 53R. Has a hard time settling down after an exciting activity.
- 68R. When angry about something, s/he tends to stay upset for ten minutes or longer.
- 85. Seems to forget a bump or scrape after a couple of minutes.
- 92. Changes from being upset to feeling much better within a few minutes.
- 103. Falls asleep within ten minutes of going to bed at night.
- 118. If upset, cheers up quickly when s/he thinks about something else.
- 134. Is easy to soothe when s/he is upset.
- 150R. Is very difficult to soothe when s/he has become upset.
- 167R. Has a hard time going back to sleep after waking in the night.
- 177. Rarely cries for more than a couple of minutes at a time.

FEAR (FE), N = 13, Alpha = .69

My child:

- 15R. Is not afraid of large dogs and/or other animals.
- 40. Is afraid of burglars or the "boogie man."
- 50. Is afraid of loud noises.
- 58R. Doesn't worry about injections by the doctor.
- 70R. Is not afraid of the dark.
- 80. Is afraid of fire.
- 91. Is very frightened by nightmares.
- 130. Is afraid of the dark.
- 138R. Is rarely frightened by "monsters" seen on TV or at movies.
- 161R. Is not afraid of heights.
- 176R. Is rarely afraid of sleeping alone in a room.
- 189. Gets nervous about going to the dentist.
Is afraid of getting lost.

HIGH PLEASURE (HP), N = 13 Alpha = .79

My child:

- 8. Likes going down high slides or other adventurous activities.
- 22. Likes to play so wild and recklessly that s/he might get hurt.
- 30R. Doesn't care for rough and rowdy games.
- 51R. Does not like chances for the fun and excitement of it.
- 60R. Doesn't like to go down high slides at the amusement park or playground.
- 67. Enjoys activities such as being chased, spun around by the arms, etc.
- 77. Enjoys being in crowds of people.
- 100. Enjoys exciting and suspenseful TV shows.
- 107. Enjoys meeting Santa Claus or other strangers in costumes.
- 124. Enjoys exploring new places.
- 139. Likes to go high and fast when pushed on a swing.
- 159. Likes rough and rowdy games.
- 182. Enjoys riding a tricycle or bicycle fast and recklessly.

IMPULSIVITY (IM), N = 13 Alpha = .78

My child:

- 13. Usually rushes into an activity without thinking about it.
- 26. Sometimes interrupts others when they are speaking.
- 46. Decides what s/he wants very quickly and goes after it.
- 59. Often rushes into new situations.
- 71R. Takes a long time in approaching new situations.
- 79R. Usually stops and thinks things over before deciding to do something.
- 90R. Is slow and unhurried in deciding what to do next.
- 104. Tends to say the first thing that comes to mind, without stopping to think about it.
- 114. When eager to go outside, sometimes rushes out without putting on the right clothes.
- 137R. Approaches slowly places where s/he might hurt her/himself.
- 155. When s/he sees a toy or game s/he wants, is eager to have it right then.

- 169R. Is among the last children to try out a new activity.
 183R. Is "slow to warm up" to others.

INHIBITORY CONTROL (IC), N = 13. Alpha = .74

My child:

4. Can lower his/her voice when asked to do so.
 20. Is good at games like "Simon Says," "Mother, May I?" and "Red Light, Green Light."
 32R. Has a hard time following instructions.
 63. Prepares for trips and outings by planning things s/he will need.
 75. Can wait before entering into new activities if s/he is asked to.
 93R. Has difficulty waiting in line for something.
 108R. Has trouble sitting still when s/he is told to (at movies, church, etc.).
 116. Is able to resist laughing or smiling when it isn't appropriate.
 136. Is good at following instructions.
 147. Approaches places s/he has been told are dangerous slowly and cautiously.
 162R. Is not very careful and cautious in crossing streets.
 168. Can easily stop an activity when s/he is told "no."
 185. Is usually able to resist temptation when told s/he is not supposed to do something.

LOW PLEASURE (LP), N = 13 Alpha = .70

My child:

- 12R. Rarely enjoys just being talked to.
 36. Enjoys just sitting quietly in the sunshine.
 54. Enjoys taking warm baths.
 66R. Doesn't enjoy being read to very much.
 76. Enjoys "snuggling up" next to a parent.
 86R. Doesn't care much for quiet games.
 111R. Isn't interested in watching quiet TV shows, such as "Mister Rogers."
 113. Enjoys just being talked to.
 133. Enjoys looking at picture books.
 146. Likes being sung to.
 151. Likes the sound of words, as in nursery rhymes.
 164. Enjoys gentle rhythmic activities, such as rocking or swaying.
 174. Enjoys sitting on parent's lap.

PERCEPTUAL SENSITIVITY (SE), N = 12, Alpha = .77

My child:

9. Notices the smoothness or roughness of objects s/he touches.
 28R. Usually doesn't comment on changes in parents' appearance.
 31. Notices it when parents are wearing new clothing.
 52. Seems to listen to even quiet sounds.
 65. Comments when a parent has changed his/her appearance.

SMILING AND LAUGHTER (SL), N = 13, Alpha = .79

My child:

- 11. Laughs a lot at jokes and silly happenings.
- 43R. Enjoys funny stories, but usually doesn't laugh at them.
- 56. Smiles and laughs during play with parents.
- 83R. Usually has a serious expression, even during play.
- 99R. Hardly ever laughs out loud during play with other children.
- 110. Sometimes smiles or giggles when playing by her/himself.
- 121R. Rarely smiles and laughs when playing with pets.
- 135R. Doesn't often giggle or act "silly."
- 152. Smiles a lot at people s/he likes.
- 163. Often laughs out loud in play with other children.
- 165R. Rarely laughs aloud while watching TV or movie comedies.
- 179. Smiles at friendly strangers.
- 194. Smiles when looking at a picture book.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

1. Seems always in a big hurry to get from one place to another.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

2. Gets angry when told s/he has to go to bed.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

3. Her/his feelings are not easily hurt by what parents say.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

4. Can lower his/her voice when asked to do so.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

5. Is not very bothered by pain.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

6. Is hard to get her/his attention when s/he is concentrating on something.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

7. Sometimes prefers to watch rather than join other children playing.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

8. Likes going down high slides or other adventurous activities.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

9. Notices the smoothness or roughness of objects s/he touches.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

10. Gets so worked up before an exciting event that s/he has trouble sitting still.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

11. Laughs a lot at jokes and silly happenings.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

12. Rarely enjoys just being talked to.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

13. Usually rushes into an activity without thinking about it.

1 2 3 4 5 6 7 NA

14. Has a hard time settling down for a nap.

1 2 3 4 5 6 7 NA

15. Is not afraid of large dogs and/or other animals.

1 2 3 4 5 6 7 NA

16. When picking up toys or other jobs, usually keeps at the task until it's done.

1 2 3 4 5 6 7 NA

17. Is comfortable in situations where s/he will be meeting others.

1 2 3 4 5 6 7 NA

18. Cries sadly when a favorite toy gets lost or broken.

1 2 3 4 5 6 7 NA

19. Rarely gets irritated when s/he makes a mistake.

1 2 3 4 5 6 7 NA

20. Is good at games like "Simon Says," "Mother, May I?" and "Red Light, Green Light."

1 2 3 4 5 6 7 NA

21. Becomes quite uncomfortable when cold and/or wet.

1 2 3 4 5 6 7 NA

22. Likes to play so wild and recklessly that s/he might get hurt.

1 2 3 4 5 6 7 NA

23. Seems to be at ease with almost any person.

1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

24. When s/he sees a toy s/he wants, gets very excited about getting it.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

25. Tends to run rather than walk from room to room.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

26. Sometimes interrupts others when they are speaking.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

27. Calms down quickly following an exciting event.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

28. Usually doesn't comment on changes in parents' appearance.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

29. Can easily shift from one activity to another.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

30. Doesn't care for rough and rowdy games.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

31. Notices it when parents are wearing new clothing.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

32. Has a hard time following instructions.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

33. Is afraid of elevators.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

34. Has temper tantrums when s/he doesn't get what s/he wants.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

35. When s/he wants to do something, s/he talks about little else.

1 2 3 4 5 6 7 NA

36. Enjoys just sitting quietly in the sunshine.

1 2 3 4 5 6 7 NA

37. Gets embarrassed when strangers pay a lot of attention to her/him.

1 2 3 4 5 6 7 NA

38. When practicing an activity, has a hard time keeping her/his mind on it.

1 2 3 4 5 6 7 NA

39. Tends to feel "down" at the end of an exciting day.

1 2 3 4 5 6 7 NA

40. Is afraid of burglars or the "bogey man."

1 2 3 4 5 6 7 NA

41. When outside, often sits quietly.

1 2 3 4 5 6 7 NA

42. Can be "cheered up" by talking about something s/he is interested in.

1 2 3 4 5 6 7 NA

43. Enjoys funny stories but usually doesn't laugh at them.

1 2 3 4 5 6 7 NA

44. Tends to become sad if the family's plans don't work out.

1 2 3 4 5 6 7 NA

45. Acts very friendly and outgoing with new children.

1 2 3 4 5 6 7 NA

46. Decides what s/he wants very quickly and goes after it.

1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely	quite	slightly	neither	slightly	quite	extremely	NA
untrue	untrue	untrue	true nor	true	true	true	not
			true				applicable
			untrue				

My child:

47. Will move from one task to another without completing any of them.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

48. Moves about actively (runs, climbs, jumps) when playing in the house.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

49. Dislikes having nails cut.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

50. Is afraid of loud noises.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

51. Does not like to take chances for the fun and excitement of it.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

52. Seems to listen to even quiet sounds.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

53. Has a hard time settling down after an exciting activity.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

54. Enjoys taking warm baths.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

55. Seems to feel depressed when unable to accomplish some task.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

56. Smiles and laughs during play with parents.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

57. Joins others quickly and comfortably, even when they are strangers.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

58. Doesn't worry about injections by the doctor.
 1 2 3 4 5 6 7 NA
59. Often rushes into new situations.
 1 2 3 4 5 6 7 NA
60. Doesn't like to go down high slides at the amusement park or playground.
 1 2 3 4 5 6 7 NA
61. Is quite upset by a little cut or bruise.
 1 2 3 4 5 6 7 NA
62. Gets quite frustrated when prevented from doing something s/he wants to do.
 1 2 3 4 5 6 7 NA
63. Prepares for trips and outings by planning things s/he will need.
 1 2 3 4 5 6 7 NA
64. Becomes upset when loved relatives or friends are getting ready to leave following a visit.
 1 2 3 4 5 6 7 NA
65. Comments when a parent has changed his/her appearance.
 1 2 3 4 5 6 7 NA
66. Doesn't enjoy being read to very much.
 1 2 3 4 5 6 7 NA
67. Enjoys activities such as being chased, spun around by the arms, etc.
 1 2 3 4 5 6 7 NA
68. When angry about something, s/he tends to stay upset for ten minutes or longer.
 1 2 3 4 5 6 7 NA
69. Has strong desires for certain kinds of foods.
 1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

70. Is not afraid of the dark.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

71. Takes a long time in approaching new situations.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

72. Does not usually become tearful when tired.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

73. Gets mad when even mildly criticized.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

74. Is sometimes shy even around people s/he has known a long time.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

75. Can wait before entering into new activities if s/he is asked to.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

76. Enjoys "snuggling up" next to a parent or babysitter.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

77. Enjoys being in crowds of people.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

78. Gets angry when s/he can't find something s/he wants to play with.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

79. Usually stops and thinks things over before deciding to do something.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

80. Is afraid of fire.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

81. Her/his feelings are easily hurt by what parents say.
1 2 3 4 5 6 7 NA
82. Looks forward strongly to the visit of loved relatives.
1 2 3 4 5 6 7 NA
83. Usually has a serious expression, even during play.
1 2 3 4 5 6 7 NA
84. Doesn't usually comment on people's facial features, such as size of nose or mouth.
1 2 3 4 5 6 7 NA
85. Seems to forget a bump or scrape after a couple of minutes.
1 2 3 4 5 6 7 NA
86. Doesn't care much for quiet games.
1 2 3 4 5 6 7 NA
87. Is bothered by light or color that is too bright.
1 2 3 4 5 6 7 NA
88. Sometimes sits quietly for long periods in the house.
1 2 3 4 5 6 7 NA
89. Sometimes seems nervous when talking to adults s/he has just met.
1 2 3 4 5 6 7 NA
90. Is slow and unhurried in deciding what to do next.
1 2 3 4 5 6 7 NA
91. Is very frightened by nightmares.
1 2 3 4 5 6 7 NA
92. Changes from being upset to feeling much better within a few minutes.
1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

93. Has difficulty waiting in line for something.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

94. Becomes tearful when told to do something s/he does not want to do.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

95. Has a lot of trouble stopping an activity when called to do something else.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

96. Becomes very excited while planning for trips.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

97. Finds rough materials uncomfortable, such as wool against his/her skin.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

98. Is quickly aware of some new item in the living room.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

99. Hardly ever laughs out loud during play with other children.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

100. Enjoys exciting and suspenseful TV shows.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

101. Is not very upset at minor cuts or bruises.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

102. Prefers quiet activities to active games.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

103. Falls asleep within ten minutes of going to bed at night.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

104. Tends to say the first thing that comes to mind, without stopping to think about it.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

105. Usually comments if someone has an unusual voice.

1 2 3 4 5 6 7 NA

106. Acts shy around new people.

1 2 3 4 5 6 7 NA

107. Enjoys meeting Santa Claus or other strangers in costumes.

1 2 3 4 5 6 7 NA

108. Has trouble sitting still when s/he is told to (at movies, church, etc.).

1 2 3 4 5 6 7 NA

109. Rarely cries when s/he hears a sad story.

1 2 3 4 5 6 7 NA

110. Sometimes smiles or giggles when playing by her/himself.

1 2 3 4 5 6 7 NA

111. Isn't interested in watching quiet TV shows such as "Mister Rogers."

1 2 3 4 5 6 7 NA

112. Rarely becomes upset when watching a sad event in a TV show.

1 2 3 4 5 6 7 NA

113. Enjoys just being talked to.

1 2 3 4 5 6 7 NA

114. When eager to go outside, sometimes rushes out without putting on the right clothes.

1 2 3 4 5 6 7 NA

115. Is bothered by bathwater that is too hot or too cold.

1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

116. Is able to resist laughing or smiling when it isn't appropriate.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

117. Becomes very excited before an outing (e.g., picnic, party).

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

118. If upset, cheers up quickly when s/he thinks about something else.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

119. Is comfortable asking other children to play.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

120. Rarely gets upset when told s/he has to go to bed.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

121. Rarely smiles and laughs when playing with pets.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

122. Does not seem to notice parents' facial expressions.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

123. Rarely runs or moves quickly in the house.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

124. Enjoys exploring new places.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

125. When drawing or coloring in a book, shows strong concentration.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

126. Plays games slowly and deliberately.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

127. Sometimes appears downcast for no reason.
 1 2 3 4 5 6 7 NA
128. Becomes easily frustrated when tired.
 1 2 3 4 5 6 7 NA
129. Talks easily to new people.
 1 2 3 4 5 6 7 NA
130. Is afraid of the dark.
 1 2 3 4 5 6 7 NA
131. Is usually pretty calm before leaving on an outing (e.g., picnic, party).
 1 2 3 4 5 6 7 NA
132. Is likely to cry when even a little bit hurt.
 1 2 3 4 5 6 7 NA
133. Enjoys looking at picture books.
 1 2 3 4 5 6 7 NA
134. Is easy to soothe when s/he is upset.
 1 2 3 4 5 6 7 NA
135. Doesn't often giggle or act "silly."
 1 2 3 4 5 6 7 NA
136. Is good at following instructions.
 1 2 3 4 5 6 7 NA
137. Approaches slowly places where s/he might hurt her/himself.
 1 2 3 4 5 6 7 NA
138. Is rarely frightened by "monsters" seen on TV or at movies.
 1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

139. Likes to go high and fast when pushed on a swing.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

140. Gets irritable about having to eat food s/he doesn't like.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

141. Becomes distressed when hair is combed.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

142. Doesn't usually react to different textures of food.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

143. Sometimes turns away shyly from new acquaintances.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

144. When building or putting something together, becomes very involved in what s/he is doing, and works for long periods.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

145. Sits quietly in the bath.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

146. Likes being sung to.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

147. Approaches places s/he has been told are dangerous slowly and cautiously.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

148. Gets very enthusiastic about teh things s/he does.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

149. Rarely becomes discouraged when s/he has trouble making something work.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

150. Is very difficult to soothe when s/he has become upset.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

151. Likes the sound of words, as in nursery rhymes.

1 2 3 4 5 6 7 NA

152. Smiles a lot at people s/he likes.

1 2 3 4 5 6 7 NA

153. Plays actively outdoors with other children.

1 2 3 4 5 6 7 NA

154. Notices even little specks of dirt on objects.

1 2 3 4 5 6 7 NA

155. When s/he sees a toy or game s/he wants, is eager to have it right then.

1 2 3 4 5 6 7 NA

156. Rarely protests when another child takes his/her toy away.

1 2 3 4 5 6 7 NA

157. Cries when given an injection.

1 2 3 4 5 6 7 NA

158. Seems completely at ease with almost any group.

1 2 3 4 5 6 7 NA

159. Likes rough and rowdy games.

1 2 3 4 5 6 7 NA

160. Has difficulty leaving a project s/he has begun.

1 2 3 4 5 6 7 NA

161. Is not afraid of heights.

1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

162. Is not very careful and cautious in crossing streets.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

163. Often laughs out loud in play with other children.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

164. Enjoys gentle rhythmic activities such as rocking or swaying.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

165. Rarely laughs aloud while watching TV or movie comedies.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

166. Shows great excitement when opening a present.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

167. Has a hard time going back to sleep after waking in the night.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

168. Can easily stop an activity when s/he is told "no."

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

169. Is among the last children to try out a new activity.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

170. Doesn't usually notice odors such as perfume, smoke, cooking, etc.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

171. Is easily distracted when listening to a story.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

172. Is full of energy, even in the evening.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

173. Easily gets irritated when s/he has trouble with some task (e.g., building, drawing, dressing).

1 2 3 4 5 6 7 NA

174. Enjoys sitting on parent's lap.

1 2 3 4 5 6 7 NA

175. Doesn't become very excited about upcoming television programs.

1 2 3 4 5 6 7 NA

176. Is rarely afraid of sleeping alone in a room.

1 2 3 4 5 6 7 NA

177. Rarely cries for more than a couple of minutes at a time.

1 2 3 4 5 6 7 NA

178. Is bothered by like loud or scratchy sounds.

1 2 3 4 5 6 7 NA

179. Smiles at friendly strangers.

1 2 3 4 5 6 7 NA

180. Has an easy time leaving play to come to dinner.

1 2 3 4 5 6 7 NA

181. Gets angry when called in from play before s/he is ready to quit.

1 2 3 4 5 6 7 NA

182. Enjoys riding a tricycle or bicycle fast and recklessly.

1 2 3 4 5 6 7 NA

183. Is "slow to warm up" to others.

1 2 3 4 5 6 7 NA

184. Sometimes doesn't seem to hear me when I talk to her/him.

1 2 3 4 5 6 7 NA

Please be sure to answer the questions on the back of this sheet.

1	2	3	4	5	6	7	NA
extremely untrue	quite untrue	slightly untrue	neither true nor untrue	slightly true	quite true	extremely true	not applicable

My child:

185. Is usually able to resist temptation when told s/he is not supposed to do something.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

186. Sometimes becomes absorbed in a picture book and looks at it for a long time.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

187. Has difficulty sitting still at dinner.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

188. Remains pretty calm about upcoming desserts like ice cream.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

189. Gets nervous about going to the dentist.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

190. Hardly even complains when ill with a cold.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

191. Looks forward to family outings, but does not get too excited about them.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

192. Likes to sit quietly and watch people do things.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

193. Gets mad when provoked by other children.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

194. Smiles when looking at a picture book.

1	2	3	4	5	6	7	NA
---	---	---	---	---	---	---	----

195. Has a hard time concentrating on an activity when there are distracting noises.

1 2 3 4 5 6 7 NA

Please check back to make sure you have completed all the pages of the questionnaire. Thank you very much for your help!