Comparing Maternal and Observer Ratings of Child Temperament in the Prediction of Concurrent Functioning and Later School Adjustment

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Abstract

Comparing Maternal and Observer Ratings of Child Temperament in the Prediction of Concurrent Functioning and Later School Adjustment

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The goal of this research was to compare a new observational temperament measure with an existing temperament questionnaire in the prediction of concurrent child and parent functioning and later school adjustment. In Study 1, mothers of infants and preschoolers, who were drawn from an at-risk sample, were asked to complete the EAS Temperament Survey along with various indices of child behaviour during the course of two home visits. They were also asked to participate in videotaped mother-child interactions, which were subsequently coded for child temperament using an observational rating system. Correspondence between the measures was evaluated along with the incremental validity of the observational technique. In Study 2, longitudinal data were used to assess the predictive validity of the maternal and observer ratings in relation to children's early school adjustment. A secondary purpose of this study was to determine the longitudinal stability of temperament ratings. The findings suggested modest congruence between observational and maternally rated temperament. Interestingly, the observational and maternal ratings showed a differential predictive pattern. Specifically, maternal ratings predicted internalizing and externalizing behaviours, whereas the observational ratings predicted cognitive functioning and adaptive behaviour during the cognitive assessment. Importantly, observational ratings showed unique incremental value in the prediction of parenting stress. In the longitudinal study, however, maternal

ratings provided a more reliable prediction of later school adjustment relative to the observational system. Temperament was found to be moderately stable over time. The findings suggest that observational ratings of temperament offer distinct and useful information in comparison with maternal ratings, although this interpretation is somewhat limited to contemporaneous measurement. This investigation also provides validation for the role of maternal ratings in predicting children's concurrent and longitudinal functioning. Taken together, this research highlights the importance of adopting a multi-method approach to the study of child temperament.

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General Introduction

The construct of temperament has long been used to understand variations in human development. Modern applications of the temperament concept in early childhood have been largely spurred by the pioneering work of Alexander Thomas and Stella Chess (Chess & Thomas, 1984; Thomas & Chess, 1977). Through the initiation of the New York Longitudinal Study (NYLS) in the 1950's, they sought to highlight the importance of children's behavioural style as a contributor to adaptive and maladaptive child outcomes. Since the first reports by Thomas and his colleagues in the 1950's, there has been a significant amount of research that has followed from the NYLS investigators as well as numerous others. Although this body of work has solidified the role of temperament in child development research, much debate exists to this day about the stability of temperament and the most effective way to measure temperamental features (Super & Harkness, 1994). One of the biggest issues concerns the use of maternal rating as the primary method for assessing child temperament, given the potential biases inherent in this approach (i.e., projection of parental personality).

The goal of the present research was to determine the potential utility of a new observational measure of children's behavioural style through comparison with maternal ratings of temperament. To address this issue, Study 1 focused on the validation of the new measure and the determination of its incremental value in comparison with mother report. Temperament was measured during the infancy and preschool years and was used to predict concurrent child and parent functioning (Karp, Serbin, Stack, & Schwartzman, 2004). In order to determine which temperament variables yield the most relevant information, it is also important to assess the predictive relationship between early

temperament and subsequent developmental outcomes. As a further step towards this understanding, Study 2 investigated the predictive validity of the parental report and observational measures as initial indicators of elementary school adjustment.

As a general introduction to these two studies, the definition, origin and stability of temperament are discussed. This is followed by a review of the literature on the measurement of temperament, including the advantages and disadvantages of utilizing different approaches. Empirical studies that evaluate the relationship between temperament and concurrent child functioning will then be introduced, followed by research examining the link between child temperament and later school adjustment. This section will conclude with the objectives of the current investigation.

Definition of Temperament

There are different conceptualizations of temperament although the majority of theorists agree that it has biological underpinnings, can be observed as early as infancy, and is stable across the lifespan. In a landmark roundtable discussion on temperament (Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987), Alexander Thomas and Stella Chess characterized temperament as consistent patterns of the way in which an individual behaves, which is evident in the early infancy period. Their particular emphasis was on the style of behaviour, rather than on the content or motivation. They postulated that environmental factors influence the expression and nature of temperament throughout the course of development. Temperament is believed to interact with other psychological attributes in a transactional system over time, and is differentiated from motivations, abilities and personality. Additionally, temperament is a

characteristic of a child that mediates the influence of the environment (Goldsmith et al., 1987).

Thomas and Chess conceptualized temperament on a purely descriptive level. They acknowledged that while heredity may play a part, their framework does not require a genetic basis for temperament (Goldsmith et al., 1987). Hagekull (1989) characterized their approach as essentially non-theoretical, where a major objective has been to identify and describe individual dimensions that may be of significance for development. Relying on data from parent interviews, Thomas and Chess (1977) developed nine categories of temperament including rhythmicity of biological functions, activity level, approach to or withdrawal from new stimuli, adaptability, sensory threshold, mood, intensity of mood expression, distractibility and persistence. Based on a combination of these dimensions, infants have been characterized as having an "easy" or "difficult" temperament. A child with an observable "difficult" temperament shows slow adaptability to change, high activity level, negative mood, a tendency to withdraw from novel situations and stimuli, biological functions that are irregular and intense emotional reactivity. In comparison, a child labeled as having an "easy" temperament has a tendency towards approach instead of withdrawal, positive mood, quick adaptability, regularity, and mild or moderate emotional reactivity (Thomas, Chess, & Birch, 1968; Thomas, Chess, & Korn, 1982).

Thomas and Chess asserted that the "difficult" temperament concept represents a cluster of temperamental attributes that make child rearing more challenging for most, but not all, parents in our culture. They also highlighted the fact that children with difficult temperaments tend to be at higher risk for maladjustment (Goldsmith et al., 1987). In accordance with their view, numerous studies have found that a difficult

temperament operates as a risk factor for behavioural problems, lower cognitive performance on intelligence tests and later psychopathology, while an easy temperament works to buffer these negative outcomes (Kyrios & Prior, 1990; Luthar & Zigler, 1991; Prior, 1992; Rothbart & Ahadi, 1994; Tschann, Kaiser, Chesney, Alkon, & Boyce, 1996; Werner, 1993).

Concept of Risk

Risk can be conceptualized as person-centered factors or aspects of an individual's environment that are associated with an increased likelihood of psychological dysfunction and/or physical illness. Given that temperament can function as a risk factor for a variety of child outcomes in the general population, it is important to examine temperament within high-risk samples, considering that they may be especially vulnerable to the negative effects of a difficult temperament. One important risk indicator is low socioeconomic status. Evans and English (2002) demonstrated that 8- to 10-year-old, low-income children were confronted with a wide array of cumulative, multiple stressors, including living in noisier, more crowded and lower quality housing. They also discovered that low-income children had more difficulties with self-regulatory behaviour than middle-income children. Prior research has shown that inner-city minority youth experience more psychosocial stressors such as elevated family distress and higher levels of violence (Brooks-Gunn, Klebanov, & Liaw, 1995), as well as non-optimal parenting (Ceballo & McLoyd, 2002). In high-risk families (i.e., inner-city, lower SES backgrounds), individual, family and environmental characteristics may combine to place young children at risk for developmental, behavioural and health problems.

Biological and Environmental Influences on Temperament

The majority of temperament definitions emphasize biological theories of development. Research indicates that genetics do play a role in determining individual differences in temperament (Plomin & Rowe, 1977; Segal, 1990). Furthermore, temperamental traits have been demonstrated to be among the first stable behavioural characteristics evident from birth (Buss & Plomin, 1984; Kohnstamm, Bates, & Rothbart, 1989). There are also central nervous system influences on temperament. Nelson (1994) and Rothbart, Derryberry and Posner (1994) noted that there are multiple central nervous system areas involved in the development and expression of temperament. For example, behavioural inhibition appears to develop as a function of coordinated interaction between the hippocampus, prefrontal cortex and portions of the motor system. Additionally, different central nervous system areas, which underlie the development of specific dimensions of temperament, reach functional maturity at dissimilar times. As a result, infants may not display consistent emotional reactivity patterns within the first year of life.

Gender differences also appear to influence the expression of temperament. Specifically, these differences are apparent from preschool age onwards and increase in magnitude as children get older. Studies have discovered that boys have a higher activity level and display greater negative emotionality than girls (Auerbach, Lerner, Barasch, & Palti, 1992; Caspi, Henry, McGee, Moffitt, & Silva, 1995; Earls & Jung, 1987). For example, Maziade and colleagues (1985) found that 7-year-old boys in the general population were overrepresented in the temperamentally difficult group, which suggests

that boys may be at a higher risk for developing a difficult temperament compared to girls.

Studies have also shown how changes in individual temperament are associated with the nature of the child's environment. Negative emotionality, particularly within the first year of life, may be especially vulnerable to environmental influences. For instance, Belsky, Fish and Isabella (1991) demonstrated that infants who shifted from low to high negative emotionality in the early infancy period had fathers who were less involved and who reported greater marital dissatisfaction, as compared with infants whose level of negative emotionality remained consistently low. Another example is that of environmental chaos, which involves factors such as crowding and levels of nonhuman noise in the home. In order to evaluate the impact of environmental chaos, Wachs (1999) utilized direct observations of home physical environments (i.e., noise levels, crowding) and had parents complete the Toddler Temperament Questionnaire. He found that higher levels of home crowding were related to 12-month-old infants being characterized as less adaptive, lower in approach and possessing more intense negative moods.

An additional factor that may help us to understand the expression of individual differences in temperament is that of cultural context. Thomas and Chess (1986) have noted how the concept of difficult temperament may have different meanings depending on the cultural context. Characteristics that may be perceived as problematic in one culture may not be seen the same way in another culture. For instance, in Kenya, where caregiving by multiple siblings is the norm, infants who are less adaptable are more likely to be considered "difficult" than in cultures where multiple caregiving is not routinely practiced (Wachs, 1999). The goodness-of-fit model, described by Thomas and Chess

(1986), postulates that child adjustment is a function of the degree to which the individual's characteristics fit with the demands of the external environment. Children whose temperamental characteristics provide a better fit to the values and preferences of a given culture are, consequently, more likely to show positive adjustment.

Taken together, this research indicates that in order to have a comprehensive understanding of individual variability in the development of temperament, both the biology and environmental context of the child needs to be considered.

Stability of Temperament

A significant issue for temperament research has been establishing the level of stability of individual differences (i.e., the degree to which individuals maintain their relative positions on temperament measures repeated over time). Some authors assert that temperamental characteristics are relatively stable and enduring traits, while others have conceptualized the construct using a more fluid approach, whereby change can occur as a function of environmental factors (Garrison, Earls, & Kindlon, 1984). Studies examining the stability of temperament have produced mixed results. For example, Rothbart, Derryberry and Hershey (2000) found both stability and instability of temperament during the period from infancy to age seven. They utilized laboratory measures to assess temperament in early infancy and later employed parent reports of temperament. The authors discovered stability for the dimensions of fear, frustration-anger and positive anticipation and non-stability in terms of activity level. In contrast, other researchers have discovered activity level to be relatively stable using cross-age correlations (Earls & Jung, 1987; Guerin & Gottfried, 1994; Slabach, Morrow, & Wachs, 1991). Furthermore, based on numerous studies using their EAS Temperament Survey, Buss and Plomin

(1984) concluded that the Emotionality and Activity factors showed moderate stability (around .4 to .55) after the first year of life.

Pedlow, Sanson, Prior and Oberklaid (1993) examined the stability of temperament utilizing maternal rating of 450 children from infancy to 8 years. They found that six factors, including approach, rhythmicity, persistence, irritability, cooperation-manageability, and inflexibility, demonstrated substantial stability over time. This study confirmed the existence of a high level of temperament stability over a significant developmental period. A further longitudinal study of temperament stability by Scarpa, Raine, Venables and Mednick (1995) assessed inhibited temperament in 1, 795 Mauritian children examined at ages three, eight and 11. A multi-method approach was implemented, with laboratory measures involved at age three, teacher-report questionnaire-based measures at age eight and teacher ratings of observed social behaviour at age 11. The results provided some support for the notion of stability of inhibited temperament over time.

Evidence has also been found for the stability of temperamental classifications, such as the easy/difficult constellation. Persson-Blennow and McNeil (1988) classified children as easy/difficult at 6 months, 1, 2 and 6 years of age, based on parental ratings. They reported considerable individual stability for the easy and difficult types from 1 to 2 years and from both 1 and 2 years to 6 years. Novosad and Thoman (1999) examined temperament stability using temperament dimensions as well as an index of difficult temperament. Mothers were asked to rate their children annually from ages 4 to 11. The results demonstrated high levels of stability for the temperament dimensions and difficult temperament classification across time.

In general, temperament stability appears to be low in infancy and increases substantially during the preschool period, eventually remaining consistent throughout childhood (Lemery, Goldsmith, Klinnert, & Mrazek, 1999; Martin, 1994). Persson-Blennow and McNeil (1988) noted that temperament measured at 6 months of age yielded poorer prediction of future temperament classification than did temperament assessed at 1 and 2 years. One explanation for this tendency could be that temperament in infancy is strongly influenced by biological factors, whereas experience and context tend to affect temperament as development progresses (Mufson, Fendrich, & Warner, 1990). Rutter (1994) pointed out that intrauterine and perinatal environmental influences tend to be the strongest in infancy with their impact lessening from that stage onwards. Additionally, the majority of temperament research relies on different measures for children at dissimilar ages, which may contribute to the discrepant results regarding the stability of temperament. Typically, moderate stability has been found across age, with correlations ranging from .35 to .70 (Sanson & Rothbart, 1995). Some authors have noted that parent-rated temperament shows higher stability than observer ratings (Saudino, 2003). Higher levels of stability are also reported for extreme temperament characteristics and in studies where methodological problems have been controlled.

Measuring Temperament

Maternal Ratings

Children's temperament is most frequently assessed through parental reports. Given that mothers are often the primary caretakers and have extensive contact with their children, they may be the best informants concerning children's behaviour. Maternal ratings provide a rich source of information about children's day-to-day functioning that

may not be available from other sources. Specifically, these ratings are based on numerous observations and have high internal reliability (Rothbart & Goldsmith, 1985). Additionally, maternal reports are cost-effective and easy to administer. They can be used to evaluate children's reactions across a wide range of situational contexts and over an extended period of time (Bornstein, Gaughran, & Segui, 1991; Fullard, McDevitt, & Carey, 1984; Rothbart, 1986).

Some critics have claimed that mothers' ratings of temperament are biased because they can be seen as a projection of parental personality, or as a social percept (Allen & Prior, 1995; Bates, 1980; Bates & Bayles, 1984; Kohnstamm et al., 1989; Lancaster, Prior, & Adler, 1989; Matheny, Wilson, & Thoben, 1987; Sameroff, Seifer, & Elias, 1982). For example, Vaughn, Bradley, Joffe, Seifer and Barglow (1987) found that the Carey Infant Temperament Questionnaire lacked discriminant validity, because the maternal responses given reflected more of the mother's personality than that of her child. Infants who were categorized as "difficult" based on this standardized maternal report instrument had mothers who had been more anxious, suspicious and impulsive before the birth of their child than mothers of "easy" infants. The authors concluded that this questionnaire has limited use in identifying infants with a difficult temperament, because it is unclear to what extent it reflects mothers' characteristics versus those of their infants. However, Daniels, Plomin and Greenhalgh (1984) failed to find evidence that parental personality traits influenced ratings of their child's temperament on this particular measure.

Studies have also found that maternal characteristics, such as depression, may affect mother's perception of their children (Fergusson, Horwood, & Shannon, 1984;

Lancaster et al., 1989). Lancaster and colleagues (1989) investigated the degree to which maternal characteristics affected ratings of child temperament. Using 100 mothers with children aged 39-51 months, they found that maternal ratings of temperament were strongly linked to psychological aspects of the mother. After maternal variables, such as psychological health problems, marital adjustment and confidence in mother/wife roles were partialled out, temperament made a smaller statistical contribution to maternal ratings of children's behaviour. The authors asserted that studies reporting significant relations between maternally rated temperament and children's behaviour have not properly controlled for maternal characteristics. Consequently, they argue that studies of behaviour or temperament using maternal report as their main methodology should be interpreted with caution.

Sawyer, Streiner and Baghurst (1998), on the other hand, found that parental distress had little impact on mothers' or fathers' ratings of their children's behaviour problems. Specifically, maternal distress accounted for less than 1% of the variance in mothers' ratings of children's problems, and paternal distress accounted for 1% of the variance in ratings of children's externalizing problems and 3% of the variance in ratings of children's internalizing problems. They concluded that the amount of bias in parental reports related to parental distress was very small and of minimal clinical significance. These mixed findings seem to support Bates and Bayles (1984) suggestion that parent report consists of three elements, including an objective component, a subjective component and a psychometric error component. Interestingly, Bates and Bayles did not find that the subjective component, reflecting the characteristics of the parent, overshadowed the objective component. Therefore, although maternal ratings of

children's behaviour are affected by environmental factors, they also reflect within-child characteristics.

Another issue concerning maternal report measures is that mothers may lack the crucial baseline information needed to make accurate judgments of their children. For example, some temperament measures ask mothers to compare their child's behaviour to the "average" child. Given that some parents have had little experience with other children, they may have less knowledge of typical child behaviours (Mangelsdorf, Schoppe, & Buur, 2000). Beyond the issues of bias and normative awareness, another concern with relying on maternal ratings is that of shared rater variance. It is possible that when there is a correlation between child temperament and measures of other characteristics and behaviour, this may simply be the result of using a single rater to complete the various instruments (Seifer, Sameroff, Barrett, & Krafchuk, 1994). In summary, this literature suggests that relying solely on maternal report may not be conducive to a comprehensive understanding of children's temperament.

Observational Measures

In order to provide a more complete picture of children's temperament, it may be useful to include direct observational measures. Two observational approaches that have been employed in the past are observation in laboratory settings and naturalistic observations conducted in the home. Laboratory measures often consist of structured tasks in which standardized stimulus materials are presented to the child (Bornstein et al., 1991). Although laboratory techniques may be the most standardized method, they have several disadvantages. For instance, the laboratory setting is a new environment that may specifically evoke novelty reactions (ranging from exploratory behaviour to inhibitory

avoidance). Other limitations are that external validity has rarely been established for laboratory measures, and they are typically appropriate only for restricted age ranges. Finally, an artificial structure or bias may be introduced by the experimenter-child interaction (Strelau, 1998).

A more naturalistic type of temperament measure involves observations in the home. Thomas and Chess (1977) stressed the importance of using naturalistic observations, in order to ensure that studies of temperament have high external validity. This type of measure has been mainly used for infants and children who are below kindergarten age. Home-based observations are based on the assumption that the home is the most natural and influential environment for children until they reach school age. In conducting home observations, parent-child interactions are utilized as a context for the behavioural expression of the child's temperament. An important advantage of this technique is that it avoids potential parental response bias.

One disadvantage of utilizing a naturalistic setting for observation is minimal control or standardization of the situation in which children's behaviour is recorded. Additionally, coding behaviour during arbitrarily set observational "sessions" within one selected context may be biased by the observer's limited ability to capture the entire range of relevant behaviour. Direct observations have typically consisted of small behavioural samples, obtained over a narrow time frame. Another potential drawback is that obtaining and coding observations is often costly and labor-intensive for the researcher. Finally, the presence of the observer may affect the home environment (Rothbart & Goldsmith, 1985). It is important to point out, however, that until recently the use of observational measures has mainly been to establish convergent validity with

parent report questionnaires (Garrison, 1991). Home-based observations have rarely been validated as predictors of children's adaptive functioning or behaviour problems, or of other aspects of the child's development and social relationships.

There are a variety of existing home-based observational measures of temperament. One example is the Infant Temperament Measure (ITM-O), which was developed by Bornstein and colleagues (1991). They utilized two 30-minute home protocol observations of 5-month-old infants to determine infant temperament. The observations were comprised of four structured vignettes, including mother-infant play (3 minutes), free play (10 minutes), observer-infant play (3 minutes) and a final free play (10 minutes). The frequency of 10 behaviours (i.e., smiling, vocalizes, kicks, fusses/cries) was recorded during the observational period. Satisfactory inter-rater reliability and short-term stability were found for the ITM-O. Another example is the Temperament Adjective Triad Assessment (TATA) (Seifer et al., 1994). It involved observational ratings of infant behaviour in the home once a week for 8 weeks. During each home visit, three situations were videotaped for approximately 10 minutes. These included the infant playing with their mother, the infant alone, and the mother caretaking with the infant (i.e., feeding, diapering, dressing, bathing). The videotapes were subsequently coded for infant mood, approach, activity and intensity. Reliability estimates in the .60-.70 range were found for 8-week aggregates. A further example is provided by Rothbart (1986), who utilized home observations of infants at 3, 6 and 9 months of age. Three home observations, approximately 30-45 minutes in length, were conducted within a 2-week period for each subject. Mothers were asked to select a time during the day when examiners could observe their infants during feeding, bathing, dressing and play.

Temperamental dimensions of activity level, smiling and laughter, distress to limitations, fear and vocal activity were coded, and composite measures of positive and negative reactivity were created. Reliability estimates were found to be adequate. This technique, in contrast to the first two, provided a composite measure of reactivity.

In general, although previous home observational instruments have been shown to be reliable, there appear to be a number of limitations associated with them. First, all of the measures were used with a limited age range (i.e., infants), and, therefore, are not likely to apply to a wide age span. This has implications for examining the stability of temperament over time, given that the existing techniques necessitate the use of a different measure at a later age. Second, the situations designed to elicit temperament were often lacking in terms of control and structure (except for the ITM-O). This may have introduced potential error into the evaluation of temperament, considering that extraneous factors in the home were not controlled and there may have been inconsistencies from one home to another. Third, few studies used tasks that were designed specifically to elicit distress in the child. Rutter (1989) asserted that emotionality features, for example, are best shown in stressful situations.

Correspondence Between Maternal and Observer Ratings

Several studies have found modest correlations between mother reports of temperament and observer ratings using laboratory or home-based methods ($r = .20$-$.40$), which offer some multi-method/multi-rater validation for the construct of temperament (Bates, 1980; Bates & Bayles, 1984; Bornstein et al., 1991; Matheny et al., 1987; Rothbart, 1986; Rothbart and Goldsmith, 1985; Sameroff et al., 1982). Seifer and colleagues (1994) examined both observers' and mothers' ratings of 50 infants during

home visits, once a week for 8 weeks. They found that the observer-mother correspondence was low and ranged from .07 to .30. The authors concluded that parent reports do not provide substantial information about actual infant behaviour, and recommended the use of direct observations to measure child temperament. Allen and Prior (1995), conversely, found that there were observable behavioural differences in children who were rated as "easy" or "difficult" by their mothers, which offers some evidence for the validity of mother report. Bornstein and colleagues (1991) compared infant temperament using maternal ratings on the Infant Temperament Measure (ITM) and observations gleaned during structured vignettes in the home, as described previously. They found a significant but small degree of correspondence between mother and observer ratings ($r =$. 24, $p <$. 05). Similar findings were reported in the other studies cited above. It is relevant to note that most of the above-mentioned studies utilized samples with limited age ranges, such as infancy.

The relatively low correspondence between parent report and direct observation has been interpreted as proof that parent ratings do not reflect the actual temperamental behaviours of their children. Another explanation is that the observation techniques themselves may lack validity or have methodological limitations, which would limit their ability to validate questionnaire-type measures (Seifer et al., 1994). However, it is not surprising that only moderate agreement exists between maternal ratings and observational methods, given that each rely on a different knowledge base of the child in question (Mangeldsdorf et al., 2000). Further explanations for the lack of agreement between questionnaire data and observations, given by Strelau (1998), are dissimilarity between inventory items and behaviour under observation and differences in the sampled

situations across the two measures. This should not be taken to imply, though, that either method fails to provide important data about children's behaviour.

Rather than focusing on one type of measurement and excluding the other, the possibility exists that both parent ratings and naturalistic observations contribute valid and unique information to the understanding of children's behavioural style. Foregoing the use of parent report would result in the loss of valuable information about child behaviour from the perspective of the person who knows the child best, and has the widest opportunity to observe the child's behaviour across different contexts. Omitting observationally based measures would lead to the loss of objective, potentially useful information about children's behaviour. Multidimensional assessment with multiple informants is probably ideal, because it allows for many perspectives to be taken into account and compared. Further, it is possible that different methods may tap into different domains of child functioning, and that each will be predictive of different behavioural pathways over time (Fagot, 1995). Therefore, mother and observer measures might demonstrate a differential predictive pattern concerning specific developmental outcomes. Mangeldsdorf et al. (2000) asserted that the debate over which informant is correct should be put to rest because both mothers and observers may offer important information about child functioning in different contexts.

The precise measurement of temperament is critical, considering that it is related to many developmental outcomes, including behaviour problems, adaptive behaviour, social functioning and cognitive and academic competence. Temperament has also been linked with maternal outcomes, such as parenting stress. Given the fact that parenting stress can affect parent's self-esteem, confidence and ability to parent effectively, it is

important to determine the extent to which temperament influences maternal functioning. It is relevant to examine these relationships utilizing temperament ratings during the infant and preschool years, given that this time period may be the most significant in terms of the temperamental organization of behaviour (Mobley & Pullis, 1991).

Temperament as a Predictor of Concurrent Child and Parent Functioning

Behaviour Problems

Numerous studies have established a connection between difficult temperament in the first few years of life, assessed through questionnaire methods and laboratory observations, and concurrent behaviour problems. Specific dimensions of child temperament such as high activity, high distractibility, high intensity, negative mood, low rhythmicity, low approach and low adaptability have been found to be related to internalizing and externalizing behaviour problems (Calkins & Johnson, 1998; Deater-Deckard, Dodge, Bates, & Pettit, 1998; Earls & Jung, 1987; Eisenberg et al., 2000; Eisenberg et al., 2001; Korn & Gannon, 1983; Kyrios & Prior, 1990; Lee & Bates, 1985; Mobley & Pullis, 1991; Prior, 1992; Rubin, Hastings, Chen, Stewart, & McNichol, 1998; Tschann et al., 1996). For example, Kyrios and Prior (1990) examined the relationship between child temperament, stress and family factors in the behavioural adjustment of 120 children, aged 3 to 5 years. They found that three temperamental characteristics (i.e., high reactivity, low manageability and low self-regulation) were the strongest concurrent predictors of children's behavioural disturbance. Importantly, they discovered that this relationship remained intact, even after the effects of parental adjustment had been partialled out. In a study of the link between temperament and behaviour problems in 3-year olds, Earls and Jung (1987) found that the temperamental characteristics of high

activity level, low adaptability, low approach, low rhythmicity, high intensity, low persistence and negative mood were significant concurrent predictors of externalizing and internalizing behaviours. Although the authors stressed the central role that temperament plays in the developmental origins of behaviour problems, it is relevant to note that their study relied on mother-rated questionnaires to assess all constructs. Tschann and colleagues (1996), who utilized a multi-rater, multi-method approach, confirmed that preschool children with difficult temperaments (based on high distractability, low persistence, high activity, negative mood and high intensity) are at greater risk for experiencing internalizing and externalizing behaviour problems than children with easy temperaments.

Adaptive Behaviour

Studies have also uncovered connections between child temperament and adaptive behaviour (Eisenberg, Pidada, & Liew, 2001; Houck, 1999; Jewsuwan, Luster, & Kostelnik, 1993; Lamb et al., 1988; Mobley & Pullis, 1991; Rothbart, Ahadi, & Hershey, 1994). For instance, Mobley and Pullis (1991) investigated the relation between teacher's ratings of child temperament and their assessment of preschoolers' behavioural adjustment. They discovered that children who were rated as high in task orientation were also perceived as displaying greater persistence, cooperation within the classroom and cooperation with others. Additionally, teachers found that children with high task orientation also demonstrated lower activity levels and lower levels of depressed behaviour. It is relevant to point out that all of the measures in the above-mentioned study were filled out by the child's teacher, which may partially account for the significance of the findings. Jewsuwan et al.'s (1993) study also revealed a connection between

temperamental characteristics and adaptive behaviour. Specifically, using a multi-rater approach, they found that children who were rated by their mothers as being sociable, soothable and low in emotionality and activity level were viewed by their teachers as being well adjusted during the first few months of preschool. Taken together, these studies have demonstrated a relationship between child temperament and children's behavioural outcomes, both in terms of behaviour problems and adaptive behaviour.

Cognitive Functioning

Beyond the temperament-behaviour relationship, there appears to be an association between child temperament and cognitive competence. The temperamental characteristics of adaptability, approach, affect-extraversion, task orientation and persistence have been found to significantly contribute to positive cognitive outcomes (Kubicek, Emde, & Schmitz, 2001; Martin & Holbrook, 1985). For example, Wachs and Gandour (1983) conducted a study with 6-month-old infants, which examined the temperament-cognitive development relationship. The outcome measure was the infant's performance on the Infant Psychological Development Scale, which assesses sensorimotor intelligence. The authors found a direct relation between adaptive behavioural style and numerous aspects of sensorimotor intelligence. Studies have also found that infants' low cognitive performance, as measured by the Bayley Mental Scales, was significantly associated with characteristics such as low adaptability, low persistence, withdrawal from new stimulation and low rhythmicity (Ross, 1987; Roth, Eisenberg, & Sell, 1984).

Parenting Stress

Child temperament has also been linked with parenting stress (Bramlett, Hall,

Barnett, & Rowell, 1995; Kohnstamm, 1986; Miller, Miceli, Whitman, & Borkowski, 1996; Morgan, Robinson, & Aldridge, 2002; Ostberg & Hagekull, 2000). For example, Ostberg and Hagekull (2000) found a relationship between maternal ratings of children as fussy-difficult and concurrent parenting stress. Children with difficult temperaments may elicit or provoke negative reactions from their parents at an early age, which could result in a greater degree of parental stress. Miller and colleagues (1996) reported that parents who perceive their parenting role as stressful are less effective in their parenting practices. More specifically, higher levels of reported parenting stress have been related to low levels of positive maternal affect, a lack of maternal responsiveness to child cues as well as child noncompliance and insecure child attachment.

Additionally, there is evidence to suggest that parents who are highly stressed are more likely to attend to negative aspects of their child's behaviour and to make negative attributions about that behaviour (which are likely to be expressed in parent report based instruments). Morgan et al. (2002) asserted that as levels of parenting stress increase, the accuracy of parents' perceptions regarding current child behaviour decrease. Given that prior reports of a connection between temperament and parenting stress have typically relied on a single rater (mother) and a single method (questionnaire), it may be important to re-assess this relation using a multi-method/multi-rater approach. This type of approach would help to determine if parents experiencing high levels of stress simply view their children as more difficult, or if these children actually display more difficult behaviour when viewed by independent observers. It is important to identify the factors that are associated with parenting stress, considering that it is linked with dysfunctional parenting behaviour and subsequent problematic child behaviour (Bramlett et al., 1995).

From the discussion above, it is evident that temperament plays a key role in the prediction of particular contemporaneous child outcomes, including behaviour problems, adaptive behaviour and cognitive functioning. The following section focuses on the longitudinal contribution of infant and preschool temperament to early school adjustment outcomes.

School Adjustment

The early years of children's school adjustment are thought to be a "critical period" for their future social and academic development (Alexander, Entwisle, & Dauber, 1993; Entwisle & Alexander, 1998). For example, children's early behavioural styles forecast subsequent peer rejection, classroom disruption and school avoidance (Ladd, 1996). Furthermore, performance on achievement tests by the end of third grade is considered to be a strong indicator of future academic competence. Alexander and Entwisle (1988) pointed out that few school experiences after third grade are substantial enough to alter the course of achievement that has been previously established. Longitudinal studies confirm that children who have poor academic and social experiences during their transition to schooling are at-risk across their lifespan for a variety of negative social, economic and health problems (Newman, Caspi, Moffit & Silva, 1997; Pulkkinen, 1995). Specifically, children who fail to develop basic academic and social skills are more likely to experience high school dropout, adolescent delinquency, adult criminality, poor mental and physical health and occupational failure (Hinde, Tamplin, & Barrett, 1993). Ladd (1990) asserted that up to 30% of the school-age population experience adjustment problems in the classroom. Children in poor

neighborhoods are especially at-risk for developing social and emotional difficulties, given that they are exposed to a wide range of psychosocial stressors (Raver, 2002).

Considering that early school adjustment is a key predictor of future developmental outcomes, it is necessary to identify the factors that promote the healthy development of young children, especially within at-risk populations. This knowledge can be used to inform the design of effective preventive strategies for children from high-risk backgrounds. Currently, there is limited understanding of the specific risk and protective factors that impact children's transition from infancy and preschool to formal schooling (Pianta & Steinberg, 1992). School adjustment is a process involving multiple and complex influences (Reynolds & Bezruckzko, 1993). An increasing literature suggests that child characteristics (i.e., temperament, gender) represent important factors (Ladd, 1996). Some children adjust more easily than do others, and one of the goals of the current study is to investigate the specific temperamental factors associated with successful and problematic adjustment to school.

In attempting to define the concept of school adjustment, it is important to first examine the limitations of previous research conducted in this area. One limitation is that prior conceptualizations of school adjustment have focused mainly on measures of children's academic achievement, and largely ignored children's social functioning. Given that children need to adjust to challenges in both academic and interpersonal domains, it is necessary to expand the definition to encompass both. Another limitation is that researchers have typically employed cross-sectional designs rather than longitudinal ones.

In order to overcome prior limitations, this investigation takes a longitudinal, multi-dimensional perspective on school adjustment. School adjustment, from kindergarten through the primary grades, will be evaluated based on children's academic achievement, social competence and behaviour problems in the classroom and at home (the latter is included in order to compare maternal and teacher ratings). One important child variable that can influence both the kinds of reactions that children can make to new demands, as well as the types of responses elicited from caregivers is temperament.

Relations Between Child Temperament and Indices of School Adjustment

Behaviour problems. Many studies have established a connection between difficult temperament and concurrent behaviour problems (Calkins & Johnson, 1998; Deater-Deckard et al., 1998; Earls & Jung, 1987; Eisenberg et al., 2000; Eisenberg et al., 2001; Korn & Gannon, 1983; Kyrios & Prior, 1990; Lee & Bates, 1985; Mobley & Pullis, 1991; Prior, 1992; Rubin et al., 1998; Tschann et al., 1996). Temperamental characteristics that have been discovered to predict subsequent adjustment outcomes are negative emotionality, withdrawal (low approach), adaptability, activity level and task persistence (Goldsmith, Aksan, Essex, Smider, & Vandell, 2001). Nelson, Martin, Hodge, Havill and Kamphaus (1999) employed parental ratings of temperament when children were five years old in order to predict subsequent behavioural patterns, as rated by teachers, when the children were in third grade. The study utilized a longitudinal design with multi-informants, and found that the most salient predictor of externalizing behaviour problems was negative emotionality.

Further support for the impact of temperament was provided by Garrison et al. (1984) who examined the relationship between temperamental characteristics and early

school adjustment. Mothers completed temperament questionnaires when the children were three years old and teachers and mothers subsequently rated the children's adjustment at school age. Findings indicated that the dimensions of high persistence, high intensity and negative mood were predictive of behaviour difficulties. Interestingly, the study demonstrated that individual characteristics of temperament fared better as predictors than the difficult temperament constellation. In contrast, Caspi (2000) found that children who were classified as undercontrolled by observers at age three (i.e., impulsive, restless, negativistic, distractible and emotionally labile) were consistently rated by their parents and teachers as displaying more externalizing behaviour problems in early and middle childhood. Therefore, both individual temperament characteristics and the difficult temperament constellation have been found to be predictive of later behaviour problems.

Social functioning. Studies have also uncovered links between child temperament and positive social outcomes, such as social competence and self-esteem (Fox & Henderson, 1999; Kochanska, Murray, & Coy, 1997; Rothbart, Ahadi, & Hershey, 1994; Slee, 1986; Smith & Prior, 1995). For example, Slee (1986) examined the relation of temperament to children's kindergarten adjustment. He found that the temperament factor of adaptability was the strongest correlate with adjustment (i.e., sociability, self-reliance, relationship with teacher). Smith and Prior (1995) also reported that specific temperamental traits were connected to adaptive functioning. They examined 81 school-age children whose families were experiencing severe psychosocial stress. Children who were rated as having low emotional reactivity and high social engagement by their teachers displayed behavioural and social competence both at home and at school. The

authors asserted that positive temperament traits play a significant role in children's ability to maintain adaptive behaviours across diverse settings, despite high levels of stress. It is necessary to point out that although the above studies make important additions to this area, they did not examine infant and preschool temperament as contributors to school-age social competence. One study that did utilize a longitudinal design was Kochanska and colleagues (1997), who proposed that the self-regulation aspect of temperament might be critical for successful social development. They reported findings supporting the predictive role of effortful control as a contributor to the development of children's conscience at school age. It is clear that further research is needed in order to elucidate the role of early temperament in children's school-age social competence.

Academic achievement. Research has confirmed a connection between child temperament and academic achievement in elementary school. This relationship has been found to exist even after variance due to IQ is controlled. It appears that the variables most commonly related to achievement are persistence, distractibility, adaptability and activity (Martin, 1988; Martin, Drew, Gaddis, & Moseley, 1988; Martin & Holbrook, 1985; Martin, Nagle, & Paget, 1983; Martin, Olejnik, & Gaddis, 1994; Maziade, Cote, Boutin, Boudreault, & Thivierge, 1986; Schoen & Nagle, 1994; Strelau, 1998). For example, Martin et al. (1988) discovered that the temperamental traits of high activity level, high distractibility and low persistence were negatively related to academic achievement. They also found that a behavioural style of approach was positively correlated with reading and spelling scores as well as teacher assigned grades. Coplan, Barber and Lagace-Seguin (1999) reported that children rated by their mothers as having

a greater attention span, lower activity level and less negative emotionality tended to display better performance on measures of early literacy, counting and numeracy skills. Furthermore, these temperamental traits predicted the outcome variables, even after controlling for gender, parental education and child IQ. The link between temperament and achievement may be explained through the child's task-engaged behaviour. For example, the ability to focus, sustain one's attention and sit still for extended periods of time is a prerequisite condition for learning in school contexts (Orth & Martin, 1994).

Taken together, these studies have demonstrated a relationship between child temperament and indices of school adaptation (i.e., behaviour problems, social functioning and academic achievement). Belsky, Hsieh and Crnic (1998) asserted that the child's own behavioural style may impact child functioning both directly and indirectly, by affecting how others interact with the child. Therefore, attributes of the child need to be considered in any examination of developmental outcomes.

Gender Differences

There is an expanding literature suggesting that school-aged boys demonstrate higher rates of behaviour problems than girls (Ladd, 1996). Studies have also shown evidence for gender effects in children's kindergarten adjustment. Specifically, girls have been found to have more positive views of school than have boys (Ramey, Lanzi, Phillips, & Ramey, 1998). Furthermore, girls and boys experience school failure at dissimilar ages, with girls displaying school failure in later grades than boys (Masse & Tremblay, 1999). In terms of academic achievement, girls tend to outperform boys on measures of receptive vocabulary, as well as early literacy and numeracy skills (Coplan et al., 1999). It has been suggested that the relationship between temperament and

adjustment may vary for boys and girls (Rothbart & Bates, 1998). In order to further our understanding of how school adjustment may differ for boys and girls, it is important to include gender as a factor in the prediction of social, behavioural and academic functioning during the early years of schooling.

The Present Study

Although prior research has demonstrated modest correspondence between parent report and direct observation, few studies have directly compared the two types of measures in the prediction of child and family functioning in a high-risk sample. Home observation of children's temperament has often been used to establish convergent validity with questionnaires rather than as an instrument in its own right, and temperament measures based on direct observation are far less common than parent report measures. Furthermore, the home-based observational techniques that currently exist have important limitations, which the current study attempted to overcome in the creation of a new observational measure.

The present study employed a new observational method, the Behavioural Style Observational System (BSOS), which was compared with an existing questionnaire-based temperament measure in order to examine its incremental value. The observational measure provided an index of children's behavioural style based on observations occurring during mother-child interactions in the home. Home observations often allow for little structure or control: this was addressed by using semi-structured situations within the home setting. The BSOS possesses numerous strengths as an observational measure, including the fact that it is quick, is easy to administer and score, covers a sample of behaviours, uses naturalistic tasks and can be adapted to either home or

laboratory settings. It was also designed to be used across a wider age range than most of the observationally based instruments that have been used in the past (i.e., Rothbart, 1986). This is an important advantage for use in longitudinal studies that follow children across developmental stages, since other commonly used instruments typically cover a more limited age range (ex. 3 to 9 months of age).

The EAS Temperament Survey (EAS; Buss & Plomin, 1984) was chosen as the parental report measure because it is a well-standardized, reliable instrument that offers a multidimensional assessment of a child's temperament. Furthermore, it can be utilized with a wide age span. Other measures have very specific age ranges (i.e., infancy) and cannot be used across a sample of differing ages. Therefore, similar to the BSOS, the EAS has potential for use in longitudinal research. The EAS contains items that ask the parent to make global ratings of a child's emotionality, activity, sociability and shyness. High emotionality has been found to predict anxious/depressed behaviour, attention problems, delinquent behaviour and aggressive behaviour as rated by mothers on the Child Behaviour Checklist (CBCL; Achenbach, 1991). Aggressive behaviour has also been predicted by high activity scores on the EAS (Gjone & Stevenson, 1997). Some advantages of the EAS are that its questions are simple and straightforward, and it covers behaviours that are observable in children ranging from infancy to adolescence (Boer & Westenberg, 1994). One limitation of the EAS is that it does not allow for a direct inference of difficult temperament, which is a construct that captures the child's overall problematic behavioural style (Thomas & Chess, 1977). This is due to the fact that the four dimensions are only modestly correlated, and thus, cannot be aggregated to form an

overall index (Mathiesen & Tambs, 1999). The observational method developed for this study, on the other hand, does provide an index of difficult temperament.

General Objectives

There were four primary objectives that guided the present investigation. One was to assess the congruence between observer perceptions of behavioural style (the BSOS) in the home environment and maternal ratings using the EAS Temperament Survey. Given that the BSOS is a new measure, it was important to evaluate its correspondence with an existing temperament measure, in order to determine whether it would replicate prior findings. The second objective was to determine the contribution of the BSOS to the prediction of children's and parents' adaptive functioning, over and above the EAS. The measures included were ratings of adaptive behaviour during cognitive assessment, level of cognitive functioning (IQ test scores), behaviour problems (CBCL measures of externalizing and internalizing) and a standardized measure of parenting stress (Parenting Stress Inventory; Adibin, 1990). Given that few studies have directly compared maternal reports of temperament with home observational measures in the prediction of adaptive functioning, we sought to explore the links between these two different methods and specific outcome variables.

The third objective was to determine the predictive validity of observational and maternally rated temperament with regards to children's early school adaptation. Using a longitudinal approach, it was possible to identify the predictive utility of certain temperament characteristics in infancy and preschool that distinguished children in terms of their behavioural, social and academic adjustment during the first few years of school. If children who are at significant risk for later maladjustment can be identified, it may

facilitate a place for temperament assessment in educational screening. Deciphering which methodology best lends itself to the potential screening of infant and preschool age children will be immensely useful in terms of both research and clinical implications.

Finally, the fourth objective of the present research was to investigate the continuity of temperament from the infancy and preschool years to the early years of children's schooling, using a longitudinal design with repeated measures over time. Considering the reliance on maternal report data in the majority of temperament research, it was important to glean an accurate estimate of the stability of temperament based on maternal ratings (Pedlow et al., 1993). Therefore, this study will utilize maternal reports of child temperament in order to determine whether it is stable across the "critical period" of early school adjustment.

Study 1:

An Observational Measure of Children's Behavioural Style: Evidence Supporting a Multi-Method Approach to Studying Temperament

During the past few decades, the accurate measurement of child temperament has become an important issue in the realm of temperament research. In general, studies have relied on maternal ratings because they tend to be the most economical and convenient method. However, the validity of parent questionnaires has come into question, given the modest correspondence between parent and observer reports and the fact that parental characteristics (i.e., depression) have an impact on the rating of children's temperament (Bates, 1980; Sameroff et al., 1982; Seifer et al., 1994; Vaughn et al., 1987). As Rutter (1994) pointed out, even the most sophisticated parent measures will necessarily include elements reflecting error, perceptual bias, relationship qualities and situation specificities. On the other hand, Wachs (1999) asserted that parental report measures are not purely subjective, but also evaluate existing differences in children's temperament domains.

Increasingly, the fact that no single instrument can provide an unbiased account of child temperament is coming to be realized. Beyond the matters related to the measurement of temperament, an additional area of concern is the likelihood of informant bias when the same person rates both temperament and outcome variables. The use of multiple viewpoints and methods is one way to help overcome these limitations and provide valid, potentially replicable findings (Seifer, 2000). One technique to consider including along with maternal ratings is direct observation, as this method tends to offer high external validity while avoiding parental response biases.

The purpose of this initial study, therefore, was to compare a new observational measure with a standardized parental report questionnaire (EAS Temperament Survey). The two measures were first evaluated on the basis of their convergent validity. In line with previous research, it was expected that a modest relationship would exist between these two instruments. Additionally, it was hypothesized that the connection between the measures would be highest for the most overt behaviours, such as activity level. Given the broad age range of children in the study, age and gender differences for both the observational and questionnaire methods were also examined. Studies have discovered that boys have a higher activity level and display greater negative emotionality than girls (Auerbach et al., 1992; Bezirganian & Cohen, 1992; Caspi et al., 1995). On the basis of these and other established research findings, it was anticipated that older children and girls would have better self-regulation, thus displaying more responsive and less difficult behavioural styles (Martin, Wisenbaker, Baker, & Huttunen, 1997; Mathiesen & Tambs, 1999; Prior, 1992).

Observational behavioural style and maternal ratings were subsequently compared in the prediction of concurrent child and parent functioning. It was expected that maternal ratings of temperament would correspond most highly with outcome measures that had also been completed by the mother (Gjone & Stevenson, 1997). Specifically, we anticipated that the EAS component of emotionality would be positively related to both externalizing and internalizing problems on the Child Behaviour Checklist and that EAS activity level would also be related to externalizing behaviour. Based on prior studies that have examined the links between the difficult temperament constellation and indices of child and family functioning (Ostberg & Hagekull, 2000; Tschann et al., 1996), it was

anticipated that observed difficult temperament would be positively related to externalizing behaviour problems, maladaptive behaviour during testing and parenting stress.

Method

Participants

Background

Participants in the current study were drawn from a larger group of individuals who have been involved in the Concordia Longitudinal Risk Project since 1976. The project involved a recruitment of 4,109 francophone school-aged children who were attending grades one, four and seven in lower socio-economic neighborhoods in Montreal, Quebec. Children were selected for the study using a peer-nomination technique, which assessed the behavioural patterns of extreme aggression and social withdrawal. Out of all of the children screened, 1,770 met the criteria for participation in the study (909 girls and 861 boys). While approximately half of the sample had elevated risk profiles due to their behavioural styles, the other half were considered to have normative behavioural styles but still lived in the same inner-city neighborhoods. Over the years, these individuals were followed and evidence indicated that the high-risk group was experiencing a plethora of psychosocial problems, including poor school achievement, school dropout, early pregnancy and elevated rates of substance abuse (Moskowitz & Schwartzman, 1989; Serbin et al., 1998; Serbin, Peters, McAffer, & Schwartzman, 1991).

As the original participants from the sample entered their 20's and 30's, a number of them became parents. Given the rare opportunity to investigate the intergenerational

processes of risk and resilience over time, the Concordia Longitudinal Risk Project began to study these two generations. The current research project involves the ongoing longitudinal study of a sub-sample of individuals from the project and their families. These families were initially seen during the years 1996 and 1998 when the offspring of the original participants were 1-6 years old. The focus of the study was to identify the inter-generational transfer of risk based on the parent's early identification as aggressive or withdrawn. Specific patterns of risk factors were discovered based on the parent's histories, including indices of maladaptive parenting and environmental constraints. For example, approximately half of the sample had annual family incomes that fell below the Canadian low-income cutoff (see Serbin, Stack, & Schwartzman, 2000).

Current Sample

The participants in the current study consisted of 160 mother-child dyads from the Concordia Longitudinal Risk Project (CLRP). With regards to the original risk classifications of the mothers, 17 were in the aggressive group, 17 were in the social withdrawal group, 18 were in the aggressive-withdrawal group and 53 were in the comparison group. The original risk classifications of the fathers were as follows: 10 were in the aggressive group, 5 were in the social withdrawal group, 3 were in the aggressive-withdrawal group and 37 were in the comparison group. The children of original participants recruited for this study were aged 12-72 months at the time of the study ($M = 42.36$, $SD = 18.36$), and included 89 girls and 71 boys. Mothers ranged in age from 25.35 to 34.52 years ($M = 30.72$, $SD = 2.52$). In terms of marital status, 65 of the women were married, 77 were cohabitating, 16 were single, 3 were divorced, 11 were separated and 1 was widowed. In terms of education, the mothers had between 6 and 18

years of schooling (M = 11.76, SD = 2.25; in the province of Quebec, high-school graduate is commensurate to eleven years of education). Twenty-five percent of the mothers failed to complete high school. Mothers' average occupational ratings corresponded to the following types of jobs: hairdresser, cosmetologist (Nock & Rossi, 1979). Given that complete data were not available for every dyad, the total number of participants varied according to the specific predictor and outcome variables in each analysis.

Measures

Observed Behavioural Style

The behavioural style of children in this study was measured from videotaped mother-child interactions in the home, using the Behavioural Style Observational System (BSOS; Karp, 1999; Appendix A). The interactions occurred during 3 separate tasks which included: a 4 minute "free play" where mothers were asked to play with their child "as they normally would at home" with a standard set of toys provided by the interviewer; a 3 minute "interference" task, where the mother was asked to complete a questionnaire and not directly attend to her child (toys were left out for the child to play with, if desired); and a final 4 minutes of unstructured free play. The toys consisted of a toy telephone, a doll, a tea set, three picture books and some building blocks. Toys were selected for their appropriateness and appeal to the age group being assessed. The coding system focused on the child's mood (negative to positive), activity level (low to high), vocal reactivity (non-reactive to negative reactivity), approach to toys (low to high), mood consistency (consistent to inconsistent) and adaptability (low to high) (see Table 1 for a detailed description of the codes). Child mood, activity level, reactivity, approach to

Table 1

Description of the BSOS Codes

Code	Description
1. Mood	1= positive - laughing, positive vocalization, smiling 2 = neutral - neither positive nor negative 3 = negative - whining, frowning, screeching, tantrums, crying
2. Activity Level	1 = child who sits for entire period without getting up 2 = child who gets up once or twice 3 = child who gets up three or more times
3. Vocal Reactivity	1 = low reactivity - even-tempered child, very calm, not bothered by little things 2 = somewhat reactive at times but calms down on own (more than once) 3 = high reactivity - expressed by loud verbalizations, crying, whining, often cannot calm down on own
4. Approach to Toys	1 = child who actively seeks out toys to play with, takes initiative to get toys, starts games 2 = child who takes some initiative to play but mostly follows mom's lead 3 = child who resists playing with toys, sulks, wants to be left alone
5. Mood Consistency	1 = consistent - no fluctuations for majority of the time 2 = fluctuates once or twice - from positive to negative, or negative to positive 3 = fluctuates three or more times
6. Adaptability	1 = child who moves easily into interference task without making a fuss, starts to play with toys right away 2 = child who becomes fussy, tries to get mom's attention, does not try to play with toys immediately 3 = child who becomes quite upset at the beginning of interference task, whines, cries

toys and mood consistency were coded once, following each of the three tasks, on a 3-point scale. During the interference task, adaptability was also coded on a 3-point scale (see Table 2 for descriptive statistics on the codes).

Theoretical and conceptual background of the BSOS. The BSOS is based on Thomas and Chess' (1977) theory of temperament, which focuses on the description of a child's behavioural style. The codes were empirically driven and based on observations of videotaped mother-child interactions. Three structured activities were selected in order to have a baseline measure (warm-up), a mild stressor and then a post-stressor task. It was important to have a range of structured tasks that represented "natural" activities that mothers and children engage in. For example, the free play task was an attempt to create a natural play situation between mother and child that would elicit a range of behaviours from the child. The interference task represented a common mild stressor, when a mother cannot pay attention to her child because she is occupied with something else. It was designed to elicit negative emotionality, and to determine the adaptability of the child. The types of interactions that were chosen lent themselves to the behaviours that were captured by the BSOS. Given the nature of the selected tasks, other behavioural styles, such as behavioural inhibition, could not be assessed. The chosen codes (i.e., mood, adaptability, reactivity, approach, mood consistency and activity level) were considered to be important as predictors of adaptive functioning and eventual school success (Martin, 1988; Nelson et al., 1999; Smith & Prior, 1995).

Reliability. The author and a student coder were trained in the use of the BSOS. The coders were blind to the demographic characteristics of the dyads involved, as well as to the maternal ratings of child temperament. Training on the BSOS was accomplished

Table 2

Means, Standard Deviations and Ranges of the Six Observational Codes

Codes	Mean	Standard Deviation	Range
Mood	1.19	.36	1.00-2.67
Activity Level	1.50	.49	1.00-3.00
Approach to Toys	1.55	.45	1.00-3.00
Vocal Reactivity	1.17	.35	1.00-3.00
Mood Consistency	1.31	.45	1.00-3.00
Adaptability	1.30	.52	1.00-3.00

through learning the rating system and coding several sample videotapes. Inter-rater agreement was assessed regularly during the training, by computing the percent agreement between the first and second rater. Official coding began at the point when the per-category agreement between the two raters reached 75% or better on each of the six codes. To determine inter-rater reliability during data coding, 35 of the 175 (20%) mother-child interactions were randomly selected and double-coded. Inter-rater reliability was calculated using percent agreement and Cohen's Kappa statistic. The procedure for coding the videotapes was identical to the procedure followed during the training phase. Percent agreement ranged from 84% to 99% on the six codes, and Cohen's Kappa ranged from .70 to .96.

Internal consistency of the BSOS. Following an examination of the intercorrelations between the variables included in the BSOS, it was determined that a factor analysis was appropriate, considering the number of sizeable correlations (>.30) among them (Tabachnick & Fidell, 1996). For the factor analysis, the variables were coded such that a high score would indicate more problematic behaviour. A principal components factor analysis was performed on the 6 variables, which had been averaged across the three observational conditions. One factor was retained which had an Eigenvalue of 3.23 and explained 53.9% of the variance. In accordance with Thomas and Chess' (1977) difficult temperament concept, the variables included in this factor described a difficult behavioural style with negative mood, high activity level, low adaptability, high reactivity, low mood consistency and low approach to toy (see Table 3 for factor loadings). The internal consistency of the factor, based on inter-correlations of the six variables, was found to be .81 using Cronbach's alpha.

Table 3

Factor Loadings of the Variables Included in the Behavioural Style Factor (N = 160)

Variables	Factor Loadings
Negative mood	.89
Mood inconsistency	.85
High reactivity	.69
Low adaptability	.66
Low approach to toys	.66
High activity level	.59

Note. The behavioural style factor had an Eigenvalue of 3.23 and explained 53.9% of the variance. The internal consistency of the factor based on Cronbach's alpha was .81.

In order to assess inter-task reliability, scores on the measures during each of the three conditions were factor analyzed to create a behavioural style factor score. Similarly to the analysis across the three tasks, when the scores for each structured task were analyzed separately a single factor emerged. Correlations between the factor scores for each task were found to be significant with a range from .48 to .52 ($p < .01$). The correlations between the first and second free play periods and the total factor score were $r = .64, p < .01$ and $r = .76, p < .01$, respectively, whereas the rating of codes during the interference task correlated the most strongly with the total factor score, $r = .86, p < .01$. Based on these results, it is evident that the BSOS possesses strong internal and inter-task consistency.

Child Temperament

The EAS Temperament Survey (EAS; Buss & Plomin, 1984; Appendix B) was selected as a measure of children's emotionality, sociability, shyness and activity level because of its application to a wide range of ages and populations. Mothers completed a French translation of this 20-item questionnaire. Factor analysis has indicated that the four components of emotionality, sociability, shyness and activity level are moderately correlated, but not high enough to warrant creating a single factor score (Mathiesen & Tambs, 1999). Consistent with prior research, the EAS variables did not meet the criteria for factor analysis in the current study due to the modest correlations between the variables (i.e., ranging from .05 to -.35, with only two correlations over .30).

Children's Cognitive Functioning

Children's cognitive functioning was measured using standardized age appropriate tests of IQ. Those children who ranged in age from 12-42 months (n= 84)

were administered the Bayley Scales of Infant Development (Second Edition, Bayley, 1993). For the present study, the scores on the Bayley Mental Development Index (MDI) were analyzed. Children who ranged from 43-72 months (n=76) were given a French translation of the Stanford-Binet Intelligence Scale (SB-IV; Thorndike, Hagen & Sattler, 1986). In the current study, the overall IQ score was used as an outcome measure.

Children's Behaviour Problems

Children's behavioural problems were assessed using mother ratings on a French translation of the Child Behaviour Checklist – Parent Report Form (CBCL-PRF: Achenbach, 1991). The CBCL, presented in Appendix C, is a widely used and well-established instrument, which provides parental reports of behavioural/emotional problems in children ages 2-18 years old. Children under the age of two did not receive the CBCL (n=20). In the present study, the Externalizing and Internalizing scales were used for analyses. In contrast to population norms (i.e., 5%), almost 10% of children in the current study reached the clinical range on the Externalizing (M = 52.90, SD = 8.40, range = 30-73) scale and Internalizing (M = 52.27, SD = 8.19, range = 30-72) scale.

Behaviour During Testing

To examine children's adaptive and maladaptive behaviour in a highly structured situation, examiners rated children's behaviour during cognitive testing on the Ratings of Children's Behaviour During Testing Scale (RCBT; Rodgers, 1995; Appendix D). It is relevant to note that the examiners who rated the RCBT were not the same examiners who rated the BSOS. The RCBT is a 24-item scale, comprised of items adapted from the SB-IV and Infant Behaviour Record of the Bayley. It assesses a number of child behaviours that contribute to or detract from ideal test performance. The scale items

address the child's motivation, concentration, perseverance and expression of frustration during testing. Responses to instruction, to examiner praise and to limit-setting, as well as anxiety level are also rated. Each item is scored on a 5-point Likert scale from "Never" to "Always." Internal consistency of the RCBT was found to be .93 in the present study.

Parenting Stress

The Parenting Stress Inventory (PSI-III; Adibin, 1990; Appendix E) was completed by mothers, in order to examine the relationship between child temperament and parenting stress. This multi-construct self-report measure was designed to assess the sources and levels of stress perceived by individuals in relation to their parenting roles and responsibilities. A total score, indicating stress related to both parent and child domains, was used in the present study. The internal consistency and reliability of the PSI are well-documented (Adibin, 1995). In the current sample, the internal consistency for the total score, based on the inter-correlations of the three PSI subscales, was found to be .71.

Maternal Symptomatology

Studies have found that mothers' ratings of child behaviour may be biased or be elevated by their own psychopathology (Lancaster et al., 1989). In order to control for this possibility, mothers' completed the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, Lipman, & Covi, 1973; Appendix F). This instrument is a 90-item self-report symptom inventory, which captures the level of discomfort caused by a number of symptoms, primarily related to anxiety and depression. For the purposes of the present study, the Global Severity Index (GSI) was utilized. Consistent with population norms, in the current sample 89 % of mothers' scores on the GSI fell in the normal range (M =

54.40, *SD* = 9.62, range = 37.00-79.00), with 11% in the borderline or clinical range (Derogatis et al., 1973). Studies have found evidence of convergent and divergent validity with other measures (Margo, Dewan, Fisher, & Greenberg, 1992; McMahon & Davidson, 1986; Stanley et al., 1993). Internal consistency measured by Cronbach's alpha was .97 in the present study.

Procedure

This study was conducted in the context of a larger, ongoing intergenerational project involving a sub-sample of families from the CLRP. During an initial telephone interview with participants (all contacts were carried out in French), informed consent was obtained from the mothers. Demographic information was also gleaned during this conversation, while the remaining measures were administered during two visits to the participants' homes. During the first session, a psychometrician performed the intellectual assessments of the children and rated their behaviour during testing on the RCBT, while a research assistant interviewed the mother and distributed questionnaires (i.e., EAS) to be completed by the parents between the first and second sessions. During the second visit, mother-child interactions during the three tasks were videotaped in order to assess children's behavioural style. Before the start of the free play interaction, the examiner selected an appropriate room in the home for the observations to take place. A blanket (12.5 cm length x 16 cm width) was placed on the floor, and the toys were spread out in a standardized format. Mother-child interactions were videotaped using a Sony Video 8AF camera, which was situated on a tripod during the observations. A microphone attached to the video camera recorded the verbalizations of the mother-child dyad. A timer indicated the beginning and end of each free play interaction as well as the

interference task. Participants were asked to carry out their play activities on the blanket provided. The research assistants left the room during the videotaping of mother-child interactions. Appendix G presents a description of the testing protocol for the overall Parent-Child Study. Of note, some aspects of the protocol are not relevant to the present investigation.

Results

Age and Gender Patterns on the Temperament Measures

Given the wide age range of children in the present study and the inclusion of both boys and girls, age and gender differences in the observational and questionnaire-based measures were examined, using multiple regressions. The results indicated that the BSOS varied as a function of age but not gender (see Table 4). As expected, older children were more likely to display more positive, less difficult behavioural styles (β = -.35, $p < .01$). With regards to the EAS, the activity subscale was influenced by both age and gender (see Table 5). Consistent with findings from Mathiesen and Tambs (1999) and Coplan et al. (1999), older children and girls tended to have lower activity levels (β = -.17 and -.22, $p < .05$, respectively). There was no age or sex effect for the emotionality subscale (see Table 6). For the shyness subscale, presented in Table 7, there was a significant effect of gender, such that girls tended to be less shy than boys (β = -.17, $p <$ .05), and on the sociability subscale, there was a trend for older children to be more sociable than younger children (β = .14, p = .06) (see Table 8). These regressions demonstrate the existence of age effects for the BSOS, and both age and gender effects for the EAS.

Table 4

Multiple Regression Predicting Age and Gender Patterns on the BSOS (N = 160)

Variables	Beta	sr^2	t
Child age	-.35	-.34	-4.59***
Child gender[a]	-.11	-.11	-1.50
Total	R^2 =.12	R^2Adj = .11	F = 10.94***

[a] 1 = boys; 2 = girls

*** $p < .001$

Table 5

Multiple Regression Predicting Age and Gender Patterns on the EAS Activity Subscale (N = 152)

Variables	Beta	sr^2	t
Child age	-.16	-.16	-2.06*
Child gender[a]	-.21	-.21	-2.69**
Total	R^2 =.06	R^2Adj = .05	F = 5.20**

[a] 1 = boys; 2 = girls
*$p < .05$. ** $p < .01$.

Table 6

Multiple Regression Predicting Age and Gender Patterns on the EAS Emotionality Subscale (N = 152)

Variables	Beta	sr^2	t
Child age	.02	.02	.20
Child gender[a]	-.08	-.08	-.96
Total	R^2 =.01	R^2Adj = -.01	F = .50

[a] 1 = boys; 2 = girls

Table 7

Multiple Regression Predicting Age and Gender Patterns on the EAS Shyness Subscale (N = 152)

Variables	Beta	sr^2	t
Child age	-.08	-.08	-.94
Child gender[a]	-.16	-.16	-2.01*
Total	R^2 =.03	R^2Adj = .02	F = 2.29*

[a] 1 = boys; 2 = girls

*p < .05.

Table 8

Multiple Regression Predictin Age and Gender Patterns on the EAS Sociability Subscale (N = 152)

Variables	Beta	sr^2	t
Child age	.14	.14	1.70^t
Child gender[a]	-.05	-.05	-.61
Total	R^2 =.02	R^2Adj = .01	F = 1.76

[a] 1 = boys; 2 = girls
$^t p$ <.10

Congruence Between the BSOS and the EAS

The next issue addressed concerned the congruence between the observationally based BSOS and the mother rated EAS Temperament Survey. As previous literature has reported low to moderate correlations between parent report and direct observation (i.e. ranging from .20 to .40), it was expected that a similar result would be found in the current study. Four regression analyses were conducted using the EAS temperament components as outcome variables and the BSOS as the main predictor variable. Child gender and age were entered first, since previous studies have found that they influence child outcomes (Auerbach et al., 1992; Prior, 1992), and the current study found that temperament varied as a function of gender and age. The behavioural style factor was entered last. In the prediction of the EAS activity subscale, as seen in Table 9, the regression was found to be statistically significant ($F = 5.04$, $p < .01$), with a main effect for the BSOS, $\beta = .18$, $p < .05$. Children with problematic behavioural styles, as measured by the BSOS, tended to be rated as highly active on the maternal report questionnaire. With regards to the EAS shyness subscale, a trend was found for the BSOS ($\beta = -.14$, $p = .09$), suggesting that children who were rated as having a more negative behavioural style on the observational measure were seen by their mothers as being less shy (see Table 10). In the two regression analyses predicting sociability and emotionality, seen in Tables 11 and 12, the BSOS was not found to be significant. Overall, these regressions indicate that there is a low degree of correspondence between the BSOS and the EAS, and highlight the fact that the strongest connection between the mother's view of her child's temperament and the observer's behavioural ratings is in terms of the child's activity level.

Table 9

Summary of Hierarchical Multiple Regression Predicting Congruence Between the BSOS and the EAS Activity Subscale (N = 152)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.06	5.03**
Child age	-.16	-.16	-2.02*		
Child gender[a]	-.21	-.21	-2.63**		
Step 2				.03	4.79*
Child age	-.10	-.10	-1.23		
Child gender	-.19	-.18	-2.34*		
Observed behavioural style	.18	.17	2.19*		
Total	R^2 =.09	R^2Adj = .07	F = 5.04**		

[a] 1 = boys; 2 = girls

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

Table 10

Summary of Hierarchical Multiple Regression Predicting Congruence Between the BSOS and the EAS Shyness Subscale (N = 152)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.03	2.50^t
Child age	-.07	-.07	-.89		
Child gender[a]	-.17	-.17	-2.13*		
Step 2				.02	2.80^t
Child age	-.12	-.11	-1.39		
Child gender	-.19	-.19	-2.35*		
Observed behavioural style	-.14	-.13	-1.67^t		
Total	$R^2 = .05$	R^2Adj = .03	$F = 2.62^t$		

[a] 1 = boys; 2 = girls

*$p < .05$. $^t p < .10$.

Table 11

Summary of Hierarchical Multiple Regression Predicting Congruence Between the BSOS and the EAS Sociability Subscale (N = 152)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.03	2.45^t
Child age	.16	.16	2.00*		
Child gender[a]	-.06	-.06	-.76		
Step 2				.01	2.32
Child age	.20	.19	2.39*		
Child gender	-.04	-.04	-.54		
Observed behavioural style	.13	.12	1.52		
Total	$R^2 = .05$	R^2Adj = .03	$F = 2.42^t$		

[a] 1 = boys; 2 = girls

*$p < .05$. $^t p < .10$.

Table 12

Summary of Hierarchical Multiple Regression Predicting Congruence Between the BSOS and the EAS Emotionality Subscale (N = 152)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.00	.35
Child age	.01	.01	.08		
Child gender[a]	-.07	-.07	-.82		
Step 2				.01	2.08
Child age	.05	.04	.54		
Child gender	-.05	-.05	-.62		
Observed behavioural style	.12	.12	1.44		
Total	R^2 = .02	R^2Adj = -.00	F = .93		

[a] 1 = boys; 2 = girls

Assessing the Incremental Validity of the BSOS

A further issue of interest was whether the BSOS would show evidence of incremental validity in comparison with the EAS. In order to evaluate the incremental value of the BSOS, it was compared to the EAS Temperament Survey in the prediction of: 1) children's behaviour during testing, 2) cognitive functioning, 3) behaviour problems on the CBCL and 4) parenting stress. In the hierarchical regression equations that follow, child age and gender were entered in the first step, followed by maternal symptomatology, as a control variable, in the second step. In the third step, the EAS subscales of emotionality, activity, sociability and shyness were added. The behavioural style factor score was entered in the last step of the analyses, in order to determine if it added to the prediction of the outcome measures above and beyond the contribution of the EAS. It was expected that maternal ratings of child temperament would be most strongly related to mother-rated outcome measures (i.e.,, the CBCL and PSI). Intercorrelations among predictors and dependent variables are presented in Table 13. The correlation coefficients ranged from small to medium size, according to the criteria set forth by Cohen and Cohen (1983).

Behaviour During Testing

Examiners rated children's behaviour during testing on the RCBT, in order to assess adaptive and maladaptive behaviour. Together the predictors accounted for 11% of the total variance of the RCBT, and produced a significant multiple R, F (8, 141) = 3.35, $p < .01$ (see Table 14). Child gender and age, entered in the first step, accounted for 9% of the variance. There was a main effect for gender ($\beta = .27, p < .01$), while age approached significance ($\beta = .14, p = .07$). Girls were likely to demonstrate more

Table 13

Correlation Matrix for the Prediction of Concurrent Child and Parent Functioning (N = 120)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Child age	--	-.13	.01	-.06	.01	.17*	-.14^{t}	-.33***	.10	-.03	-.07	-.05	.01
2. Child gender[a]		--	-.08	-.17*	-.07	-.08	-.19*	-.07	.23**	.15^{t}	-.13	-.09	-.07
3. Symptomatology			--	.11	.28***	.07	-.05	.14^{t}	-.11	-.21**	.34***	.35***	.48***
4. EAS - Shyness				--	.23**	-.37***	-.22**	-.09	-.17*	-.01	.04	.36***	.13
5. EAS - Emotionality					--	.23**	.04	.12	-.08	-.05	.35***	.35***	.32***
6. EAS - Sociability						--	.33***	.07	.08	.05	.08	-.07	.06
7. EAS - Activity level							--	.23**	-.08	-.03	.26**	-.08	-.01
8. BSOS								--	-.22**	-.30***	.13	.08	.28***
9. Adaptive behaviour									--	.53***	-.17^{t}	-.32***	-.29***
10. Child IQ										--	-.17^{t}	-.14	-.35***
11. Externalizing											--	.49***	.55***
12. Internalizing												--	.43***
13. Parenting stress													--

[a] Males = 1, Females = 2

* $p < .05$. ** $p < .01$. *** $p < .001$. $^{t}p < .10$.

Table 14

Summary of Hierarchical Multiple Regression Predicting Children's Adaptive Behaviour During Testing (N = 150)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.09	6.91**
Child age	.14	.14	1.81[t]		
Child gender[a]	.27	.27	3.40***		
Step 2				.01	1.51
Child age	.15	.14	1.84[t]		
Child gender	.26	.26	3.30**		
Maternal symptomatology	-.10	-.10	-1.23		
Step 3				.02	.84
Child age	.11	.11	1.36		
Child gender	.24	.22	2.83**		
Maternal symptomatology	-.09	-.08	-1.03		
EAS - Shyness	-.09	-.08	-.99		
EAS - Emotionality	-.04	-.04	-.45		
EAS - Sociability	.09	.08	.96		
EAS - Activity	-.08	-.07	-.87		
Step 4				.04	7.29**
Child age	.04	.03	.44		
Child gender	.21	.20	2.58*		
Maternal symptomatology	-.06	-.05	-.68		
EAS - Shyness	-.12	-.10	-1.35		
EAS - Emotionality	-.02	-.02	-.20		
EAS - Sociability	.09	.07	.90		
EAS - Activity	-.04	-.03	-.41		
Observed behavioural style	-.23	-.21	-2.70**		
Total	$R^2 = .16$	R^2Adj = .11	F = 3.35**		

[a] 1 = boys; 2 = girls

*$p < .05$. **$p < .01$. ***$p < .001$. [t]$p < .10$.

adaptive behaviour during the intellectual assessment than boys, while older children also seemed to be better behaved. Maternal symptomatology and the EAS subscales were entered in the second and third step respectively, and did not increase the amount of explained variance. Observational behavioural style was significant when entered on the last step (β = -.23, $p < .01$), and accounted for 4% of the variance. Children who possessed a difficult behavioural style had poorer behaviour during cognitive testing. This result indicates that the BSOS made an important contribution to the prediction of children's behaviour in contrast to the EAS.

Cognitive Functioning

Overall, the multiple R was significant, F (8, 143) = 3.80, $p < .01$, and the predictors accounted for 13% of the variance (see Table 15). When entered in the first step, child gender was a trend (β = .15, $p = .08$), suggesting that girls performed better on the cognitive tests than boys. In the second step, a main effect was found for maternal symptomatology (β = -.21, $p < .05$). Mothers who were experiencing more severe psychological symptoms tended to have children who performed more poorly on the intelligence tests. None of the EAS subscales were significant. In contrast, when entered in the final step of the regression equation, observational behavioural style accounted for 10% of the variance in children's cognitive functioning and produced a main effect (β = -.35, $p < .01$). The factor score emerged as a significant negative predictor, indicating that children with problematic behavioural styles had lower scores on the IQ tests. It appears that with regards to cognitive functioning, the BSOS was a significant contributor in comparison with the EAS.

Table 15

Summary of Hierarchical Multiple Regression Predicting Children's IQ Scores (N = 152)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.02	1.61
Child age	-.00	-.00	-.05		
Child gender[a]	.15	.14	1.78[t]		
Step 2				.04	6.60*
Child age	-.00	-.00	-.03		
Child gender	.13	.13	1.63		
Maternal symptomatology	-.21	-.20	-2.57*		
Step 3				.01	.49
Child age	-.02	-.02	-.28		
Child gender	.14	.13	1.65		
Maternal symptomatology	-.22	-.21	-2.58*		
EAS - Shyness	.08	.07	.83		
EAS - Emotionality	-.02	-.02	-.26		
EAS - Sociability	.13	.10	1.31		
EAS - Activity	-.04	-.04	-.49		
Step 4				.10	17.32***
Child age	-.13	-.12	-1.57		
Child gender	.10	.10	1.26		
Maternal symptomatology	-.18	-.17	-2.21*		
EAS - Shyness	.03	.03	.35		
EAS - Emotionality	.01	.01	.16		
EAS - Sociability	.12	.10	1.32		
EAS - Activity	.01	.01	.08		
Observed behavioural style	-.35	-.32	-4.16***		
Total	$R^2 = .17$	R^2Adj = .13	F = 3.80***		

[a] 1 = boys; 2 = girls

*$p < .05$. *** $p < .001$. [t] $p < .10$.

Behaviour Problems

As can be seen in Tables 16 and 17, the regression equations predicting children's externalizing and internalizing behaviour on the CBCL both produced statistically significant multiple correlations (F's = 5.21 and 5.44, p's <.001, respectively). In both regressions, neither child gender nor age was found to add to the variance in children's behaviour problems. There was a main effect for maternal symptomatology (β = .32 and .33, $p < .001$, respectively); mothers who reported experiencing severe psychological symptoms also reported that their children had more problem behaviours. Even after controlling for maternal symptomatology, the EAS subscale of emotionality was a significant predictor of the CBCL scales (β = .30 and .23, $p < .01$ and $< .05$, respectively). Mothers who rated their children as being highly emotional were likely to have children who they also reported to display more externalizing and internalizing behaviour problems. Additionally, in the prediction of children's externalizing behaviour, the EAS activity subscale was found to produce a main effect (β = .28, $p < .01$), such that children who were rated as being highly active were reported to display more externalizing characteristics. In the prediction of children's internalizing behaviour, the EAS shyness subscale was a significant predictor (β = .28, $p < .01$), suggesting that children who were considered by their mothers to be shy were seen as likely to exhibit internalizing characteristics. Observational behavioural style failed to make a significant contribution across the two regression equations, which suggests that maternal ratings of child temperament is a stronger predictor of mother report of problem behaviour on the CBCL.

Table 16

Summary of Hierarchical Regression Analysis for Variables Predicting CBCL Externalizing Behaviour (N=120)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.02	1.30
Child age	-.10	-.10	-1.06		
Child gender[a]	-.12	-.12	-1.29		
Step 2				.10	13.81***
Child age	-.10	-.10	-1.11		
Child gender	-.11	-.11	-1.25		
Maternal symptomatology	.32	.32	3.72***		
Step 3				.15	5.62***
Child age	-.08	-.07	-.92		
Child gender	-.04	-.04	-.46		
Maternal symptomatology	.27	.26	3.24**		
EAS - Shyness	-.04	-.03	-.40		
EAS - Emotionality	.30	.27	3.37**		
EAS - Sociability	-.09	-.07	-.92		
EAS - Activity	.28	.25	3.15**		
Step 4				.00	.14
Child age	-.07	-.07	-.81		
Child gender	-.04	-.04	-.45		
Maternal symptomatology	.27	.25	3.15**		
EAS - Shyness	-.03	-.03	-.34		
EAS - Emotionality	.30	.27	3.35**		
EAS - Sociability	-.09	-.07	-.92		
EAS - Activity	.28	.25	3.03**		
Observed behavioural style	.03	.03	.38		
Total	$R^2 = .27$	R^2Adj = .22	F = 5.21***		

[a] 1 = boys; 2 = girls

*$p < .05$. ** $p < .01$. *** $p < .001$.

Table 17

Summary of Hierarchical Regression Analysis for Variables Predicting CBCL Internalizing Behaviour (N=120)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.01	.58
Child age	-.08	-.08	-.86		
Child gender[a]	-.06	-.06	-.70		
Step 2				.11	14.56***
Child age	-.08	-.08	-.92		
Child gender	-.05	-.05	-.62		
Maternal symptomatology	.33	.33	3.82***		
Step 3				.15	5.85***
Child age	-.05	-.05	-.60		
Child gender	-.01	-.00	-.06		
Maternal symptomatology	.25	.24	2.96**		
EAS - Shyness	.28	.24	3.01**		
EAS - Emotionality	.23	.21	2.60*		
EAS - Sociability	-.00	-.00	-.03		
EAS - Activity	-.02	-.02	-.21		
Step 4				.01	1.48
Child age	-.03	-.02	-.31		
Child gender	-.00	-.00	-.02		
Maternal symptomatology	.23	.22	2.77**		
EAS - Shyness	.30	.25	3.17**		
EAS - Emotionality	.23	.21	2.58*		
EAS - Sociability	-.00	-.00	-.03		
EAS - Activity	-.04	-.03	-.40		
Observed behavioural style	.10	.10	1.22		
Total	$R^2 = .28$	$R^2Adj = .23$	$F = 5.44$***		

[a] 1 = boys; 2 = girls

*$p < .05$. **$p < .01$. ***$p < .001$.

Parenting Stress

In the regression examining parenting stress, Table 18 reveals that the total variance accounted for was 31%. Together, the combined predictors produced a significant multiple R, F (8, 143) = 9.60, $p < .01$. Child age and gender did not add to the prediction of parenting stress. When entered on the second step, maternal symptomatology was a significant positive predictor ($\beta = .50, p < .01$), such that mothers who reported more severe symptoms also indicated that they were experiencing high levels of stress in relation to their parenting roles and responsibilities. When the EAS subscales were introduced on the third step, there was a main effect for emotionality, $\beta = .20, p < .01$. Children who were rated as highly emotional tended to have mothers who reported increased parenting stress. Above and beyond the contribution of the EAS, the BSOS was a significant positive predictor of parenting stress ($\beta = .26, p < .01$). Children who were observed to show a difficult behavioural style had mothers who had a high degree of stress related to parenting. It is evident that the BSOS and EAS are measuring different aspects or dimensions of children's behaviour, and that both contribute additively to parental stress. These results underline the incremental value of the BSOS in comparison with the EAS Temperament Survey.

In sum, the BSOS made a significant contribution to the prediction of cognitive functioning and behaviour during testing, while the EAS subscales did not. In contrast, the EAS subscales predicted mothers' perception of their children's externalizing and internalizing behaviour scores on the CBCL, whereas the BSOS did not increase the amount of explained variance. Finally, both the BSOS and the EAS independently predicted parenting stress. Overall, these results provide support for the contribution of

Table 18

Summary of Hierarchical Regression Analysis for Variables Predicting Parenting Stress (N = 152)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.00	.31
Child age	-.03	-.03	-.34		
Child gender[a]	-.06	-.06	-.74		
Step 2				.25	49.71***
Child age	-.03	-.03	-.47		
Child gender	-.03	-.02	-.35		
Maternal symptomatology	.50	.50	7.05***		
Step 3				.04	1.93
Child age	-.03	-.03	-.43		
Child gender	-.02	-.02	-.22		
Maternal symptomatology	.45	.43	6.08***		
EAS - Shyness	-.01	-.01	-.11		
EAS - Emotionality	.21	.18	2.62**		
EAS - Sociability	-.01	-.01	-.16		
EAS - Activity	.00	.00	.05		
Step 4				.06	12.55***
Child age	.05	.04	.67		
Child gender	.01	.01	.17		
Maternal symptomatology	.42	.39	5.85***		
EAS - Shyness	.03	.02	.33		
EAS - Emotionality	.18	.16	2.33*		
EAS - Sociability	-.01	-.01	-.12		
EAS - Activity	-.03	-.03	-.45		
Observed behavioural style	.26	.24	3.54***		
Total	$R^2 = .35$	$R^2Adj = .31$	$F = 9.60$***		

[a] 1 = boys; 2 = girls

*$p < .05$. ** $p < .01$. *** $p < .001$.

the BSOS over and above the EAS, and highlight the importance of including both maternal report and observational measures of children's behavioural style in studies investigating the relationship of children's temperament to other aspects of child development and functioning, as well as the potential relationship between child temperament and maternal stress levels related to parenting.

Discussion

The results of the present study provide some evidence of congruence between observed behavioural style and maternal perceptions of temperament, as well as demonstrating a differential predictive pattern of the two measures. Although prior research has examined the correspondence between maternal reports and direct observation (Bates, 1980; Bates & Bayles, 1984; Bornstein et al., 1991; Matheny et al., 1987; Rothbart, 1986; Rothbart & Goldsmith, 1985; Sameroff et al., 1982), no previous study has directly compared these two methods in the prediction of cognitive functioning, behaviour during testing, behaviour problems or parenting stress.

Congruence Between Measures

The area of convergence found in this study was a modest but significant relationship between the observational measure and the EAS activity subscale. Prior research has found that components of behavioural style that are more overt tend to have the highest interrater agreement (Mangelsdorf et al., 2000). It was surprising to find that the EAS emotionality subscale did not correspond to observed difficult temperament, given the salience of mood and reactivity in the latter. This may reflect the fact that the two measures are picking up on different aspects of children's behavioural style. For instance, the observed measure taps into emotional reactivity in the context of mother-

child interactions, and seems to identify children who have difficulty regulating their emotions in reaction to a mild stressor. The EAS emotionality subscale, on the other hand, may be identifying emotional reactivity across a range of situations and characterize children who are likely to react strongly in many different contexts.

Age effects were found for both measures, whereas gender effects were only apparent on the maternal temperament questionnaire. It is possible that the gender effects found using maternal ratings may reflect the influence of societal gender stereotypes. In general, these results highlight the developmental importance of behavioural style as children get older. Specifically, older children were found to display easier behavioural styles (i.e., better self-regulation), lower activity levels and increased sociability. Numerous studies indicate that is it important for children to be able to modulate their behaviour in order to facilitate their competence during the early years of schooling (Miech, Essex, & Goldsmith, 2001; Nelson et al., 1999; Shields et al., 2001)

Incremental Value of the Observational Technique

A second important finding involved evidence for the incremental value of observed behavioural style in comparison with maternal ratings of temperament. Specifically, both the observational and questionnaire-based measures were significant predictors of parenting stress. The emotionality subscale was linked with parenting stress even after controlling for maternal symptomatology, which confirms that maternal ratings of temperament are not exclusively a reflection of their own pathology. The observational technique demonstrated incremental validity, in that it predicted parenting stress above and beyond the contribution of mothers' perceptions of temperament. The results substantiate the link between objective child behavioural style and maternal ratings of

stress, which provides evidence for mother's perceptions of her child as difficult. The fact that both measures were independently related to the same outcome highlights the notion that each likely taps into different components of children's behavioural style. It also supports the combined use of both types of instruments, and provides additional insight into the factors that may affect parental stress. Specifically, beyond children's high emotionality, their difficult behavioural style may also influence mothers' view of their parenting role as more stressful. Children with problematic temperaments may provoke negative reactions from their parents at an early age, which could lead to an increase in parenting stress.

It is also possible that the direction of causality can go from mother to child. Mothers who experience more parenting stress may become upset and frustrated when interacting with their children. In turn, this may result in coercive parent-child interactions, which can exacerbate the mother's level of parenting stress as well as the severity of their child's difficult temperament. In the current study, the measure of parenting stress was obtained contemporaneously with both maternal ratings and observations of children's behavioural style, so therefore it was impossible to examine the direction of this effect developmentally. Regardless of the direction of causality, the fact that child temperament is linked with parenting stress has negative implications (Miller et al., 1996). Studies have confirmed that greater parenting stress is related to insecure child attachment, child abuse and neglect and perceived negative marital quality (Ostberg & Hagekull, 2000). Furthermore, Bramlett and colleagues (1995) noted that parents with increased stress have been found to provide less stimulation to their young children.

Interestingly, the two temperament measures were related to different aspects of children's functioning. The observational measure was a significant negative predictor of children's adaptive behaviour during testing as well as their level of cognitive functioning, while none of the maternal rated temperament scales were significant predictors of either behaviour during testing or cognitive performance. One possible explanation is that the observationally based measure tapped into aspects of children's functioning, such as regulation of attention and emotion, that are involved in both the IQ test performance itself and the ratings of adaptive behaviour during testing. Moreover, both were measured in a semi-controlled context at home, which might have elicited similar behaviours in children. In infancy and preschool, competence on an intelligence test seems to be closely tied to behaviour (Kubicek et al., 2001). Therefore, observational behavioural style has a strong relationship to the intelligence scores, as a pertinent aspect of achieving a high score on the IQ test involves behavioural competence.

An additional aspect of behavioural competence is self-regulation (Kopp, 1982), which is a likely component of all three measures (observational behavioural style, IQ and adaptive behaviour during testing). Children with difficult behavioural styles may have had problems with self-regulation, which could have resulted in maladaptive behaviour during the cognitive assessment, as well as lower cognitive functioning scores. These results have implications for the prediction of future school adjustment, as difficulty regulating one's behaviour may have a negative impact on subsequent school achievement and peer relations (Miech et al., 2001; Nelson et al., 1999; Shields et al., 2001).

With regards to children's behaviour problems, maternal perceptions of temperament were significant predictors of externalizing and internalizing behaviour as reported by mothers on the CBCL, whereas the observational measure failed to make a significant contribution to the prediction equation. These results confirmed the initial hypothesis that maternal ratings of child temperament would be related to mothers' reports of children's problem behaviour. The finding that the emotionality subscale was a strong predictor of both mother rated problem behaviour measures, as well as the fact that the activity subscale also predicted the externalizing scale of the CBCL, confirms earlier results by Gjone and Stevenson (1997). An additional result in this study that was not found by Gjone and Stevenson was that the shyness subscale was related to mother-report of internalizing behaviour. It is important to note that the temperament subscales were significant predictors of the CBCL scales even after controlling for maternal symptomatology. This provides support for the assertion that maternal ratings of child behaviour are not simply a projection of their own pathology, but appear to reflect characteristics of the child's behaviour. It is also true, however, that by using the same rater (the child's mother) for both measures, the prediction of CBCL behaviour problems from maternal ratings of temperament could partially reflect shared rater variance. Another possibility is that there may be similarity and some overlap in the items found on both instruments. For example, both the EAS and CBCL include questions concerning whether the child cries easily, would rather be alone than with others, and has difficulty sitting still.

The concurrent relationship between temperament and problem behaviour has repeatedly been demonstrated in the literature (Caspi et al., 1995; Deater-Deckard et al.,

1998; Earls & Jung, 1987; Eisenberg et al., 2000; Eisenberg et al., 2001; Guerin, Gottfried, & Thomas, 1997; Kyrios & Prior, 1990; Lee & Bates, 1985; Maziade et al., 1985; Prior, 1992). Although the current research cannot speak to the issue of causal mechanisms, it is nonetheless important to indicate potential processes that may be theoretically relevant to the variables under investigation. One such mechanism that is hypothesized to account for this association is that difficult children may elicit negative reactions from parents, and consequently create problems in parent-child interactions. Lee and Bates (1985) found that 2-year-old children rated as difficult were more likely to have conflictual interactions with their mothers than easy or average children. Furthermore, mothers of such children were likely to use more intrusive control strategies, which may be indicative of a negative mother-child relationship. This coercive interaction style may have resulted from a "poorness of fit" between the mother's child-rearing style and her child's difficult temperament.

Clinical Implications

Considering the negative consequences associated with a "poorness of fit", attempts to train parents on how to provide a better fit between their parenting strategies and their child's behavioural style might prove to be beneficial. One example is parent-training programs, where parents learn to understand the temperamental basis of their child's behaviour and respond appropriately (Chess & Thomas, 1984). Sheeber and Johnson (1994) examined the efficacy of a comprehensive temperament-based group parent-training program. Criteria for involvement in the program required that the child demonstrate evidence of a difficult temperament and there also be evidence of maternal difficulties related to parenting. Twenty mothers of 3-5 year-old children were randomly

assigned to the parent-training program (PTP) and 20 to a wait-list control group. The PTP had weekly sessions for 9 weeks and the focus was on developing an understanding of child temperament to enhance the match between child characteristics and parental demands. The initial portion was centered on familiarizing parents with the nature of child temperament, and subsequent sessions emphasized how to manage temperament-related behaviour problems. Results showed that relative to mothers in the wait-list control condition, mothers who participated in the PTP reported greater satisfaction in their parent-child relationship, felt more competent as parents and experienced greater attachment to their children. Furthermore, mothers also rated their children as displaying fewer internalizing and externalizing behaviour problems, and felt less restricted by parenting demands. Treatment gains were maintained at 2-month follow-up. Addressing the fit between parent and child through interventions that involve psychoeducation and parent management techniques may reduce maternal anxiety, enrich parent-child relationships and lead to more adaptive outcomes.

Another possible implication is the use of parent support groups for families with children with difficult temperaments. Support groups offer families the opportunity to ventilate their feelings and frustrations, reduce their isolation and acquire information and education (Andersen, 1994). Parent-run groups are especially useful as they facilitate the notion that parents are active members of their own treatment. Having parents exchange information regarding children's temperament assists in increasing their own understanding of their child. It is also important for parents to realize that at each developmental stage, children need different resources from their family in order to master critical developmental tasks. The ability to discuss and learn about children's

temperament in a safe, validating environment may help to decrease parental stress and promote more positive parent-child interactions.

Summary

In sum, the present study offers a unique perspective on the comparison between observational and questionnaire measures of children's behavioural style. The findings suggest that maternal reports and observer ratings each offer distinct and valid information about children's behaviour. Rather than supporting the use of one type of instrument over another, this study reinforces the value of including both types of measures in order to gain a fuller picture of child and parent functioning. Furthermore, if the observational measure had not been included, one might have assumed based on maternal EAS ratings that behavioural style is unrelated to cognitive functioning, or to adaptive behaviour during cognitive testing. There are other important reasons for employing a multi-method, multi-rater approach (Rothbart & Goldsmith, 1985). For example, some studies have used a single rater to assess both predictor and outcome variables, and therefore any relationship between the two could simply be an artifact of shared rater variance. Additionally, relying on a single type of method, such as questionnaires, restricts the range of available information on children's behaviour, so it is strongly recommended that a multi-method/multi-rater approach be used.

In future research, it may be useful to examine the relative predictive validity of parental reports and observational measures as initial indicators of school readiness and other competencies during the important years of early elementary school. Additionally, it seems likely that the combined use of these two methods may help us to understand the relationship between children's behavioural characteristics and specific aspects of family

functioning, such as parenting stress, that have important implications for parent-child relationships and subsequent developmental outcomes.

Study 2:

The Predictive Validity of Observational and Maternal Ratings of Temperament in Relation to Children's Early School Adjustment

Early school adjustment is a critical time in children's lives because the initial transition into school has a significant impact on later functioning (Reynolds & Bezruczko, 1993). For example, children who experience poor peer relationships (i.e., rejection) in the early years of schooling are at elevated risk for grade retention, lower academic achievement, school dropout, delinquency and committing juvenile offenses (Raver, 2002). Additionally, children's performance in the primary grades matter more for their future success than school functioning at any other time (Entwisle & Alexander, 1998). School adjustment is dependent on numerous factors, including child characteristics. One particular child variable that has been shown to impact on school functioning is temperament. Keogh (1986) asserted that temperament might enhance or hinder school performance by laying the foundations for the acquisition of learning. Specifically, the child's behavioural style, including their modulation of activity, tendency to approach new situations, regulation of mood and ability to persist and withstand distraction all contribute to their readiness to embrace school and its associated challenges. Therefore, temperament might be perceived as a school readiness variable. Some behavioural styles are more compatible with the school environment than others, and children who possess certain temperamental traits or constellations of behaviours may be more at risk for poor school adjustment.

While a number of studies have begun to document the relations between early temperament and later school adjustment, many of these investigations have been fraught

with methodological weaknesses, including the fact that only a single measure of school adjustment is utilized, samples are cross-sectional in nature, and the same person typically rates both temperament and outcome variables. In order to overcome these limitations, the current study employs a multi-method, multi-rater approach within a longitudinal framework. School adjustment is conceptualized as academic achievement (based on both report card marks and standardized achievement test scores), social competence and behaviour problems at school.

The focus of the current investigation was to examine the predictive validity of observed behavioural style and maternal ratings of temperament with regards to children's early school adjustment. Based on prior research in this area, it was expected that both individual temperament characteristics (i.e., high activity level, high emotionality) and the difficult temperament constellation would be predictive of greater behaviour problems across home and school contexts. More specifically, it was hypothesized that mother-rated temperament would be the most highly related to maternal ratings of children's behaviour problems, given the possibility of shared rater variance. In line with previous research (Martin, 1988; Smith & Prior, 1994), it was also predicted that the EAS variables of high activity level, high emotionality and low social engagement (i.e., high shyness, low sociability) would be predictive of lower social competence and academic achievement. Additionally, based on studies examining gender differences in achievement and overall adjustment (Alexander & Entwisle, 1988; Coplan et al., 1999; Ladd, 1996; Schoen & Nagle, 1994), it was anticipated that boys would be at greater risk for poor school adjustment, in terms of behaviour problems, lower academic achievement and poorer social competence.

A second objective of this investigation was to examine the relative stability of temperament from infancy and preschool to early school adjustment. Consistent with prior findings (Pedlow et al., 1993; Scarpa et al., 1995), it was hypothesized that modest stability (i.e., correlations ranging from .2 to .4) would exist over time for the four temperamental characteristics on the EAS Temperament Survey.

Method

Participants

Current Sample

A follow-up study of the 175 families from the Concordia Longitudinal Risk Project (CLRP) was begun in September 1999, with a focus on the children's early school adjustment. The CLRP is a 20-year prospective, longitudinal study of individuals from lower SES areas of Montreal, Quebec (Canada) (see Serbin et al., 1998 for a description of the original sample). The time interval between data collection of Study 1 and Study 2 ranged from 2.06 to 6.16 years ($M = 3.87$, $SD = 1.06$). With regards to attrition, the sample size was reduced from 160 in Study 1 to 127 in Study 2 (79% retention rate). Reasons for attrition included: families opting not to participate (13%), difficulty reaching participants (3%), children exceeding the age range (3%), and failure to receive written consent (2%).

At this point in time, 127 children and their families have been assessed. These 127 families were used for data analysis in the current report. This included 72 girls and 55 boys, ranging in age from 5.19 to 11.64 years ($M = 7.67$, $SD = 1.04$). In terms of grade placement, 62 children were in grade 1, 44 children were in grade 2, 14 children were in grade 3, 4 children were in grade 4 and 3 children attended grade 5. The mothers

in this sample ranged in age from 24.31 to 51.08 years (M = 34.72, SD = 3.41), while fathers' age ranged from 24.56 to 50.39 years (M = 36.61, SD = 3.61). With regards to the original risk classifications of the mothers, 13 were in the aggressive group, 16 were in the social withdrawal group, 12 were in the aggressive-withdrawal group and 46 were in the comparison group. The original risk classifications of the fathers were as follows: 8 were in the aggressive group, 5 were in the social withdrawal group, 2 were in the aggressive-withdrawal group and 25 were in the comparison group. At the birth of their first child, women were between the ages of 14 and 36 years old (M = 25.17 years, SD = 3.57). Approximately 10% of the women had become mothers by the time they were twenty years of age. In terms of marital status, approximately 14% of the women were raising their children alone (never married, separated, divorced or widowed), while 86% of the mothers were married or cohabitating.

As one indicator of the socio-economic status of participating families, educational attainment was obtained. Mothers had between 4 and 18 years of schooling (M = 11.95, SD = 2.25), while fathers had between 6 and 16 years of schooling (M = 11.60, SD = 1.99). In the province of Quebec, high school graduation is commensurate to 11 years of education. Twenty-nine mothers (23%) and twenty-eight fathers (22%) left high school prior to completion. Current family income was another index of socio-economic status that was gathered. Families had a mean annual income of $45,050 ($SD$ = 24,389, range from $6, 905 to $129,168). Approximately 6% of the sample was receiving welfare at the time of the study and an additional 28% of the families were considered to be "working poor", given that their annual income fell below the Canadian low-income cutoff (CLICO; Center for International Statistics, 1997). On average, the current sample

can be considered to be a "working poor" sample, given that the participants' mean educational attainment was equivalent to high-school graduation and the fact that approximately one third of the families fell below the national low-income cutoff. It is important to note, however, that the families evidenced a range of functioning with regards to their socioeconomic status.

Measures

Time 1: Infancy and Preschool Years

The Time 1 data was collected during the previous phase of data collection, which focused on family functioning in the home. The measures of child temperament that were gathered at that time were used as predictors of children's school adjustment in the current study.

Observed behavioural style. Children's behavioural style was ascertained from videotaped mother-child interactions in the home, using the Behavioural Style Observational System (BSOS; Karp, 1999). This technique possesses ecological validity and provides a conservative estimate of children's behaviour (see description of the BSOS in Study 1 for further details).

Child temperament. The EAS Temperament Survey (EAS; Buss & Plomin, 1984) was used as a measure of children's emotionality, sociability, shyness and activity level (see Study 1 for a more detailed description of the EAS). Mothers completed a French translation of this 20-item questionnaire at Time 1 and again at Time 2 (school age).

Children's cognitive functioning. Standardized age appropriate tests of IQ were used to evaluate children's cognitive functioning. Those children who ranged in age from 12-42 months were administered the Bayley Scales of Infant Development (Second

Edition, Bayley, 1993). Children who ranged from 43-72 months were given a French translation of the Stanford-Binet Intelligence Scale (SB-IV; Thorndike et al., 1986). Each child received only one of the IQ assessments. Children's overall IQ scores on the Bayley and Stanford-Binet were standardized and combined in order to create an overall measure of children's cognitive competence in early childhood. The measure of children's cognitive functioning was included as a control variable, given the well documented finding that IQ influences children's school adaptation (Coplan et al., 1999).

Children's behaviour problems. Mother ratings of a French translation of the Child Behaviour Checklist – Parent Report Form (CBCL-PRF: Achenbach, 1991) were used to assess children's behaviour problems. The Externalizing scale was used as a control variable in the current study, given that some proportion of aggressive and overactive toddlers and preschool children will continue to experience problems at school age (see Campbell, Shaw, & Gilliom, 2000).

Sociodemographic information. The Demographic Information Questionnaire (DIQ; Concordia Longitudinal Risk Project, 1993) was used to gather information on all of the participants in the study. From this measure, the parents' educational level, current occupation and income, age and martial status were obtained. The DIQ was completed over the telephone when the participants were contacted to provide consent for the study. Maternal education was used as control variable in the present study, given its established relationship with children's adjustment (Auerbach et al., 1992; Coplan et al., 1999). See Appendix H for a copy of this questionnaire.

Time 2: School Age

The next series of measures were collected in the most recent phase of data collection (i.e., visits made to the children's school). These included indices of children's behaviour problems, social functioning and academic achievement.

Maternal report of behavioural problems. Mothers were asked to report on children's behaviour using the Child Behaviour Checklist (CBCL; Achenbach, 1991) as well as the Conner's Parent Rating Scales-48 (CPRS-48; Conners, 1990; Appendix I). The CBCL is a widely used and well-established instrument, which provides parental reports of behavioural/emotional problems, including withdrawal, somatic complaints, anxious-depressed thoughts, social problems, thought problems, attention problems, delinquent problems, and aggressive behaviour. Scores are summarized to create an Externalizing, Internalizing and Total Problem scale. The psychometric properties of the CBCL are well established (see Achenbach, 1991). Given the reduced sample size in the current study and the fact that externalizing behaviour is more easily assessed by parents and teachers than internalizing behaviour (Raver, 2000), it was decided to use the Externalizing scale as a school-age outcome measure.

The CPRS-48 investigates the existence of behaviour problems related to inattention and hyperactivity. Using a 4-point Likert-type scale, mothers' rated 48 items assessing the degree to which the child demonstrates a variety of problem behaviours, including conduct problems, learning problems, psychosomatic problems, impulsive-hyperactivity and anxiety. A Hyperactivity Index can also be calculated. The Conners' Rating Scale has been found to have excellent psychometric properties (see Conners, 1990).

For the purposes of the current study, the Externalizing scale on the CBCL as well as the Hyperactivity Index of the CPRS-48 were combined through factor analysis to create an overall measure of children's behaviour problems at school age (r = .61). Factor analysis is considered to represent a useful approach to summarize data by grouping together variables that are correlated (Tabachnick & Fidell, 1996).

Teacher report of behavioural problems. Teacher versions of the Child Behaviour Checklist (TRF; Achenbach, 1991; Appendix J) and the Conners Rating Scales (CTRS-28; Conners, 1990; Appendix K) were administered, in order to examine teachers' perspectives of children's problem behaviours. Using the Externalizing scale on the TRF and the Hyperactivity Index of the CTRS-28, a factor was created which represented an overall measure of children's behaviour problems at school age (r = .77).

Social functioning. Using a French translation of the Social Competence Scale (SCT; Gifford-Smith, 2000), teachers' views of children's adaptive social behaviour were determined. This 25-item instrument, presented in Appendix L, assesses three distinct factors: prosocial behaviour skills, emotion regulation abilities and work-related behaviours, such as attention, perseverance and concentration. Teachers evaluate each item on a 5-point Likert scale, according to how closely it resembles the behaviour of the child (from "not at all" to "very well"). The psychometric properties of this measure are well documented (Gifford-Smith, 2000). For the purposes of the current study, the three factors were combined to create an overall measure of social competence. Internal consistency was found to be .95 in the present study.

Report cards. Final report cards were collected, with parental consent, for each child who took part in the study. Grades in language arts (including reading, writing and

oral communication) and mathematics were taken from these official records and factor analyzed to create a measure of children's overall academic achievement (r = .67).

Standardized testing. The BQAL (Bilan Qualitatif de l'Apprentissage de la Lecture; Campeau-Filion & Gauthier, 1989) is a French achievement test that evaluates children's reading skills and identifies specific problems in the areas of decoding and comprehension. This measure is typically used to evaluate the competence of children in the early elementary grades (grades 1 to 3), and has been demonstrated to accurately predict future learning disabilities. The BQAL is composed of ten sections, with each section getting progressively more difficult. It begins with the recognition of individual letters and ends with the ability to read and comprehend short stories. A multiple-choice rating system is used to evaluate the items.

In order to assess children's math abilities, the numerical operations subtest from the Weschler Individual Achievement Test (WIAT; The Psychological Corporation, 1992) was administered to all children in the sample. This scale is composed of a set of 40 problems, which measures the ability to write numbers that are dictated orally and to solve calculation problems involving the basic operations of addition, subtraction, multiplication and division. After basal and ceiling levels are obtained, an overall standardized score of children's numerical skills is computed. Individual scores are then compared to norms based on the child's age or grade. The psychometric properties of this instrument have been found to be adequate (The Psychological Corporation, 1992). The scores on the BQAL and WIAT were factor analyzed to create an overall measure of children's achievement on standardized instruments (r = .32).

Sociodemographic information. The Demographic Information Questionnaire (DIQ; Concordia Longitudinal Risk Project, 1993) was used again at Time 2 in order to gain current sociodemographic data on the families in the study. The DIQ was administered over the telephone when participants were contacted to provide consent for the latest phase of the project.

Procedure

The families were first contacted when the children were infants and preschoolers. During an initial telephone interview with the participants, informed consent was obtained from the mother. Demographic information was also gleaned during this conversation, while the remaining measures were administered during two visits to the participants' homes. The home visits lasted up to three hours and were separated by a 1-week interval. The recruitment and testing took place from September 1996 to April 1998. An M.A. level licensed psychologist performed the intellectual assessment of the children, while a research assistant interviewed the mother and distributed questionnaires to be completed by the parents between the first and second sessions. These questionnaires assessed the mother's view of their child's temperament and behaviour problems. Mother-child interactions during the free play and interference tasks were videotaped and coded by the author and another student in order to assess children's behavioural style.

The families were contacted again, once the children reached school age, in order to ask whether they would be interested in participating in a follow-up study of children's functioning. Informed consent was obtained from the parents for the school testing and release of school records (i.e., report cards). Once the parents had verbally agreed to be

involved in the study, they received a written consent form along with questionnaires assessing their children's temperament and behaviour (See Appendix M for a copy of the consent form). After these documents had been returned, the school principal was contacted in order to arrange an appointment to visit children in their school setting. The testing sessions lasted approximately one hour and involved individualized academic testing. During the school visit, the children's teachers were asked to complete questionnaires that assessed their view of the children's behaviour and adjustment. It was requested that the teachers return these questionnaires by mail. Schools were contacted again, at the end of the school year, in order to obtain copies of children's final report cards.

Results

Preliminary Analyses

The sample size in the current study ranged from 82 to 100, which was largely due to unreturned teacher packages and incomplete questionnaires. Given the substantial number of missing cases and the desire to retain as many subjects as possible, it was decided to keep the variables in the analyses without substitution. Consequently, it was necessary to reduce the number of predictor variables to be included in the analyses. This was undertaken to ensure that there was sufficient power for the analyses and to reduce the risk of spurious findings (Tabachnick & Fidell, 1989). In initial exploratory analyses, parent's childhood aggression and withdrawal, family socioeconomic status and maternal symptomatology were considered as potential control variables, but were not found to be significant predictors of children's school adaptation. Additionally, the EAS subscales of emotionality and sociability did not significantly contribute to the regression equations

predicting school adjustment. Subsequently, these variables were dropped from further analyses. It is also important to note that possible interactions between child gender and temperament were examined but none reached statistical significance.

Age and Gender Patterns on the EAS Temperament Survey

Given that age and gender patterns were discovered on the temperament measures in Study 1, they were also assessed in Study 2. No effects of age and gender were found on the EAS Temperament Survey. These analyses are presented in Appendices N through Q.

Prediction of School Adjustment

In order to evaluate the hypotheses of the current study, hierarchical multiple regression was chosen as an appropriate statistical strategy, given its ability to examine the contribution of a particular variable, while controlling for the effects of other independent variables. Regression analyses were carried out on five measure of school adjustment, including behaviour problems (mother and teacher perspectives), social competence and academic achievement (report card scores and standardized achievement testing). Table 19 presents the intercorrelations among the predictors and dependent variables. The correlation coefficients between the outcome variables ranged from small to moderate size, with one correlation in the large range. Specifically, the correlation between children's social competence scores and teacher ratings of their behaviour problems was found to be -.78, ($p < .01$). The overlap is likely due to the fact that teachers were selected to be informants in both cases. Given that the correlation was not high enough to warrant problems of multicollinearity (see Tabachnick & Fidell, 1996)

Table 19

Correlation Matrix for the Prediction of Children's School Adjustment (N = 82)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Maternal education	--	.01	-.13	.32***	-.10	.02	.11	-.07	-.14	-.19*	.24*	.21*	.07
2. Child gender[a]		--	-.18*	.16[t]	-.12	-.04	-.20*	-.14	-.24**	-.27**	.33**	.06	.13
3. Child age			--	-.04	-.04	-.34***	-.11	-.05	.13	.14	-.17	-.22*	.31***
4. Child IQ				--	-.20*	-.24**	-.06	-.03	-.22*	-.32**	.35***	.41***	.22*
5. Externalizing (Time 1)					--	.17[t]	.34***	-.05	.55***	.06	-.04	-.03	-.09
6. Observed temperament						--	.26**	-.07	.19*	.23*	-.20*	-.03	-.03
7. EAS - Activity level							--	-.29**	.28**	.23*	-.22*	.12	-.03
8. EAS - Shyness								--	.04	-.03	-.01	-.15	-.22*
9. Externalizing (mother)									--	.36***	-.34***	-.24*	-.12
10. Externalizing (teacher)										--	-.78***	-.33**	-.25*
11. Social competence											--	.36**	.22*
12. Report card marks												--	.25*
13. Achievement test scores													--

[a] 1 = boys; 2 = girls

*$p < .05$. **$p < .01$. ***$p < .001$. [t]$p < .10$

and that the constructs were considered to be conceptually distinct, the two outcome variables were retained for use in the final analyses.

In the hierarchical multiple regressions presented below, predictor variables included mothers' educational attainment, children's age, gender and cognitive functioning, maternal-rated behaviour problems and measures of child temperament (EAS subscales of activity level and shyness and the BSOS). For each of the regression equations, maternal education was entered first in order to control statistically for its potential impact on children's school adjustment. It was followed by the control variables of child age and gender on the second step, and children's cognitive functioning and maternal ratings of children's externalizing behaviour in the third step. In the final step, all of the temperament measures were allowed to directly compete for the variance in children's school adjustment, thereby providing a test of the strength of each of the independent variables. In the description of results below, independent variables are discussed in terms of their predictive power at the step at which they were entered in the regression equations.

Maternal Ratings of Externalizing Behaviour

In the prediction of mother-rated externalizing behaviour, all of the variables combined accounted for 31% of the variance and produced a significant multiple R, F (8, 91) = 6.52, $p < .001$ (see Table 20). Maternal education did not make a significant contribution to externalizing behaviour in the first step. In the second step, child gender approached significance ($\beta = -.18$, $p = .08$), suggesting that boys were more likely than girls to display externalizing behaviours at home. When entered in step 3, children's externalizing behaviour at preschool-age made a significant contribution to maternal

Table 20

Summary of Hierarchical Regression Analysis for Variables Predicting Maternal Ratings of Externalizing Behaviour (N = 100)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.00	.78
Maternal education	-.09	-.09	-.88		
Step 2				.03	1.55
Maternal education	-.09	-.09	-.95		
Child gender[a]	-.18	-.18	-1.76^t		
Child age	-.02	-.02	-.17		
Step 3				.28	19.28***
Maternal education	-.03	-.03	-.30		
Child gender	-.10	-.10	-1.15		
Child age	.02	.02	.20		
Child IQ	-.05	-.05	-.53		
Time 1 Externalizing	.53	.51	6.02***		
Step 4				.05	2.19^t
Maternal education	-.02	-.02	-.20		
Child gender	-.04	-.03	-.41		
Child age	.05	.05	.57		
Child IQ	-.01	-.01	-.10		
Time 1 Externalizing	.46	.43	5.09***		
Observed behavioural style	.11	.10	1.22		
EAS - Activity	.20	.17	2.02*		
EAS - Shyness	.13	.12	1.44		
Total	$R^2 = .36$	R^2Adj = .31	F = 6.52***		

[a] 1 = boys; 2 = girls

*$p < .05$. *** $p < .001$. $^t p < .10$.

ratings of externalizing behaviour at school age ($\beta = .53, p < .001$). Preschoolers with high levels of externalizing behaviour tended to display high levels of externalizing behaviour in the early years of school adjustment. This result provides evidence of the stability of problem behaviour over time. In the final step, the EAS subscale of activity level was a significant predictor of mother-rated externalizing behaviour ($\beta = .20, p < .05$). Mothers who rated their children as possessing a high activity level as infants or preschoolers were likely to have children who they also reported to display more externalizing behaviour problems at school age. Observational behavioural style failed to make a significant contribution, which implies that maternal ratings of child temperament are a more powerful predictor of maternally rated externalizing behaviour problems.

Teacher Ratings of Externalizing Behaviour

Overall, the multiple R was significant, $F(8, 74) = 3.25, p < .01$, and the predictors accounted for 18% of the variance (see Table 21). When entered in the first step, maternal education was not significant. In the second step, child gender emerged as a significant predictor ($\beta = -.22, p < .05$), whereas age neared significance ($\beta = .20$, p = .06). Boys were rated by their teachers as demonstrating more externalizing behaviour than girls, and older children were also perceived as displaying higher levels of problem behaviour. In step 3, children's cognitive functioning was also related to teacher ratings ($\beta = -.23, p < .05$), indicating that children with higher IQ's were considered to manifest less externalizing behaviour in the classroom. When the temperament variables were introduced in the final step, there was a main effect for EAS activity level ($\beta = .24$, $p < .05$) and observational behavioural style ($\beta = .22, p < .05$). Children with both difficult behavioural styles and high activity levels were viewed by their teachers as

Table 21

Summary of Hierarchical Regression Analysis for Variables Predicting Teacher Ratings of Externalizing Behaviour (N = 83)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.03	2.40
Maternal education	-.17	-.17	-1.55		
Step 2				.10	4.46*
Maternal education	-.16	-.16	-1.52		
Child gender[a]	-.22	-.22	-2.13*		
Child age	.20	.20	1.92[t]		
Step 3				.04	1.99
Maternal education	-.08	-.07	-.70		
Child gender	-.20	-.20	1.93[t]		
Child age	.21	.21	2.00*		
Child IQ	-.23	-.21	-2.00*		
Time 1 Externalizing	-.03	-.03	-.28		
Step 4				.09	2.99*
Maternal education	-.07	-.07	-.67		
Child gender	-.12	-.11	-1.14		
Child age	.25	.25	2.46*		
Child IQ	-.16	-.13	-1.34		
Time 1 Externalizing	-.11	-.10	-.98		
Observed behavioural style	.22	.20	1.97*		
EAS - Activity	.24	.20	1.99*		
EAS - Shyness	.14	.13	1.26		
Total	$R^2 = .26$	R^2Adj = .18	F = 3.25**		

[a] 1 = boys; 2 = girls

*$p < .05$. **$p < .01$. [t]$p < .10$.

evidencing more externalizing behaviour problems. These results highlight the independent predictive validity of the BSOS in combination with the EAS, and demonstrate that both contribute additively to teacher's view of children's externalizing behaviour.

Teacher Ratings of Social Competence

As seen in Table 22, the regression equation predicting teacher-rated social competence produced a statistically significant multiple correlation ($F = 3.99, p < .001$) and accounted for 23% of the variance. There was a main effect for maternal education ($\beta = .22, p < .05$); mothers with higher levels of education had children who were rated as being more socially competent by their teachers. Child gender had a significant impact on teacher reports of children's social competence in step two ($\beta = .30, p < .01$), suggesting that girls were rated as more socially competent in the classroom than boys. Additionally, there was a trend for child age ($\beta = -.18, p = .09$), such that older children tended to be rated as demonstrating less socially competent behaviour. In step three, children's cognitive functioning was a significant predictor ($\beta = .25, p < .05$), indicating that children who scored higher on standardized measures of intellectual skills at infancy and preschool age also displayed increased social functioning in the classroom. It is interesting to note that the effect of maternal education disappeared at this step, suggesting that it operates through children's IQ to predict social competence. In the final step, there was a main effect for the EAS activity level subscale ($\beta = -.25, p < .05$). Children who were rated by their mothers as being highly active tended to be seen by teachers as possessing lower social competence in the classroom. The observational

Table 22

Summary of Hierarchical Regression Analysis for Variables Predicting Teacher Ratings of Social Competence (N = 82)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.05	3.91*
Maternal education	.22	.22	1.98*		
Step 2				.13	6.18**
Maternal education	.21	.21	2.00*		
Child gender[a]	.30	.30	2.95**		
Child age	-.18	-.18	-1.71[t]		
Step 3				.05	2.52[t]
Maternal education	.12	.11	1.13		
Child gender	.28	.28	2.78**		
Child age	-.18	-.18	-1.77[t]		
Child IQ	.25	.22	2.23*		
Time 1 Externalizing	.07	.06	.64		
Step 4				.07	2.65[t]
Maternal education	.12	.11	1.08		
Child gender	.20	.18	1.88[t]		
Child age	-.22	-.21	-2.16*		
Child IQ	.19	.16	1.69[t]		
Time 1 Externalizing	.14	.13	1.36		
Observed behavioural style	-.16	-.15	-1.51		
EAS - Activity	-.25	-.21	-2.18*		
EAS - Shyness	-.15	-.13	-1.35		
Total	$R^2 = .30$	R^2Adj = .23	F = 3.99***		

[a] 1 = boys; 2 = girls

*$p < .05$. ** $p < .01$. *** $p < .001$. [t] $p < .10$.

behavioural style variable, in contrast, did not contribute significantly to the predictive equation.

Academic Achievement (Report Card Scores)

Table 23 presents the results of the regression analysis predicting academic achievement, based on children's report card scores. Together, the predictors accounted for 18% of the variance, and produced a significant multiple R, F (8, 79) = 3.34, $p < .01$. Maternal education did not emerge as a significant predictor when introduced in the first step. In step 2, child age produced a main effect (β = -.23, $p < .05$), indicating that children in higher grades had more difficulty meeting academic expectations than children in lower grades. Children's cognitive functioning had a strong impact on children's achievement (β = .40, $p < .001$), such that infants and preschoolers who scored higher on tests of intellectual competence also mastered the language and mathematics aspects of the curriculum following school entry. None of the temperament variables were significant predictors of report card scores when entered in the final step.

Academic Achievement (Standardized Achievement Testing)

In the regression examining children's academic achievement, based on standardized achievement testing, Table 24 reveals that the total variance accounted for was 14%. Together, the combined predictors produced a significant multiple R, F (8, 91) = 2.95, $p < .01$. In the first step of the regression equation, maternal education did not contribute significantly to the prediction of academic achievement. Child age approached significance in the second step (β = .18, p = .07), suggesting that older children demonstrated an increased ability to perform well on standardized tests of academic achievement. In step 3, there was a main effect for children's cognitive functioning (β =

Table 23

Summary of Hierarchical Regression Analysis for Variables Predicting Report Card Marks (N = 88)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.02	1.52
Maternal education	.13	.13	1.23		
Step 2				.05	2.39[t]
Maternal education	.13	.13	1.23		
Child gender[a]	-.03	-.03	-.25		
Child age	-.23	-.23	-2.18*		
Step 3				.14	7.47**
Maternal education	.02	.02	.23		
Child gender	-.07	-.06	-.66		
Child age	-.25	-.24	-2.47*		
Child IQ	.40	.38	3.86***		
Time 1 Externalizing	.03	.03	.33		
Step 4				.04	1.38
Maternal education	-.00	-.00	-.05		
Child gender	-.07	-.06	-.66		
Child age	-.29	-.27	-2.78**		
Child IQ	.38	.35	3.62***		
Time 1 Externalizing	-.00	-.00	-.02		
Observed behavioural style	-.09	-.08	-.83		
EAS - Activity	.09	.08	.79		
EAS - Shyness	-.16	-.15	-1.50		
Total	$R^2 = .25$	R^2Adj = .18	F = 3.34**		

[a] 1 = boys; 2 = girls

*$p < .05$. **$p < .01$. ***$p < .001$. [t]$p < .10$.

Table 24

Summary of Hierarchical Regression Analysis for Variables Predicting Standardized Achievement Test Scores (N = 100)

Variables	Beta	sr^2	t	R^2 change	F change
Step 1				.02	1.64
Maternal education	.13	.13	1.28		
Step 2				.05	2.53[t]
Maternal education	.14	.14	1.41		
Child gender[a]	.16	.16	1.58		
Child age	.18	.18	1.81[t]		
Step 3				.06	3.26*
Maternal education	.06	.06	.62		
Child gender	.12	.12	1.24		
Child age	.16	.16	1.68[t]		
Child IQ	.26	.24	2.49*		
Time 1 Externalizing	-.01	-.01	-.14		
Step 4				.08	3.03*
Maternal education	.03	.03	.29		
Child gender	.10	.09	.96		
Child age	.16	.15	1.63		
Child IQ	.29	.27	2.85**		
Time 1 Externalizing	-.06	-.05	-.54		
Observed behavioural style	.10	.09	.97		
EAS - Activity	.04	.03	.36		
EAS - Shyness	-.24	-.22	-2.30*		
Total	$R^2 = .21$	R^2Adj = .14	F = 2.95**		

[a] 1 = boys; 2 = girls

*$p < .05$. **$p < .01$. [t]$p < .10$.

.26, $p < .05$), such that children with higher IQ scores tended to receive higher achievement test scores. In the final step, the EAS subscale of shyness produced a main effect ($\beta = -.24, p < .01$). Children who were rated as being very shy tended to have lower scores on the standardized tests of academic achievement. Observational behavioural style, on the other hand, was not a significant predictor of children's test scores.

In summary, both the BSOS and EAS were significant independent predictors of teacher-rated externalizing behaviour problems, which underscores the importance of including both maternal ratings and observational measures in examining children's adjustment during the early years of schooling. Additionally, the EAS subscales made a contribution to the prediction of mother-rated externalizing behaviour, teacher-rated social competence and standardized academic achievement testing scores.

Stability of Child Temperament From Infancy and Preschool Age to School Age

An additional area of interest was whether the maternally rated EAS subscales of activity level, shyness, emotionality and sociability would demonstrate evidence of stability across time. As predicted, based on correlations between the Time 1 and Time 2 variables, it was found that all of the EAS subscales displayed moderate stability over time (see Table 25). Specifically, the shyness subscale at Time 1 was correlated with both the shyness and sociability subscales at Time 2. Shyness at infancy and preschool age was linked with shyness and low sociability at school age. With regards to sociability, it was correlated with the shyness, sociability and activity level subscales at Time 2, indicating that high sociability was related to low shyness, high sociability and high activity level in the early years of school adjustment. High emotionality at Time 1 was

Table 25

Correlation Matrix for the Stability of EAS Subscales from Time 1 (T1) to Time 2 (T2)

	T1			
T2	Activity	Shyness	Sociability	Emotionality
Activity	.48***	-.17*	.29**	.11
Shyness	-.28**	.52***	-.28**	.12
Sociability	.28**	-.23**	.44***	-.02
Emotionality	.08	.01	-.03	.30**

Note. N = 127
*$p < .05$. **$p < .01$. ***$p < .001$.

solely related to high emotionality at Time 2, whereas high activity level was linked with low shyness, high sociability and high activity level. The two variables with the highest stability across time were the EAS subscales of shyness and activity level.

Discussion

This study is one of the first attempts to compare two different temperament methodologies in the prediction of children's behavioural, social and academic functioning during the early years of schooling in an at-risk sample. The current research addressed many of the shortcomings of previous work on children's school adjustment by utilizing a multi-method/multi-rater approach, within a longitudinal design, and employing a comprehensive view of school functioning. These findings provide support for the predictive validity of both observational and maternally rated temperament in relation to children's early school adjustment.

Externalizing Behaviour

With regards to maternal and teacher ratings of externalizing behaviour, the EAS activity subscale emerged as a significant predictor after controlling for the effects of externalizing behaviour during infancy and preschool-age. Externalizing behaviour at Time 1 was a powerful predictor of Time 2 externalizing behaviour, which is not surprising considering the well-established literature on the stability of externalizing behaviour over time (Campbell et al., 2000; Fagot & Leve, 1998; Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998). The results indicate that after taking the stability of problem behaviour into account, children's high activity levels contributed to mothers' and teachers' perceptions of behaviour problems. The fact that the EAS activity subscale predicted both outcomes suggests that the issue of shared rater variance is not

much of a concern. Furthermore, it lends support to the notion that mothers are important, useful and effective informants for their children's temperament. Compared to home observations, which take place over a brief period of time, mother ratings of temperament are based on numerous observations over an extended period of time. It appears that maternal ratings possess strong predictive validity, and should not be dismissed as insignificant.

As expected, maternal ratings were the strongest predictor of maternally rated externalizing behaviour. This finding is in line with Fagot and O'Brien's (1994) work, which demonstrated a link between parental ratings of high activity level on the Toddler Temperament Scale and parental ratings of problem behaviour on the CBCL. The observational measure failed to add significantly to the prediction equation. In terms of teachers' perceptions of children's externalizing behaviour, both maternal ratings and observational behavioural style made significant and unique contributions. The findings provide empirical support for the combined use of both types of measures, and offers insight into the temperamental characteristics that influence later externalizing problems. As predicted, both high activity level and difficult behavioural style were related to school-age behaviour problems. This is consistent with prior research (Caspi, 2000), and indicates that both individual and constellations of temperamental traits possess predictive utility. It is possible that children with these types of overt problematic behavioural styles may be brought to the attention of teachers more often than children who are shy or inhibited, potentially resulting in negative perceptions on behalf of teachers.

One way to understand the association between child temperament and later behaviour problems, is that difficult temperament may serve as a general marker for poor self-regulatory skills. Infant and preschool temperament, therefore, might be useful in predicting which children with early difficulties will continue to show adjustment problems over time. It is relevant to note that not all children with difficult temperaments experience maladjustment and, therefore, the interaction of individual differences and environmental factors may determine whether a child with a negative behavioural style will go on to develop externalizing behaviour problems. Other explanations that link the two constructs are common genetic influence, common biological substrates and the fact that both involve processes of emotional regulation and dysregulation (Lemery, Essex, & Smider, 2002).

Social Competence

In the prediction of teacher's ratings of children's social competence, maternal perception of activity level was an important factor, such that high activity level resulted in poorer social competence. Although observational behavioural style was correlated with social competence, it did not directly contribute to the prediction beyond the effect of activity level. Children who possess high activity levels may have difficulty regulating their attention and concentration, which are essential elements in adjusting to the demands of a classroom. Their work-related behaviours may be poor, given their inability to sustain attention for long periods of time. Additionally, considering the strong relationship between activity level and externalizing behaviour at school age, these children may lack the appropriate skills and resources to be able to engage in prosocial interactions with teachers and peers. Raver (2002) asserted that children's ability to

regulate their behaviour and emotions in prosocial versus antisocial ways influences the building of positive relationships with teachers and peers. Children who are highly active in the classroom may also be disruptive to other students, which could result in peer rejection. As was stated earlier, children who are rejected by their classmates face a host of negative consequences throughout their future development. Although the current research cannot speak to the mechanisms that link activity level with lower social competence, it is nevertheless important to identify the early temperamental characteristics that have an impact on future social functioning. Few studies have examined the link between early temperament and later social competence, so further work in this area is essential. What this study contributes is the knowledge that infant and preschool-age children who are high in activity level may be more likely to experience problem behaviour and poor social competence in the early years of school adjustment.

Academic Achievement

With regards to children's academic achievement, the only temperament variable that demonstrated predictive utility was maternal ratings of shyness. Specifically, children who were considered to be very shy by their mothers in the infancy and preschool years were later found to display lower test scores on standardized achievement measures. This was found after controlling for the effects of IQ, which has a well-established relationship with achievement. One possible explanation is that shy children may be less engaged in the testing materials and may not appear to put forth as much effort as children who are considered to be extroverted. Furthermore, intelligent children who are extremely shy may not be able to communicate their knowledge in a forthcoming

and articulate manner, thus receiving lower scores on the standardized measures of achievement.

In the face of unfamiliar adults or objects, inhibited children tend to be slow to warm up, may fret or cry and may cease to play or to talk (Scarpa et al., 1995). Considering the nature of the standardized testing situation, which involved a new, unfamiliar adult, it is plausible that shy children felt uncomfortable and withdrew from the interaction. Olson, Bates and Kaskie (1992) pointed out that early sociability may influence the child's tendency to cooperate with mental test examiners. Alternatively, children who have long latencies in interacting with others may also be less active in exploring their environment and, consequently, may lack exposure to stimulating and enriching experiences. In particular, inhibited children are reluctant to guess the answer to difficult problems in the classroom, and may get fewer opportunities to participate in discussions and to practice public speaking skills (Martin, 1994). They may also have more difficulty eliciting social support from peers and teachers, which could impact on their ability to get help with challenging tasks and subsequently affect their academic success.

Interestingly, neither observational behavioural style nor maternally rated temperament was a predictor of report card marks. This is in contrast to other research that has found a stronger relationship between temperament and teacher-assigned grades than standardized test scores (Alexander et al., 1993; Martin, 1988). The results may be a reflection of the fact that standardized achievement test scores are more reliant on children's behavioural style and ability to communicate their knowledge than are report card marks. Report card marks represent numerous factors including the child's effort

throughout the year, their attention span, attendance, active engagement in the classroom and homework completion (Alexander et al., 1993). Marks are also more sensitive to the child's ethnicity, gender and economic background (Entwisle & Alexander, 1998). It is possible that temperament may influence marks indirectly, through its impact on the teacher-student relationship. It is evident that difficult temperament is associated with the display of behavioural maladjustment and poor social competence, both of which are relationally based indices of child functioning. Teachers may respond differently to different types of children, and consequently, there may be an issue of "goodness of fit" between the child's behavioural style and the teacher's expectations. As was seen in Table 19, lower report cards marks were correlated with teacher ratings of externalizing behaviour and higher report card marks were correlated with teacher ratings of social competence. It is possible that temperament may be predictive of teacher-child interactions, which in turn may predict teacher-grading practices. Coplan et al. (1999) asserted that temperament characteristics play a role in determining how "teachable" teachers find children to be. Alternatively, a difficult temperament may be linked to low achievement through disruptive behaviour, because it decreases the time that children spend attending to the learning materials as well as to their teacher. Seeing as the current study did not address this directly, future research will be needed in order to shed light on this issue.

Child Gender and Age

Consistent with prior research (Alexander & Entwisle, 1988; Ladd, 1996; Schoen & Nagle, 1994), the findings support the contention that boys have a harder time adjusting to the demands of the school environment. As initially predicted, boys had

more externalizing behaviour problems at home and at school and lower ratings of social competence. Interestingly, child gender did not influence academic performance, regardless of whether it was assessed through standardized achievement tests or report card marks. These findings are in contrast to research demonstrating gender differences in achievement (Coplan et al., 1999). It is possible that gender influences achievement in a gradual and cumulative way, so that its impact is only visible at later points in time. Furthermore, the elevated behavioural and social difficulties that appear in the early grades may eventually interfere with boys' ability to attend to the material being presented in class, which could ultimately lead to boys experiencing poorer academic achievement in the later grades.

Child age was also found to be a significant predictor of several aspects of school adjustment, with older children perceived as displaying more externalizing behaviours in the classroom, lower social competence and lower report card marks. This may be attributable to the fact that older children at Time 1 (i.e., preschoolers) were in higher grades at school-age, and evidently struggled more to meet the social and academic demands of the classroom. There may be a additive effect of problem behaviour over time, such that some children in younger grades are more able to adapt to the expectations of the school setting whereas certain older children have more difficulty with increasing demands to modify their behaviours. These may include expectations regarding work-related skills, the ability to effectively regulate their emotions and to engage with others in a prosocial manner. It is relevant to note, however, that the comparisons between children at different ages were cross-sectional in nature, given that children were not followed as they progressed through the elementary grades.

Stability of Child Temperament

In terms of the stability of temperament, the results provided support for the moderate stability of the four EAS Temperament subscales from infancy and preschool age to early school adjustment (i.e., correlations in the .30 to .50 range). These findings are consistent with those of Katainen, Raikkonen and Keltikangas-Jarvinen (1997), who discovered a low to moderate level of stability from ages 3 to 6 for the EAS subscales of activity, emotionality and sociability. The temperamental constructs showing the highest degree of stability in the current study were shyness and activity. This is congruent with other research conducted by Scarpa et al. (1995) and Guerin and Gottfried (1994), who found significant across-time continuity for inhibited temperament and activity level, respectively. Considering that maternal reports are the most widely used temperament measure, it was important to ascertain the level of stability of maternal perceptions. It is possible, though, that the stability could be due to stability in the mothers' view or expectation of their child's temperament, instead of the consistency of the child's actual behaviour. Additionally, is it unclear how much of the observed stability is accounted for by stability in the environment, such as parenting. In the future, it would be worthwhile for investigators to examine temperament stability by comparing multi-method data, and taking contextual factors into consideration.

Clinical Implications

The period from infancy to preschool is considered to be one of the most critical in development, because many developmental trajectories leading to adaptive or maladaptive outcomes get set into motion during these years (Shaw et al., 1998). As a result, it is important to examine the early precursors of children's school adjustment,

especially considering that child characteristics may be more responsive to intervention prior to school entry. Observed difficult temperament and high activity level were found to be risk factors for poorer school adjustment in the current sample of high-risk families. Multiple stressors tend to exist in families with lower socioeconomic status (Brooks-Gunn et al., 1995; Ceballo & McLoyd, 2002), and the addition of a child's challenging temperament could lead to an exacerbation of family tension and problematic parent-child relationships. Furthermore, children with more difficult temperaments may be less likely to effectively regulate the stresses of the school environment and may, in turn, show a poor fit with the demands of the early classroom (Coplan, Bowker, & Cooper 2003).

Given the predictive power of both temperament methodologies, it is possible that temperament characteristics may be useful for screening infant and preschool-age children. This screening could be conducted as a way to identify children at-risk for future maladjustment during the transition to schooling. At this point in time, routine temperament screenings in the general population have not yet been shown to be of value for prevention. More specifically, the current generation of temperament measures has not demonstrated adequate sensitivity and specificity to identify cases at risk from among a large sample of individuals. In addition, without guidance from a professional, there is the possibility that the information would be misused or misunderstood (Sheeber & McDevitt, 1998). Temperamental screenings have begun to be incorporated, though, in temperament guidance programs within pediatric practices (see Cameron, Rice, Hansen, & Rosen, 1994). These programs include temperamental assessment and counseling, in order for pediatricians to provide parents with greater knowledge about their child's

temperament profile and the parenting challenges that they can expect over the first year of life. Although this concept makes intuitive sense and there is evidence to support the program's cost-effectiveness and consumer satisfaction, it has not become a standard component of pediatric practice.

For children who are identified as experiencing school problems, temperament assessment could become a regular part of educational screenings. These assessments would ideally provide information to aid teachers in planning programs that enhance children's school performance and facilitate the tailoring of the curriculum to meet individual needs. Additionally, with knowledge of their temperamental characteristics, children could be taught to increase their self-awareness regarding their behavioural style and to develop strategies for adapting to situational demands. These skills will likely become particularly important as children progress through school and take on increasing responsibility for their own behaviour.

Martin (1994) asserted that school psychologists tend to focus their assessments on cognitive functioning, academic achievement and behaviour problems. This research has demonstrated that the developmental paths of children are determined to an important extent by variations in behavioural style characteristics within the normal range. The two measures highlighted in this body of work would be appropriate instruments to use in identifying children's temperamental characteristics. With this information, along with the typical characteristics that are assessed by school psychologists, predictions about children's future behaviour can be made with greater accuracy and decisions about the fit between the child and the schooling environment can be enhanced.

For instance, extremely shy children may need extra encouragement and opportunities to get involved in class discussions, given their propensity to withdraw from certain situations. These children may easily "slip through the cracks" due to their quiet and unobtrusive nature, yet they may suffer from low self-esteem and not achieve their full potential. Considering that inhibited children have difficulty adjusting to novel situations, the transition into formal schooling may be highly stressful for them. Consequently, identifying children with this kind of predisposition may provide useful information for caregivers and teachers as to what they may expect during the initial stages of this transition and the need for additional support. A further implication of this research for the practice of psychology in schools is that there has likely been too much emphasis placed on identifying children with a clinically significant attention deficit hyperactivity disorder, to the exclusion of children with subclinical levels of high activity. What is clear from the present data is that high activity level has important negative influences on children's behaviour and social competence, even within a non-clinical sample.

Limitations and Summary

In the current study, an important shortcoming was the relatively small sample size, which imposed restrictions on the number of predictors that could be included in the analyses. The ideal way to test the hypotheses would have been through a path analysis, which would have allowed for firmer conclusions to be drawn regarding how temperament works to influence school adjustment. Since this was not possible, any interpretations based on the findings must still be considered tentative. Replication with a larger sample size is necessary to confirm the present findings.

In summary, both the observational and maternally rated measures significantly contributed to the prediction of children's early school adjustment. Overall, maternal ratings appeared to be the strongest predictor, given their impact on four out of five outcome variables. These findings assist in demonstrating that maternal ratings are not simply a projection of their own personality or pathology, but offer valid and useful information regarding children's functioning. Given that the observational measure uniquely predicted teacher ratings of externalizing behaviour, this study supports the notion of utilizing a multi-method/multi-rater approach in order to enhance prediction and our understanding of the temperamental characteristics that may impact on children's subsequent developmental outcomes.

An important next step in this research domain would be to examine the types of factors that mediate the relationship between infant and preschool temperament and later school adjustment. Hypothesized variables include child-rearing practices, teacher-child relationships and teachers' perception of pupils' teachability. If there is evidence of a poor fit between child characteristics and environmental expectations, then assisting parents and teachers in adapting their approaches to children's individual behavioural styles may result in healthier outcomes for children, as well as more satisfying parenting and teacher experiences.

General Discussion

It is important to consider some of the general limitations of the current research. First, the coding of children's behavioural style was based on a small sample of behaviour (including three standardized situations, totaling 11 minutes), which may not be representative of the relevant scope of a child's behavioural repertoire. Although there was evidence for behavioural consistency across the three conditions, the range of behaviours that could be observed was restricted. Furthermore, the tasks that were utilized did not lend themselves to the assessment of other temperamental characteristics, such as behavioural inhibition, task persistence and distractibility.

Second, the videotaped interactions took place at one point in time. In general, temperament is considered to be a stable trait that manifests itself in different situations across time. Given that children were only observed on one day, it is possible that the observational measure may have picked up on factors other than temperament. For instance, children who were feeling tired or sick on that particular day may have been perceived as exhibiting a "difficult" temperament, whereas repeated measures of the same child across time would have shown a different picture. It is also plausible that children were reacting to the presence of the observer and would have behaved in a different manner if only the mother had been present. Even though an effort was made to construct the free play sessions to be as naturalistic as possible, being videotaped under specific constraints is still an artificial situation and may not have resembled the type of interactions that normally occurred in the home. Considering that the observational technique may not allow for valid inferences about children's temperament, it is important to consider alternative methodologies. Specifically, it might have been more

informative to have multiple observations of children's behaviour aggregated over time. Coplan et al. (2003) described a method of conducting behavioural observations, to assess children's general styles of play behaviour. Children's behaviours was observed and coded over a four-week period. Each child was observed for between 4 and 5 minutes per day, on at least four different occasions. In sum, each child was observed for 20 minutes, which yielded 120 coding intervals per child. This approach reduces potential error due to variables such as the child reacting to the presence of an observer or being sick on a particular day.

In light of the fact that this project was restricted in its available time and monetary resources, this research demonstrates that the BSOS is a practical, low-cost alternative that can be adapted to various situations (i.e.,, home environment, laboratory). It is relevant to point out that this study attempted to overcome some important shortcoming of other observational techniques, by implementing semi-structured conditions and choosing tasks that elicit distress in the child and can be used with a wide age range, spanning from infancy to preschool-age.

Although maternal ratings have been widely criticized for their potential biases in evaluating children's temperament, this investigation provided strong validation for the role of maternal ratings in predicting children's concurrent and longitudinal functioning. Maternal ratings were stronger predictors of longitudinal functioning than the observationally-based measure, which indicates that mother's early perceptions of their child's temperament were the most important indicators of their future school adjustment. Comparing the two measures in Study 2 provided a stronger test of their predictive abilities, given the longitudinal nature of the design. In Study 1, the variables were

collected contemporaneously and, consequently, the conclusions drawn need to be considered in light of that fact. Overall, the observational ratings were empirically useful as a predictor of concurrent child functioning and parenting stress, and longitudinal ratings of externalizing behaviour, and they provided information that was distinct from maternal report. Still, they did not possess the same predictive power as maternal ratings. Considering that it is impossible for others to understand children in the complex way that a parent does, observers will always be limited in their ability to fully capture the range of children's behavioural style. Maternal ratings are based on numerous observations of children, in different contexts, over an extended period of time.

One possibility for future research would be to include repeated observations of children over the infancy and preschool years, which could then be averaged and contrasted with maternal ratings in the prediction of developmental outcomes. Given that the behavioural style observations were conducted over such a limited time frame in the present study, it may have been unrealistic to assume that they would be strong predictors of school adjustment. Nevertheless, it is important to point out that the observational ratings were significantly correlated with the ratings of externalizing behaviour from both mother and teacher, and the teacher ratings of social competence. Few studies have used both instruments in conjunction in order to ascertain the relationship between temperament and concurrent and longitudinal child functioning and, therefore, future replication studies are necessary.

Even though the focus of this study was not on parenting behaviour, it is important to point out that temperament does not operate in a vacuum. Research has shown that difficult temperament is a function of both individual child traits and

challenging parent-child relationships. For instance, infant negative emotionality and activity level may influence caregiver's perceptions of their infant, which in turn, impacts on their parenting practices and the subsequent development of child behaviour problems (Shaw et al., 1998; Watson & Kowalski, 1999). Additionally, the development of problematic behaviour may depend on the child's own vulnerability to parenting (Belsky et al., 1998; Calkins, 2002). For example, children who are high in negative emotionality are thought to be more susceptible to hostile and maladaptive parenting than easy children. Future research should address the interaction of temperament and parenting in the prediction of both concurrent and longitudinal child adjustment, as this area has not been fully investigated. Furthermore, studies examining this issue should employ a multi-method, multi-rater approach in order to best identify the temperament-parenting combinations that promote successful adaptation.

Concluding Comments

In conclusion, the accurate measurement of temperament is crucial in order to understand and appreciate the uniqueness of each child. Results from the current study reinforce the notion that children's behavioural style plays an important role in influencing their concurrent and longitudinal functioning, and that temperament needs to be considered in both research and clinical contexts. There is no "one-size-fits-all" model when dealing with children, be it as a parent or as a teacher, and therefore any efforts to promote greater knowledge about and respect for individual differences will hopefully lead to a better fit between children's temperamental characteristics and the environments that help to shape their development.

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Appendix A

Behaviour Style Observational System (BSOS)

Behavioural Style Observational System

Tape No:_____ Age of Child: _____ Cohort: _____
Subject No:_____ Coder: _____ Date: _____

Free Play

1) Mood (Child) – rate child's mood with 1 indicated by frowning, anger, 2 indicated by neutral mood and lack of expressiveness and 3 indicated by smiling, laughing, positive vocalizations

1 2 3

2) Activity Level - rate child's activity level with 1 being low and 3 being high ->1 would indicate a child who sits for entire free play without getting up, 2 is a child who gets up once or twice and 3 is a child who gets up three or more times

1 2 3

3) Reactivity – rate child's emotional reactivity with 1 being low reactivity and 3 being high ->1 would indicate an even-tempered child, 2 would indicate a somewhat reactive child and 3 would be a highly reactive child

1 2 3

4) Approach to toys – rate child's approach to toys with 1 being withdrawn from play and 3 being actively engaged in play ->1 would indicate a child who resists playing with toys, 2 would indicate a child who takes some initiative and 3 would indicate a child who actively seeks out toys to play with

1 2 3

5) Mood Regularity – rate child's mood regularity with 1 being consistent mood, 2 being fluctuates once or twice and 3 being fluctuates three or more times

1 2 3

Interference Task

1) Adaptability – rate child's initial adaptability to interference task with 1 being inflexible and 3 being very flexible **(FIRST 30 SEC)**
->1 would indicate a child who becomes quite upset at beginning of interference, 2 would indicate a child who becomes fussy and 3 would indicate a child who moves easily into interference

1 2 3

2) Mood (Child) – rate child's mood with 1 indicated by frowning, anger, 2 indicated by neutral mood and lack of expressiveness and 3 indicated by smiling, laughing, positive vocalizations

1 2 3

3) Activity Level - rate child's activity level with 1 being low and 3 being high
->1 would indicate a child who sits for entire interference without getting up, 2 is a child who gets up once or twice and 3 is a child who gets up three or more times

1 2 3

4) Reactivity – rate child's emotional reactivity with 1 being low reactivity and 3 being high
->1 would indicate an even-tempered child, 2 would indicate a somewhat reactive child and 3 would be a highly reactive child

1 2 3

5) Approach to toys – rate child's approach to toys with 1 being withdrawn from play and 3 being actively engaged in play
->1 would indicate a child who resists playing with toys, 2 would indicate a child who takes some initiative and 3 would indicate a child who actively seeks out toys to play with

1 2 3

6) Mood Regularity – rate child's mood regularity with 1 being consistent mood, 2 being fluctuates once or twice and 3 being fluctuates three or more times

1 2 3

Free Play

1) Mood (Child) – rate child's mood with 1 indicated by frowning, anger, 2 indicated by neutral mood and lack of expressiveness and 3 indicated by smiling, laughing, positive vocalizations

1 2 3

2) Activity Level - rate child's activity level with 1 being low and 3 being high
->1 would indicate a child who sits for entire free play without getting up, 2 is a child who gets up once or twice and 3 is a child who gets up three or more times

1 2 3

3) Reactivity – rate child's emotional reactivity with 1 being low reactivity and 3 being high
->1 would indicate an even-tempered child, 2 would indicate a somewhat reactive child and 3 would be a highly reactive child

1 2 3

4) Approach to toys – rate child's approach to toys with 1 being withdrawn from play and 3 being actively engaged in play
->1 would indicate a child who resists playing with toys, 2 would indicate a child who takes some initiative and 3 would indicate a child who actively seeks out toys to play with

1 2 3

5) Mood Regularity – rate child's mood regularity with 1 being consistent mood, 2 being fluctuates once or twice and 3 being fluctuates three or more times

1 2 3

Behavioural Style Observational System Manual

Free Play – 4 Minutes

Coding will begin when mother and child start interacting and will continue until the timer sounds or until the experimenter stops the interaction. Coding will stop at the end of the 4 minutes regardless of whether the mother and child continue to interact. The counter display on the screen will be used to determine the length of time and will be set by the principal coder.

1) Mood (Child)
- 1=negative ie. whining, frowning, screeching, tantrums, crying
- 2=neutral ie. neither positive nor negative, lack of expressiveness
- 3=positive ie. laughing, positive vocalizations, smiling
- for majority of time (more than 2 minutes)

2) Activity Level
- refers to how active child is during free play on mat
- getting up refers to getting toy, moving to change sitting position, moving closer or farther away from mother
- does not include child sliding across mat to move to other side without getting up
- for child 1-2 years old, if crawling off mat considered getting up
- 1=child who sits for entire free play without getting up
- 2=child who gets up once or twice
- 3=child who gets up three or more times

3) Vocal Reactivity
- refers to child's emotional reactivity but not in response to any specific event
- examining whether child gets upset or frustrated easily
- 1=low reactivity, even-tempered child, very calm, not bothered by little things
- 2=somewhat reactive at times but calms down on own ->more than one occurrence
- 3=high reactivity, expressed by loud verbalizations, crying, whining, often cannot calm down on own

4) Approach to toys
- refers to child's approach to toys
- 1=child who resists playing with toys, sulks, wants to be left alone
- 2=child who takes some initiative to play but mostly follows mom's lead ie. mother reading book
- 3=child who actively seeks out toys to play with, takes initiative to gets toys, starts games
- for more than 2 minutes

5) Mood Regularity
- refers to how consistent child's mood is across free play
- 1=consistent ie. no fluctuation for majority of time
- 2=fluctuates once or twice ie. fluctuates from positive to negative, or negative to positive
- 3=fluctuates three or more times ie. fluctuates back and forth from positive to negative or negative to positive

Interference Task – 3 Minutes

Coding begins when timer goes off to signal the beginning of the interference task and ends when timer sounds to signal the end of the interference task. The counter display on the screen will be used to determine the length of time and will be set by the principal coder.

1) Adaptability
- refers to child's initial adaptation to interference task (first 30 seconds)
- 1=child who becomes quite upset at beginning of interference, whines, cries
- 2=child who becomes fussy, tries to get mom's attention, does not try to play with toys immediately
- 3=child who moves easily into interference without making fuss, starts to play with toys right away

2) Mood
- 1=negative ie. does not have to be as pronounced as in free play, can include frowning, whining
- 2=neutral ie. lack of vocalizations
- 3=positive ie. some positive vocalizations (more than one)

3) Approach to Toys
- 2=picking up objects but not as engaged with them
- 3=showing enthusiasm, playing game, building something
- for children 1-3, if showing enthusiasm but not actively playing still 3

- for all other codes under interference task refer to free play definitions

Appendix B

EAS Temperament Survey

Questionnaire sur mon enfant

Rempli par: Mère Père **No. Identification:**

Évalue chaque énoncé en te servant de l'échelle ci-dessous pour nous indiquer comment ton enfant est habituellement.

1	Pas du tout	3	Modérément	4	Passablement
2	Un peu			5	Énormément

1.	Mon enfant a tendance à être gêné(e).	1	2	3	4	*5*
2.	Mon enfant pleure facilement.	1	2	3	4	*5*
3.	Mon enfant aime être avec des gens.	1	2	3	4	*5*
4.	Mon enfant est toujours "sur une patte", il n'arrête jamais.	1	2	3	4	*5*
5.	Mon enfant préfère jouer avec d'autres plutôt que tout(e) seul(e).	1	2	3	4	*5*
6.	Mon enfant a tendance à être quelque peu émotif.	1	2	3	4	*5*
7.	Quand mon enfant se déplace, il le fait habituellement avec lenteur.	1	2	3	4	*5*
8.	Mon enfant se fait des ami(e)s facilement.	1	2	3	4	*5*
9.	Mon enfant est débordant(e) d'énergie dès qu'il se réveille le matin.	1	2	3	4	*5*
10.	Mon enfant trouve que les personnes sont plus stimulantes que n'importe quoi d'autre.	1	2	3	4	*5*
11.	Mon enfant s'en fait facilement et pleure souvent.	1	2	3	4	*5*
12.	Mon enfant est très sociable.	1	2	3	4	*5*
13.	Mon enfant a beaucoup d'énergie.	1	2	3	4	*5*
14.	Mon enfant prend beaucoup de temps pour être à l'aise avec des étrangers.	1	2	3	4	*5*
15.	Mon enfant est facilement bouleversé(e).	1	2	3	4	*5*
16.	Mon enfant est plutôt du genre solitaire.	1	2	3	4	*5*
17.	Mon enfant préfère les jeux tranquilles, inactifs plutôt que les jeux plus actifs.	1	2	3	4	*5*
18.	Lorsque mon enfant est seul(e), il-elle se sent isolée.	1	2	3	4	*5*
19.	Mon enfant réagit intensément lorsqu'il-elle est contrarié(e).	1	2	3	4	*5*
20.	Mon enfant est très cordial(e), amical(e) avec les étrangers.	1	2	3	4	*5*

Appendix C

French Translation of the Child Behavior Checklist – Parent Version

CBCL-4/18

Date (A/M/J): _____

Rempli par: Mère Père

Questionnaire de Comportement pour Parents

Voici une liste d'énoncés décrivant les enfants. En vous basant sur le comportement de votre enfant au cours des 6 derniers mois, veuillez encercler:

2 --> si c'est très vrai ou souvent vrai pour votre enfant
1 --> si c'est quelquefois vrai pour votre enfant
0 --> si ce n'est pas vrai pour votre enfant

Assurez-vous de répondre à tous les énoncés au meilleur de votre connaissance, même si certains ne semblent pas s'appliquer à votre enfant.

1. Agit trop jeune pour son âge 0 1 2
2. Allergie 0 1 2
   (décrire)_____
   _____
3. Argumente beaucoup 0 1 2
4. Asthme 0 1 2
5. Se comporte comme l'autre sexe ... 0 1 2
6. Fait caca en dehors des toilettes 0 1 2
7. Se vante 0 1 2
8. Ne peut se concentrer ou porter attention longtemps 0 1 2
9. Ne peut s'arrêter de penser à certaines choses, obsessions 0 1 2
   (décrire)_____
   _____
10. Ne peut s'asseoir tranquille, est agité(e) ou hyperactif(ve) 0 1 2
11. S'accroche aux adultes, ou est trop dépendant(e) 0 1 2
12. Se plaint de solitude 0 1 2
13. Est confus(e) ou semble être dans la brume 0 1 2
14. Pleure beaucoup 0 1 2
15. Est cruel(le) envers les animaux 0 1 2
16. Est cruel(le), brutal(e) ou mesquin(e) envers les autres 0 1 2
17. Rêvasse ou se perd dans ses pensées 0 1 2
18. Se fait volontairement mal ou tentative de suicide 0 1 2
19. Demande beaucoup d'attention 0 1 2
20. Détruit ses propres objets 0 1 2
21. Détruit les objets appartenant à sa famille ou aux autres enfants 0 1 2
22. Est désobéissant(e) à la maison 0 1 2
23. Est désobéissant(e) à l'école 0 1 2
24. Ne mange pas bien 0 1 2
25. Ne s'entend pas avec les autres enfants 0 1 2
26. Ne semble pas se sentir coupable après une mauvaise action 0 1 2
27. Facilement jaloux(se) 0 1 2
28. Mange ou boit des choses qui ne sont pas comestibles 0 1 2
    (décrire)_____
    _____
29. Craint certains animaux, situations ou places autres que l'école 0 1 2
    (décrire)_____
    _____
30. Craint d'aller à l'école 0 1 2

31. Craint de penser ou faire quelque chose de mal 0 1 2

32. Sent qu'il/elle doit être parfait(e) ... 0 1 2

33. Sent ou se plaint que personne ne l'aime 0 1 2

34. Pense que les autres lui en veulent 0 1 2

35. Se sent inférieur(e) ou bon(ne) à rien 0 1 2

36. Se blesse souvent, a souvent des accidents 0 1 2

37. Se bataille souvent 0 1 2

38. Est fréquemment taquiné(e) 0 1 2

39. Se tient avec des enfants qui attirent le trouble 0 1 2

40. Entend des choses imaginaires 0 1 2
(décrire)_____
_____

41. Est impulsif(ve) ou agit sans réfléchir 0 1 2
(décrire)_____
_____

42. Aime être seul(e) 0 1 2

43. Ment ou triche 0 1 2

44. Se ronge les ongles 0 1 2

45. Nerveux(se), tendu(e) 0 1 2

46. Mouvements nerveux ou tics 0 1 2
(décrire)_____
_____

47. Cauchemars 0 1 2

48. N'est pas aimé(e) des autres enfants 0 1 2

49. Constipé(e) 0 1 2

50. Très craintif(ve) ou anxieux(se) 0 1 2

51. A des étourdissements 0 1 2

52. Se sent trop coupable 0 1 2

53. Mange trop 0 1 2

54. Est toujours fatigué(e) 0 1 2

55. Est trop gros(se) 0 1 2

56. Problèmes physiques sans cause médicale apparente 0 1 2

a. fièvre ou douleurs 0 1 2
b. maux de tête 0 1 2
c. nausées, se sent malade 0 1 2
d. problèmes aux yeux 0 1 2
(décrire)_____
_____
e. éruption, rougeurs ou autres problèmes de peau 0 1 2
f. troubles d'estomac, crampes 0 1 2
g. vomissements 0 1 2
h. autres 0 1 2
(décrire)_____
_____

57. Attaque physiquement les gens 0 1 2

58. Se gratte le nez, la peau ou d'autres parties du corps 0 1 2

59. Joue avec ses organes sexuels en public 0 1 2

60. Joue trop avec ses organes sexuels 0 1 2

61. Fait mal ses travaux scolaires 0 1 2

62. Est maladroit(e) ou mal coordonné(e) 0 1 2

63. Préfère jouer avec des enfants plus vieux 0 1 2

64. Préfère jouer avec des enfants plus jeunes 0 1 2

65. Refuse de parler 0 1 2

66. Répète souvent certains gestes, compulsions 0 1 2
(décrire)_____
_____

67. Se sauve de la maison 0 1 2

68. Hurle ou crie beaucoup 0 1 2

69. Renfermé(e), garde les choses pour lui/elle 0 1 2

70. Voit des choses imaginaires 0 1 2
(décrire)_____
_____

71. Centré(e) sur lui/elle même ou facilement embarassé(e) 0 1 2

72. Déclenche des feux 0 1 2

73. A des problèmes sexuels 0 1 2
(décrire)_____

74. Fait le "clown" ou se pavane 0 1 2

75. Timide 0 1 2

76. Dort moins que les autres enfants 0 1 2

77. Dort moins que les autres enfants durant le jour et la nuit 0 1 2
(décrire)_____
_____

78. Joue avec ses excréments 0 1 2

79. Problème de langage 0 1 2
(décrire)_____
_____

80. Regard vague, dans le vide 0 1 2

81. Vole à la maison 0 1 2

82. Vole à l'extérieur de la maison 0 1 2

83. Entrepose des choses dont il/elle n'a pas besoin 0 1 2
(décrire)_____
_____

84. Comportements bizarres 0 1 2
(décrire)_____
_____

85. Idées étranges 0 1 2
(décrire)_____
_____

86. Irritable, entêté(e), maussade 0 1 2

87. Change soudainement d'humeur ... 0 1 2

88. Boude beaucoup 0 1 2

89. Soupçonneux(se), méfiant(e) 0 1 2

90. Grossier(e) 0 1 2

91. Parle de se tuer 0 1 2

92. Parle ou marche durant son sommeil décrire)_____ 0 1 2
_____

93. Parle trop 0 1 2

94. Agace beaucoup 0 1 2

95. Accès de colère, des crises, ou s'emporte facilement 0 1 2

96. Pense trop au sexe 0 1 2

97. Menace les gens 0 1 2

98. Suce son pouce 0 1 2

99. Trop préoccupé(e) par l'ordre et la propreté 0 1 2

100. Trouble lié au sommeil 0 1 2
(décrire)_____
_____

101. Fait l'école buissonnière, vagabonde 0 1 2

102. N'est pas actif(ve), a des mouvements lents, manque d'énergie 0 1 2

103. Triste, malheureux(se) ou depressif(ve) 0 1 2

104. Extrêmement bruyant(e) 0 1 2

105. Boit de l'alcool ou prend de la drogue 0 1 2
(décrire)_____
_____

106. Vandalisme (tendance à détruire) .. 0 1 2

107. Se mouille durant le jour 0 1 2

108. Mouille son lit 0 1 2

109. Pleurniche, gémit 0 1 2

110. Souhaite être de l'autre sexe 0 1 2

111. Se retire, n'aime pas s'impliquer avec les autres 0 1 2

112. S'inquiète 0 1 2

113. S'il vous plaît, écrire les problèmes que votre enfant a et qui ne sont pas énumérés plus haut.

_____ 0 1 2

_____ 0 1 2

_____ 0 1 2

114. Avez-vous des inquiétudes au sujet du développement de votre enfant, que ce soit sur le plan de l'école, de son comportement, de ses relations avec sa famille et ses amis, etc.?

Assurez-vous d'avoir répondu à tous les items. Merci de votre collaboration.

Appendix D

Ratings of Child Behavior During Testing

Ratings of Children's Behaviour During Testing

The examiner will rate children's behaviour during administration of the intelligence scale by circling the appropriate number on the scale below. The ratings should be made on completion of the test and be based solely on the examiner's observations during test administration. The examiner should refer to her summaries of children's test behaviour for assistance in making the ratings.

1-Never.....2-Occasionally.....3-Sometimes.....4-Frequently.....5-Always

1. The child requires encouragement from examiner to initiate task.	1 2 3 4 5
2. The child seems to derive intrinsic pleasure from completing the tasks.	1 2 3 4 5
3. The child requires encouragement from the examiner to persist on tasks.	1 2 3 4 5
4. The child appears nervous/anxious during testing.	1 2 3 4 5
5. The child appears confident in his/her competence or ability to solve tasks.	1 2 3 4 5
6. The child demonstrates flexibility/adaptability in his/her problem-solving approaches.	1 2 3 4 5
7. The child appears relaxed during testing.	1 2 3 4 5
8. The child is responsive to the examiner's praise.	1 2 3 4 5
9. The child respects the limits placed upon his/her behaviour by the examiner.	1 2 3 4 5
10. The child complies with the examiner's directives.	1 2 3 4 5
11. The child appears withdrawn.	1 2 3 4 5
12. The child shows a reflective (as opposed to impulsive) style of responding to items.	1 2 3 4 5

13. Task directions need to be repeated.	1	2	3	4	5
14. The child relies on trial and error to solve tasks.	1	2	3	4	5
15. The child benefits from instruction on difficult items.	1	2	3	4	5
16. The child makes impulsive/careless errors in completing the tasks.	1	2	3	4	5
17. The child demonstrates awareness of his/her errors.	1	2	3	4	5
18. The child demonstrates a willingness to compromise during interactions with the examiner.	1	2	3	4	5
19. The child acknowledges difficulties in completing some tasks.	1	2	3	4	5
20. It is necessary for the examiner to place firm limits on the child's behaviour during testing.	1	2	3	4	5
21. The child shows good concentration/focused attention in completing tasks.	1	2	3	4	5
22. The child is persistent in solving tasks.	1	2	3	4	5
23. The child expresses frustration in developmentally inappropriate/disruptive ways (e.g., throwing test materials, making loud sounds, covering the eyes).	1	2	3	4	5
24. The child is organized in his/her approach to solving tasks.	1	2	3	4	5

Appendix E

French Translation of the Parenting Stress Inventory

Rempli par: **Mère** **Père**

ISP (version abrégée)
(Abidin, 1986)

Directives:

Pour ce questionnaire, nous vous demandons d'encercler la réponse qui décrit le mieux vos sentiments. Il se peut que le choix de réponse ne décrive par exactement comment vous vous sentez. Dans ce cas, encerclez la réponse qui s'approche le plus de votre sentiment réel. VOTRE PREMIÈRE RÉACTION À CHAQUE QUESTION DEVRAIT ÊTRE VOTRE RÉPONSE.

Veuillez écrire à quel point vous êtes en accord ou en désaccord avec chaque énoncé en encerclant le chiffre qui correspond à la meilleure réponse pour vous selon le choix suivant:

1 = Très d'accord **2** = Parfois d'accord **3** = Modérément d'accord

4 = Parfois en désaccord **5** = Très en désaccord

Exemple: 1 2 3 4 5 : J'aime aller au cinéma (Si vous aimez parfois aller au cinéma, vous devriez alors encercler le "2").

1.	J'ai souvent le sentiment que je ne peux pas très bien faire face aux choses.	1	2	3	4	5
2.	Je me trouve à consacrer une plus grande partie de ma vie à combler les besoins de mon enfant que je ne m'y attendais.	1	2	3	4	5
3.	Je me sens prisonnier(ère) de mes responsabilités de parent.	1	2	3	4	5
4.	Depuis que j'ai cet enfant, je n'arrive pas à faire des choses nouvelles et différentes.	1	2	3	4	5
5.	Depuis que j'ai cet enfant, je sens que je ne suis presque jamais capable de faire des choses que j'aime.	1	2	3	4	5
6.	Je ne suis pas content(e) du dernier article de vêtement que je me suis acheté.	1	2	3	4	5
7.	Il y a plusieurs choses qui me dérangent au niveau de la vie.	1	2	3	4	5
8.	Avoir un enfant m'a causé plus de problèmes que je n'avais prévu au niveau de ma relation avec mon époux/épouse (ami/amie).	1	2	3	4	5
9.	Je me sens seul(e), sans ami(e)s.	1	2	3	4	5
10.	Lorsque je vais à un "party", je ne m'attends généralement pas à avoir du plaisir.	1	2	3	4	5
11.	Je ne suis pas aussi intéressé(e) aux autres personnes que je ne l'étais avant.	1	2	3	4	5
12.	Je n'aime pas les choses que j'aimais auparavant.	1	2	3	4	5
13.	Mon enfant fait rarement des choses pour moi qui me font sentir bien.	1	2	3	4	5

14. Parfois, je sens que mon enfant ne m'aime pas et qu'il ne veut pas être près de moi. 1 2 3 4 5

15. Mon enfant me sourit beaucoup moins que je ne m'y attendais. 1 2 3 4 5

16. Lorsque je fais des choses pour mon enfant, j'ai le sentiment que mes efforts ne sont pas beaucoup appréciés. 1 2 3 4 5

17. Lorsqu'il joue, mon enfant ne rit pas. 1 2 3 4 5

18. Mon enfant ne semble pas apprendre aussi vite que la plupart des enfants. 1 2 3 4 5

19. Mon enfant ne semble pas sourire autant que la plupart des enfants. 1 2 3 4 5

20. Mon enfant est incapable d'en faire autant que je m'y attendais. 1 2 3 4 5

21. Il est très difficile pour mon enfant de s'habituer à de nouvelles choses et cela lui prend beaucoup de temps. 1 2 3 4 5

22. Je sens que:
1 = je ne suis pas un bon parent
2 = je suis une personne qui a de la difficulté à être parent
3 = je suis un parent qui se situe dans la moyenne
4 = je suis un meilleur parent que la moyenne
5 = je suis un très bon parent

23. Je m'attendais à avoir plus de sentiments chaleureux envers mon enfant que je n'en ai présentement et cela me dérange. 1 2 3 4 5

24. Mon enfant fait parfois des choses qui me dérangent juste pour être méchant(e). 1 2 3 4 5

25. Mon enfant semble pleurer davantage ou être plus facilement irritable que la majorité des enfants. 1 2 3 4 5

26. Mon enfant se réveille généralement de mauvaise humeur. 1 2 3 4 5

27. J'ai le sentiment que mon enfant a beaucoup de sautes d'humeur. 1 2 3 4 5

28. Mon enfant fait certaines choses qui me dérangent beaucoup. 1 2 3 4 5

29. Mon enfant réagit fortement lorsque quelque chose qu'il n'aime pas se produit. 1 2 3 4 5

30. Mon enfant devient facilement perturbé(e) face à la moindre petite chose. 1 2 3 4

31. La routine de sommeil et des repas de mon enfant a été beaucoup plus difficile à établir que j ne m'y attendais. 1 2 3 4 5

32. Je trouve que faire en sorte que mon enfant fasse quelque chose ou arrête de faire quelque chose est:

1 = beaucoup plus difficile que je ne m'y attendais
2 = un peu plus difficile que je ne m'y attendais
3 = à peu près aussi difficile que je ne m'y attendais
4 = un peu plus facile que je ne m'y attendais

5 = beaucoup plus facile que je ne m'y attendais

33. Pensez attentivement et comptez le nombre de choses que votre enfant fait qui vous dérangent (p.ex.: il(elle) perd du temps, refuse d'écouter, est hyperactif(ve), pleure, interrompt, se bat, se plaint etc.). Encerclez la réponse appropriée.

1 = 1-3 **2** = 4-5 **3** = 6-7 **4** = 8-9 **5** = 10 et +

34.	Mon enfant fait des choses qui m'agacent beaucoup.	1	2	3	4	5
35.	Il s'est avéré(e) que mon enfant est un plus gros problème que ce à quoi je m'attendais.	1	2	3	4	5
36.	Mon enfant fait plus de demandes que la plupart des autres enfants.	1	2	3	4	5

MERCI

Appendix F

French Translation of the SCL-90

SCL-90

Voici une liste de problèmes et de plaintes que les gens formulent de temps à autre. Nous te demandons de lire chacune de ces plaintes attentivement et de nous indiquer, par le numéro approprié, la réponse qui décrit le mieux À QUEL POINT CE PROBLÈME T'A DÉRANGÉ OU AFFLIGÉ AU COURS DES SEPT (7) DERNIERS JOURS, AUJOURD'HUI INCLUS.

0 Pas du tout	1 Un peu	2 Modérément	3 Passablement	4 Énormément

EXEMPLE: À QUEL POINT AS-TU ÉTÉ DÉRANGÉ(E) PAR ...

des maux de dos 0 1 2 3 4

AU COURS DES 7 DERNIERS JOURS, À QUEL POINT AS-TU ÉTÉ DÉRANGÉ(E) PAR ...

1.	des maux de tête?	0	1	2	3
2.	de la nervosité ou des tremblements internes?	0	1	2	3
3.	des pensées désagréables qui revenaient sans cesse?	0	1	2	3
4.	des évanouissements ou des étourdissements?	0	1	2	3
5.	une perte de l'intérêt ou du plaisir sexuel?	0	1	2	3
6.	le fait d'être porté(e) à critiquer les autres?	0	1	2	3
7.	l'idée que quelqu'un d'autre contrôle tes pensées?	0	1	2	3
8.	le sentiment que les autres sont surtout à blâmer pour tes problèmes?	0	1	2	3
9.	des difficultés à te rappeler quelque chose?	0	1	2	3
10.	des inquiétudes à propos de la malpropreté ou de la négligence?	0	1	2	3
11.	le fait d'être facilement agacé(e) ou irrité(e)?	0	1	2	3
12.	des douleurs au coeur ou à la poitrine?	0	1	2	3
13.	la peur des espaces ouverts ou d'être sur la rue?	0	1	2	3
14.	la sentiment de manquer d'énergie ou d'être au ralenti?	0	1	2	3
15.	des pensées d'en finir avec la vie?	0	1	2	3

16.	le fait d'entendre des voix que les autres n'entendent pas?	0	1	2	3
17.	des tremblements?	0	1	2	3
18.	le sentiment que tu ne peux pas te fier à la plupart des gens?	0	1	2	3
19.	le manque d'appétit?	0	1	2	3
20.	le fait de pleurer facilement?	0	1	2	3
21.	le fait d'être gêné(e) ou mal à l'aise avec des personnes du sexe opposé?	0	1	2	3
22.	le sentiment d'être pris(e) au piège ou immobilisé(e)?	0	1	2	3
23.	des peurs soudaines sans raison?	0	1	2	3
24.	des accès de colère que tu ne pouvais pas contrôler?	0	1	2	3
25.	la peur de sortir seul(e) de la maison?	0	1	2	3
26.	le fait de te blâmer toi-même pour des choses?	0	1	2	3
27.	des douleurs dans le bas du dos?	0	1	2	3
28.	le sentiment de ne plus avancer dans ce que tu fais?	0	1	2	3
29.	le sentiment d'être seul(e)?	0	1	2	3
30.	le fait d'avoir le cafard, de te sentir triste?	0	1	2	3
31.	le fait de trop t'inquiéter à propos de petits rien, de détails?	0	1	2	3
32.	un manque total d'intérêt dans tout?	0	1	2	3
33.	des sentiments de crainte, de peur?	0	1	2	3
34.	le fait que tes sentiments sont trop facilement blessés?	0	1	2	3
35.	le fait que les autres sont au courant de tes pensées intimes?	0	1	2	3
36.	le sentiment que les autres ne te comprennent pas ou sont antipathiques?	0	1	2	3
37.	le sentiment que les gens ne sont pas amicaux ou ne t'aiment pas?	0	1	2	3

38.	le fait d'avoir à faire les choses très lentement pour t'assurer que tout est correct?	0	1	2	3
39.	des palpitations ou des battements rapides du coeur?	0	1	2	3
40.	des nausées ou l'estomac dérangé?	0	1	2	3
41.	le fait de te sentir inférieur(e) aux autres?	0	1	2	3
42.	des muscles endoloris?	0	1	2	3
43.	le sentiment que tu es surveillé(e) ou que les autres parlent de toi?	0	1	2	3
44.	de la difficulté à t'endormir?	0	1	2	3
45.	le fait d'avoir à vérifier et re-vérifier ce que tu fais?	0	1	2	3
46.	de la difficulté à prendre des décisions?	0	1	2	3
47.	la peur de voyager par autobus, par métro ou par train?	0	1	2	3
48.	de la difficulté à reprendre ton souffle?	0	1	2	3
49.	des bouffées de froid ou de chaleur?	0	1	2	3
50.	le fait d'avoir à éviter certaines choses, certains endroits ou certaines activités parce que tu as peur?	0	1	2	3
51.	le fait de te sentir la tête vide?	0	1	2	3
52.	des engourdissements ou des démangeaisons dans différentes parties de ton corps?	0	1	2	3
53.	des serrements de gorge, l'impression d'avoir une boule dans la gorge?	0	1	2	3
54.	un sentiment de désespoir face à l'avenir?	0	1	2	3
55.	de la difficulté à te concentrer?	0	1	2	3
56.	le fait de sentir que certaines parties de ton corps sont faibles?	0	1	2	3
57.	le fait de te sentir tendu(e) ou à bout de nerfs?	0	1	2	3

58.	des sentiments de lourdeur dans les bras ou dans les jambes?	0	1	2	3	
59.	le fait de penser à la mort ou à mourir?	0	1	2	3	
60.	le fait de trop manger?	0	1	2	3	
61.	le fait de te sentir mal à l'aise quand les gens te regardent ou parlent de toi?	0	1	2	3	
62.	le fait d'avoir des pensées qui ne sont pas les tiennes?	0	1	2	3	
63.	des envies de battre quelqu'un, de le/la blesser ou de lui faire mal?	0	1	2	3	
64.	le fait de te réveiller aux petites heures du matin?	0	1	2	3	
65.	le sentiment de devoir répéter toujours les mêmes gestes comme toucher, compter, te laver?	0	1	2	3	
66.	le fait de passer des nuits blanches ou d'avoir le sommeil troublé?	0	1	2	3	
67.	des envies de briser ou de casser des choses?	0	1	2	3	
68.	l'idée que personne ne veut partager?	0	1	2	3	
69.	le fait de te sentir très intimidé(e) par les autres?	0	1	2	3	
70.	le fait de te sentir mal à l'aise dans les foules, comme au cinéma ou dans les magasins?	0	1	2	3	
71.	le sentiment que tout te demande un effort?	0	1	2	3	
72.	des crises de frayeur ou de panique?	0	1	2	3	
73.	le fait de te sentir mal à l'aise de manger ou de boire en public?	0	1	2	3	
74.	des disputes fréquentes?	0	1	2	3	
75.	un sentiment de nervosité lorsque tu es seul(e)?	0	1	2	3	
76.	le fait que les autres ne te donnent pas le crédit souhaité pour tes accomplissements?	0	1	2	3	
77.	le sentiment d'être seul(e) même lorsque tu es avec d'autres?	0	1	2	3	
78.	le fait de te sentir si agité(e) que tu ne peux pas rester assis(e) tranquille?	0	1	2	3	4

79.	le sentiment de n'être bon(ne) à rien?	0	1	2	3
80.	le sentiment que quelque chose de mauvais va t'arriver?	0	1	2	3
81.	le fait de crier, ou de lancer des objets?	0	1	2	3
82.	la peur de t'évanouir en public?	0	1	2	3
83.	le sentiment que les gens prendront avantage de toi si tu les laisse faire?	0	1	2	3
84.	des pensées à propos du sexe qui te dérangent beaucoup?	0	1	2	3
85.	l'idée que tu devrais être puni(e) pour tes péchés?	0	1	2	3
86.	des pensées et des impressions de nature effrayante?	0	1	2	3
87.	l'idée que quelque chose de sérieux ne va pas avec ton corps?	0	1	2	3
88.	le fait de ne jamais te sentir proche d'une autre personne?	0	1	2	3
89.	des sentiments de culpabilité?	0	1	2	3
90.	l'idée que quelque chose ne va pas avec ton esprit?	0	1	2	3

Merci beaucoup

Appendix G

Testing Protocol: Parent-Child Study

PARENT-CHILD/HEALTH CANADA:

Full Protocol

May 21, 1997

DAY 1 PROTOCOL:

1- Examiner: - takes care of introductions,
- reminds mother that Interviewer cannot interact with child until Series 2 has been filmed,
- builds rapport with child,
- summarizes study and explains general Day 1 procedures to Ss,
- makes sure mother has read and signed consent form,
- for Cohort 2 Ss, explains that saliva sampling is optional and, if mother consents, obtains a sample from both of them **immediately before standard testing** (record the time at which all samples were taken on the saliva form).

Interviewer: - chooses the most appropriate room for interaction series,
- sets up camera and materials for Series 1 in the standard order (see toy lay-out sheet),
- removes all other unecessary materials, if possible,
- unplugs that room's telephone if present,
- and attempts to remain as invisible to the child as possible until Series 2.

2- Examiner: - begins administering Bayley II or SB4.

Interviewer: - **a)** if mother does not need to stay with child (for SB4): Interviewer begins administration of the demographic, health battery, and general impressions of temperament questionnaires;
- **or b)** if mother needs to stay with her child, the Interviewer can supervise siblings, score data, or read a good book!!!

BREAK - For Cohort 2 Ss, the 2nd saliva sample is taken from both mother and child within 10 min. following standard testing. Examiner asks mother to come, if she's with Interviewer.
- Make sure you ask Ss if they need to go to the bathroom or get a change of diaper.
-If needed, Interviewer informs Examiner of interaction setup location.

3- Before bringing Ss to the interaction room, the Examiner gives mother the following Series 1 instructions.

SERIES 1

"Maintenant, on aimerait vous voir jouer ensemble. Comme tu sais, on va enregistrer ça sur vidéo. Donc, pour être sûr que vous restiez tous(tes) les deux bien en vue pendant qu'on filme, c'est très important que vous restiez assis(es) tous(tes) les deux sur le tapis qu'on a mis par terre. Moi, je vais quitter la pièce et je vais revenir vérifier la caméra une ou deux fois pour être bien sûr qu'elle fonctionne bien. Alors, la première chose qu'on aimerait que tu fasses est simplement de jouer avec (ENFANT) comme vous le faites d'habitude pendant environ 15 minutes et essayez d'être le plus naturels possible. Vous pouvez prendre les jouets qu'on a mis sur le tapis si vous voulez, mais vous n'êtes pas obligés. Puis, quand tu entendras l'alarme sonner, tu pourras arrêter de jouer. As-tu des questions?"

Examiner then gets Ss settled on the carpet and instructs child (if s/he can understand such instructions) to remain within its limits; e.g.:

"Maintenant, (CHILD), tu vas jouer avec maman, mais j'aimerais que tu restes sur le tapis. Fais comme si le tapis était ton carré de sable et que c'est défendu de sortir du carré de sable..." etc.

Before getting out of view, Examiner tells mother they can begin. Examiner is responsible for timing all 3 Series and should position herself close enough to the interaction area so she can still hear Ss and thus know when to start and stop the timer. No camera person will be present during filming. The camera should be positioned on the tripod so as to encompass the carpet tightly. The Examiner should periodically check the position of the camera so that dyad is being properly filmed. [If there is an interruption of filming during the **first** half of the series (e.g., bathroom), reset the timer to 15 min. and start over. If the interruption occurs in the **second** half of the series **and** lasts less than 2 min., just pause and restart timer when the interaction resumes; but if the trip takes **more** than 2 min., Series 1 will have to be repeated at the end of Day 2.]

At the end of Series 1, Examiner takes saliva samples from both Ss (Cohort 2 only) and administers "Maternal perceptions" questionnaire. If mother reports a score of 1 or 2, thus indicating that either her or her child's behavior was not natural, Series 1 should be repeated on Day 2.

BREAK (±5 min.)

- Bathroom check

- The Examiner or the Interviewer repositions materials for Series 2 and, if needed, prepares the barrier so it will safely prevent a 12-42 mo. child from leaving interaction room during separation episode.

4- While the Examiner supervises the child, she asks mother to join with the Interviewer. The Interviewer will then give mother the following Series 2 instructions so as not to be heard by child. (If child becomes upset about his/her mother's departure, Examiner will give her the instructions in the child's presence.)

SERIES 2

FREE PLAY (4 MIN)

"La prochaine période de jeux va aussi être filmé mais va avoir 4 parties: En premier, tu va recommencer à jouer avec (ENFANT) comme tantôt, avec ou sans les jouets, mais juste pour une couple de minutes jusqu'à ce que tu entendes l'alarme sonner, comme tantôt."

PUZZLES (7 MIN, 4 MIN for 12-42 cohort)

"A ce moment-là, pousse les jouets de côté et choisis un casse-tête à faire avec (ENFANT). (FOR OLDER COHORT, EXPLAIN TO MOTHER THE LABELLED BAGS OF PUZZLE PIECES AND THEIR CORRESPONDING BOARDS. PRESS BEEPER WHEN THEY BEGIN WORKING ON THE PUZZLE). Si vous finissez ce casse-tête-là, vous pouvez travailler sur un autre. Après quelques minutes, l'alarme va sonner de nouveau et je (or INTERVIEWER) vais entrer dans la pièce."

SEPARATION AND REUNION (2+4=6 MIN)

"A ce moment-là, tu sortiras de la pièce pour laisser (ENFANT) jouer tout seul avec les jouets. Et pour être sûr qu'il/elle ne te suivra pas quand tu va sortir, je vais placer une barrière en travers la porte/arche. Bien sûr, si (ENFANT) devient trop dérangé par ton absence, ou si tu te sens mal à l'aise, tu pourras le/la rejoindre. Sinon, après une couple de minutes, (EXAMINER) va te dire que c'est le temps d'aller rejoindre (ENFANT) sur le tapis. Puis, tu passera 3-4 minutes de plus avec lui/elle et on te laissera savoir quand tout est fini."

> Interviewer comes in at the beep and waits next to the door until mother has left. Then s/he puts the barrier in place (for 12-42 mo. cohort) or closes the door and then goes behind the camera to keep child in view during both the separation and reunion episodes. Examiner presses "start" when mother exits the room. Then, after 2 minutes, she signals mother to join her child.

"Donc, pour résumer, commencez par jouer ensemble comme vous le faites d'habitude; puis, quand tu entendras l'alarme, pousse les jouets de côté et choisis un casse-tête. Quand tu me verras entrer, sors de la pièce jusqu'à ce qu'on te dise te rejoindre (ENFANT). J'ai une petite liste qui pourra t'aider à te souvenir des étapes, et je vais la placer juste ici. As-tu des questions? J'aimerais juste te rappeler encore de rester sur le tapis pour que vous puissiez rester bien en vue. J'aimerais aussi quand tu sortiras que tu restes invisible pour (ENFANT), mais assez près de (EXAMINER) pour entendre son signal, OK?"

At the end of Series 2, Interviewer administers "Maternal perceptions" questionnaire. If mother reports a score of 1 or 2, Series 2 should be repeated on Day 2. Interviewer also administers Day 1 Touch Questionnaire.

5- At the end of Day 1, Interviewer gives instructions for mother and father questionnaire packages, for cortisol sampling, and makes the appointment for Day 2.

N.B. If child needs to nap during Day 1, Interviewer can take that opportunity to continue interviews with mother.

Fill out the Cortisol and VideoTape log sheet. Clean Bayley II and toys, if needed.

DAY 2 PROTOCOL:

1- Examiner reconnects with child and gives Day 2 general instructions.

2- Examiner finishes Bayley II or SB4. If mother does not need to stay with child, Interviewer answers any questions she might have about the questionnaires and finishes interviewing her. But if mother still needs to stay with child, Interviewer can set up Series 3 materials and check parental packages for missing data or clinical concerns (e.g., SCID screeners, SCL-90).

BREAK **- Series 3 setup, if not done already**
- Bathroom check

3- While Examiner supervises child away from interaction room, she tells mother to go to the interaction room to meet Interviewer who gives her the following Series 3 instructions so as not to be heard by child. If child becomes upset about mother's departure, the Examiner gives her the instructions in the child's presence.

Série 3

FREE PLAY (4 MIN)

"C'est la dernière fois qu'on va vous filmer, et il y a 4 choses qu'on aimerait que vous fassiez ensemble. D'abord, comme l'autre jour, on aimerais que tu joues avec (ENFANT) comme vous le faites d'habitude, avec ou sans les jouets, jusqu'à ce que tu entendes l'alarme sonner.

COMMAND TASK (3 MIN) - NOT DONE FOR 12-24 MO. CHILDREN

A ce moment-là, vous arrêterez de jouer pour faire quelque chose de complètement différent. Pour les 2-3 prochaines minutes, j'aimerais que tu demandes à (ENFANT) de faire quelques petites tâches pour toi. Tiens, voilà une liste de tâches que tu peux utiliser (GIVE HER THE LIST). Comme tu peux voir, il y en a qui sont plus difficiles que d'autres; c'est parce qu'on visite différentes familles avec des enfants d'âges différents. Celles du début

sont plus faciles que celles de la fin (READ FIRST 3 AND LAST 3). On aimerais que tu prennes au moins 4 ou 5 des tâches de la liste. Tu peux en prendre plus si tu veux et tu peux même inventer tes propres tâches, mais pourvu que (ENFANT) n'ait pas à quitter le tapis. La liste sera placé tout près du tapis. (PRESS BEEPER WHEN MOTHER BEGINS INTRODUCING TASK)

INTERFERENCE TASK (3 MIN)

Quand tu entendras l'alarme sonner, vous arrêterez pour faire autre chose encore. On aimerais voir comment (ENFANT) réagit quand tu es très occupée. Tu sais comment c'est des fois quand tu es au téléphone ou bien en train de faire à manger et que c'est pas possible de lui donner toute l'attention qu'il/elle demande. Pour observer ça, on aimerais que tu remplisses le questionnaire qui est juste en-dessous (SHOW HER). Et pendant que tu le remplis, on aimerait que tu te retournes un peu pour lui faire comprendre que ce que tu fais est trés important. Si tu termine ce questionnaire avant l'alarme, tu pourras lire ces magazines-là (SHOW HER). (ENFANT) pourra continuer à jouer avec les jouets pendant ce temps-là; mais assure-toi encore qu'il/elle reste assis(e) sur le tapis. Tu continueras de travailler sur le questionnaire ou de lire jusqu'à ce que tu entendes une autre alarme. (PRESS BEEPER WHEN MOTHER BEGINS QUESTIONNAIRE)

FREE PLAY (4 MIN)

A ce moment-là, mets tout ça de côté et recommence à jouer avec (ENFANT) comme vous le faites d'habitude jusqu'à ce l'alarme te dise que c'est fini. N'oublie pas de rester à l'intérieur des limites du tapis pour que la caméra puisse vous garder tous les deux bien en vue.

Donc, en résumé, commencez par jouer avec (ENFANT) comme vous le faites d'habitude; ensuite, quand tu entends la 1ère alarme, prends la liste et fais-lui faire des tâches; puis, à la 2e alarme, commence à travailler sur le questionnaire jusqu'à ce que tu entendes la 3e alarme. A ce moment-là, tu recommences simplement à jouer avec (ENFANT). Comme la dernière fois, on a une petite liste qui va t'aider à te rappeler des étapes. As-tu des question?"

At the end of Series 3, Interviewer administers "Maternal perceptions" and finishes "Touch" questionnaires.

BREAK

4- Examiner administers the remaining HOME interview items **(both HOME versions are completed for 37-42 mo. children)**, and investigates any clinical concerns that might have arisen through other questionnaires. Examiner and Interviewer then decide who will administer the "Parenting Practices Interview" (AUDIOTAPED), the SCID modules (if required), and the Peabody to the child. When Examiner is done with her interviews, the Interviewer joins her for the wrap-up which includes the "Needs Assessment Questionnaire" (AUDIOTAPED).

Fill out the Cortisol and VideoTape log sheet. Clean Bayley II and toys between each visit, if needed.

Appendix H

Demographic Information Questionnaire

L'INDIVIDU DANS SON MILIEU

Renseignements sociodémographiques

Tous ces renseignements sont traités de façon totalement confidentielle

1.Sexe ☐ M ☐ F

2.Âge _____ ans Date de naissance AN ____ MO ____ JR ____

3.État civil

Note: "Conjoints de fait": désigne deux personnes qui vivent ensemble comme si elles étaient mariées. Il s'agit de ton état actuel; même si tu es légalement divorcé(e) ou autre, mais que tu vis avec un(e) conjoint(e) présentement, inscris conjoint de fait.

		Depuis quelle date?
☐ Célibataire	☐ Conjoint	
☐ Marié(e)	☐ Séparé(e)	AN MO JR
☐ Divorcé(e)	☐ Veuf/veuve	_____ _____ _____

4. Nombre d'enfants _____

Si enceinte (ou conjointe enceinte), bébé attendu pour: AN ____ MO ____

Sinon, prévoyez-vous avoir un enfant dans les prochains 12 mois? OUI _____ NON ____
dans les prochains 24 mois? OUI _____ NON ____

Pour chaque enfant:

1 - Inscrire le nom, le sexe, la date de naissance

2 - Encercler "TE" si c'est ton enfant (tu es le parent biologique)
"EC" si l'enfant du conjoint (le conjoint actuel est le parent biologique)
"EA" si c'est un enfant adopté /"FA" en foyer d'accueil et qui vit chez toi
Si "TE" et "EC" sont vrais, encercler les deux.

3 - Indiquer si l'enfant vit avec toi, OUI ou NON ou GP (garde partagée)

4 - Inscrire l'année scolaire (si applicable) ainsi que si l'enfant fréquente une classe ou une école spéciale.

(Si tu as plus de quatre enfants, inscrire leurs informations sur une feuille séparée.)

1	NOM	SEXE	AN MO JR
	_____	☐ M ☐ F	____ ____ ____

L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐

Année scolaire: _____ Classe spéciale: _____

2 NOM SEXE AN MO JR

_____ ☐ M ☐ F____ ____ ____

L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐

Année scolaire: _____ Classe spéciale: _____

3 NOM SEXE AN MO JR

_____ ☐ M ☐ F____ ____ ____

L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐

Année scolaire: _____ Classe spéciale: _____

4 NOM SEXE AN MO JR

_____ ☐ M ☐ F____ ____ ____

L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐

Année scolaire: _____ Classe spéciale: _____

5. Ta scolarité complétée (dernière année terminée):

En quoi? (spécialisation/général): _____

Étudies-tu présentement? OUI : Temps plein ☐ partiel ☐ NON ☐

Si oui, quel diplôme postules-tu _____ pour quand? ____/____/____/

6. As-tu un emploi (rappel: renseignements gardés confidentiels)?

OUI ☐

Occupation: _____
_____

Tes tâches: _____
_____

Combien d'heures/sem.? _____

Salaire de l'heure _____ $

Depuis quand es-tu à cet emploi? inscrire la date
AN MO
____/____/

NON ☐

As-tu déjà eu un emploi?

Oui ☐ Non ☐
⇓
En quoi? _____

Pendant combien de temps?
____ an(s) ____ mois

Quand as-tu arrêté de travailler:
date: ____/____/
AN MO

Au cours des 12 derniers mois, as-tu bénéficié de:

Oui ☐ Non ☐ l'Assurance chômage?

Oui ☐ Non ☐ Prestations d'aide sociale?

Oui ☐ Non ☐ la CSST? (préciser:_____)

7. **Informations sur le conjoint (renseignements gardés confidentiels):**

a) Son nom:_____ Date de naissance AN ____ MO ____ JR ____

Son occupation:_____

Ses tâches:_____

Son salaire: _____ $/ heure Nombre d'heures _____ / semaine

Il/Elle travaille là depuis: date AN ____ MO ____

b) Au cours des 12 derniers mois, a-t-il/elle bénéficié de:

Oui ☐ Non ☐ l'Assurance chômage?

Oui ☐ Non ☐ Prestations d'aide sociale?

Oui ☐ Non ☐ la CSST? (préciser:_____)

c) Sa scolarité complétée (dernière année terminée):

En quoi? (spécialisation/général):_____

Étudie-t-il (elle) présentement? OUI : Temps plein ☐ partiel ☐ NON ☐

Si oui, diplôme postulé?_____ pour quand? (date) ____/____/

8. **Informations sur le père\la mère de tes enfants (si n'habite pas avec toi)**

AN MO JR

a) Son nom:_____ Date de naissance ____ ____ ____

Son occupation:_____

Ses tâches:_____

Son salaire: _____ $/ heure Nombre d'heures _____ / semaine

AN MO

Il/Elle travaille là depuis: date ____ ____

b) Au cours des 12 derniers mois, a-t-il/elle bénéficié de:

Oui ☐ Non ☐ l'Assurance chômage?

Oui ☐ Non ☐ Prestations d'aide sociale?

Oui ☐ Non ☐ la CSST? (préciser:_____)

c) Sa scolarité complétée (dernière année terminée):

En quoi? (spécialisation/général):_____

Étudie-t-il (elle) présentement? OUI : Temps plein ☐ partiel ☐ NON ☐

Si oui, diplôme postulé?_____ pour quand? (date) ____/____/

9. **Disponibilité pour l'entrevue**: un bloc de 2-3 heures

☐ Le matin ☐ L'après-midi

☐ Le soir ☐ La fin de semaine

10. **Je préfère aller à** _____ Guy et Maisonneuve (centre-ville)
_____ 7141 Sherbrooke ouest (N.D.G.)

S.V.P. Vérifier l'adresse et les numéros de téléphone.

_____ _____
No Rue app.

_____ _____ _____
Ville Code postal

Téléphones: Personnel: (_____) _____ - _____
Travail: (_____) _____ - _____
Parents: (_____) _____ - _____
Autre _____: (_____) _____ - _____

Ton numéro de téléphone est à quel nom dans l'annuaire téléphonique: Nom complet et lien avec toi:
_____

Adresse électronique: _____

Adresse des parents: _____
_____

Appendix I

French Translation of the Conners' Scale – Parent Version

Échelle de Comportement (Parents)

Vous trouverez ci-dessous des énoncés décrivant des compotrements d'enfants ou des problèmes qu'ils ont parfois. Lisez chaque énoncé attentivement et décidez du degré auquel votre enfant a souffert de ce problème durant la dernière année.

	Pas du tout	Un petit peu	Beau-coup	Énormé -ment
1. Tripote ou ronge certaines choses (ongles, doigts, cheveux, vêtements).				
2. Insolent(e) avec les grande personnes.				
3. A du mal à se faire des amis et à les garder.				
4. Excitable, impulsif(ive).				
5. Veut tout commender.				
6. Suce ou mâchonne (pouce, vêtements, couvertures).				
7. Pleure souvent ou facilement.				
8. Se sent attaqué(e), est sur la défensive.				
9. Rêvasse.				
10. A des difficultés d'apprentissage.				
11. Se tortille, ne tient pas en place.				
12. A peur (de nouvelles situations, de nouveaux endroits et de nouvelles personnes, ou de fréquenter l'école.)				
13. Est agité(e), a toujours besoin de faire quelque chose.				
14. Est destructeur(trice).				
15. Ment ou raconte des histoires qui ne sont pas vraies.				
16. Est timide.				

17. S'attire plus d'ennuis (se fait plus attraper)que les autres enfants de son âge.				
18. Ne parle pas comme les autres enfants de son âge (parle comme un bébé, bégaye, est difficile à comprendre).				
19. Nie ses erreurs ou accuse les autres.				
20. Est querelleur(euse).				
21. Fait la moue et boude.				
22. Prend les choses qui ne lui appartiennent pas.				
23. Est désobéissant(e) ou obéit à contrecoeur.				
24. S'inquiète plus que les autres (de la maladie, de la mort, de la solitude).				
25. Ne termine pas ce qu'il (elle) a commencé.				
26. Est facilement froissé(e).				
27. Brutalise ou intimide ses camarades.				
28. Ne peut s'arrêter lors d'une activité répétitive.				
29. Est cruel(le).				
30. A un comportement immature (demande qu'on l'aide pour quelque chose qu'il (elle) peut faire seul(e), est collant(e), a constamment besoin d'être rassuré(e)).				
31. A des problèmes de fixation de l'attention, distractivité.				
32. Souffre de maux de tête.				
33. A des changements d'humeur rapides et marqués.				
34. N'obéit pas ou n'aime pas obéir aux règles, ou brave les interdits.				
35. Se bagarre constamment.				
36. Ne s'entend pas avec ses frères et soeurs.				
37. Se décourage facilement lorqu'un effort est nécessaire.				
38. Dérange les autres enfants.				

39. Est un(e) enfant foncièrement malheureux(euse).				
40. A des problèmes d'alimentation (a un mauvais appétit, se lève après chaque bouchée).				
41. Souffre de maux d'estomac.				
42. A des problèmes de sommeil (ne peut s'endormir, se réveille trop tôt, se réveille pendant la nuit).				
43. Se plaint d'autres maux physiques et de douleurs.				
44. Souffre de vomissements, de nausées.				
45. Se sent lésé(e) à la maison.				
46. Se vante, fanfaronne.				
47. Se laisse écraser, manipuler par les autres.				
48. A des problèmes d'évacuation intestinale (selles molles, irrégulières, constipation).				

Appendix J

French Translation of the Child Behavior Checklist – Teacher Version

CBCL-ENSEIGNANT/E

Voici une liste d'énoncés pouvant décrire les élèves. Veuillez évaluer chaque énoncé en fonction du comportement de l'élève au cours des deux derniers mois et encercler la cote appropriée. Veuillez encercler la cote 2 si l'énoncé est très vrai ou souvent vrai, la cote 1 si l'énoncé est ou parfois vrai et la cote 0 si l'énoncé ne correspond pas du tout à l'élève ou que vous n'avez pas suffisament d'informations pour répondre à cette question.

2 = très vrai ou souvent vrai;
1 = parfois vrai;
0 = ne correspond pas du tout ou informations insuffisantes.

0	1	2	1.	Se comporte d'une façon trop jeune pour son âge.
0	1	2	2.	Fredonne ou fait d'autres bruits étranges en classe.
0	1	2	3.	Se dispute beaucoup.
0	1	2	4.	Ne termine pas les choses qu'il (elle) commence.
0	1	2	5.	Se comporte comme l'autre sexe.
0	1	2	6.	Défie quelqu'un de, ou répond de façon impolit au personnel enseignant.
0	1	2	7.	Se vante.
0	1	2	8.	Est incapable de se concentrer pour une longue periode de temps.
0	1	2	9.	Ne peut cesser de penser à certaines choses, a des obsessions (Expliquez).
0	1	2	10.	Ne peut pas rester assis(e), est agité(e) ou hyperactif(ve).
0	1	2	11.	S'accroche aux adultes ou est trop dépendant(e).
0	1	2	12.	Se plaint de se sentir seul(e).
0	1	2	13.	Confus(se) ou semble être dans le brouillard.
0	1	2	14.	Pleure beaucoup.
0	1	2	15.	A la bougeotte.
0	1	2	16.	Est cruel(le), brutal(e) ou méchant(e) envers les autres.
0	1	2	17.	Est perdu(e) dans ses rêveries ou dans ses pensées.
0	1	2	18.	Se fait mal intentionnellement ou essaie de se suicider.
0	1	2	19.	Exige beaucoup d'attention.
0	1	2	20.	Détruit ses propres choses.
0	1	2	21.	Détruit des objets qui appartiennent à d'autres personnes.
0	1	2	22.	A de la difficulté à suivre les directives qu'on lui donne.
0	1	2	23.	Est désobéissant(e) à l'école.
0	1	2	24.	Dérange les autres élèves.
0	1	2	25.	Ne s'entend pas avec les autres enfants.
0	1	2	26.	Ne semble pas se sentir coupable après s'être mal comporté(e).
0	1	2	27.	Est facilement jaloux(se).
0	1	2	28.	Mange ou boit autre chose que de la nourriture.
0	1	2	29.	A peur de certains animaux, de certaines situations ou d'endroits autres que l'école.
0	1	2	30.	A peur d'aller à l'école.
0	1	2	31.	A peur d'avoir des mauvaises pensées ou de faire quelque chose de mal.
0	1	2	32.	Pense qu'il(elle) doit être parfait(e).
0	1	2	33.	Pense ou se plaint que personne ne l'aime.
0	1	2	34.	Pense qu'on le(la) persécute.
0	1	2	35.	Se croit bon(ne) à rien ou inférieur(e).
0	1	2	36.	Se fait souvent mal, est prédisposé(e) aux accidents.
0	1	2	37.	Se bagarre souvent.
0	1	2	38.	Se fait taquiner beaucoup.
0	1	2	39.	Fréquente des enfants qui attirent des ennuis.

0	1	2	40.	Croit entendre des sons qui n'existent pas (Expliquez).
0	1	2	41.	Est impulsif(ve) ou agit sans réfléchir.
0	1	2	42.	Aime la solitude.
0	1	2	43.	Ment ou triche.
0	1	2	44.	Ronge ses ongles.
0	1	2	45.	Nerveux(se), stressé(e), tendu(e).
0	1	2	46.	A des mouvements nerveux ou des contractions involontaires répétées (Expliquez).
0	1	2	47.	A une attitude trop conformiste face aux règlements.
0	1	2	48.	N'est pas aimé(e) par les autres élèves.
0	1	2	49.	A des difficultés d'apprentissage.
0	1	2	50.	Est trop peureux(se) ou anxieux(se).
0	1	2	51.	A des étourdissements.
0	1	2	52.	Se sent trop coupable.
0	1	2	53.	N'attend pas son tour pour parler.
0	1	2	54.	Est trop fatigué(e).
0	1	2	55.	Pèse plus que la moyenne.
0	1	2	56.	A des problèmes physiques sans cause médicale connue: a. des douleurs ou des malaises. b. des maux de tête. c. des nausées, se sent mal. d. des problèmes avec ses yeux (expliquez). e. des éruptions ou autre problèmes de la peau. f. des maux d'estomac ou des crampes. g. des vomissements h. autre (expliquez).
0	1	2	57.	Attaque les gens physiquement.
0	1	2	58.	Joue dans son nez, se gratte la peau ou d'autres parties du corps (expliquez).
0	1	2	59.	Dort en classe.
0	1	2	60.	Est apathique et manque de motivation.
0	1	2	61.	Travaille mal à l'école.
0	1	2	62.	Est mal coordonné(e) ou maladroit(e).
0	1	2	63.	Préfère jouer avec des enfants plus âgés.
0	1	2	64.	Préfère jouer avec des enfants plus jeunes.
0	1	2	65.	Refuse de parler.
0	1	2	66.	Répète sans cesse certains actes; est compulsif(ve) (expliquez).
0	1	2	67.	Dérange la classe.
0	1	2	68.	Hurle beaucoup.
0	1	2	69.	Est renfermé(e), garde les choses pour lui(elle) même.
0	1	2	70.	Voit des choses qui ne sont pas là (expliquez).
0	1	2	71.	Est timide ou facilement embarassé(e).
0	1	2	72.	Son travail n'est pas ordonné.
0	1	2	73.	Se comporte de facon irresponsable.
0	1	2	74.	Fait le (la) fin(e) ou le bouffon.
0	1	2	75.	Est gêné(e) ou timide.
0	1	2	76.	Son comportement est explosif et imprévisible.
0	1	2	77.	Ses demandes doivent être comblées immediatement et il (elle) est facilement frustré(e).
0	1	2	78.	N'est pas attentif(ve) et est facilement distrait(e).
0	1	2	79.	A des problèmes d'élocution (expliquez).
0	1	2	80.	A le regard vague.
0	1	2	81.	Se sent blessé(e) lorsqu'il (elle) est critiqué(e).
0	1	2	82.	Vole.

0	1	2	83.	Amasse des choses dont il (elle) n'a pas besoin.
0	1	2	84.	A des comportements étranges (expliquez).
0	1	2	85.	A des idées étranges (expliquez).
0	1	2	86.	Est entêté(e), maussade ou irritable.
0	1	2	87.	A des sautes d'humeur ou de sentiments soudains.
0	1	2	88.	Boude beaucoup.
0	1	2	89.	Est méfiant(e).
0	1	2	90.	Sacre ou se sert de mots obscènes.
0	1	2	91.	Parle de se tuer.
0	1	2	92.	Ne fournit pas son rendement maximum.
0	1	2	93.	Parle trop.
0	1	2	94.	Taquine beaucoup.
0	1	2	95.	A des accès de colère, des crises ou s'emporte facilement (expliquez).
0	1	2	96.	Semble préoccupé(e) par le sexe.
0	1	2	97.	Menace les gens.
0	1	2	98.	Est en retard à l'école ou en classe.
0	1	2	99.	Est trop préoccupé(e) par l'ordre ou la propreté.
0	1	2	100.	Ne fait pas ses travaux.
0	1	2	101.	Fait l'école buissonnière, manque l'école.
0	1	2	102.	Est trop peu actif(ve), fait des mouvements lents ou manque d'énergie.
0	1	2	103.	Est malheureux(se), triste ou déprimé(e).
0	1	2	104.	Est exceptionnellement bruyant(e).
0	1	2	105.	Prends de l'alcool ou de la drogue (expliquez).
0	1	2	106.	Est très anxieux(se) de plaire.
0	1	2	107.	N'aime pas l'école.
0	1	2	108.	A peur de commettre des erreurs.
0	1	2	109.	Pleurniche.
0	1	2	110.	Manque de propreté dans son apparence personnelle.
0	1	2	111.	Est renfermé(e), ne se mêle pas aux autres.
0	1	2	112.	Se fait des soucis.
0	1	2	113.	Veuillez indiquer tout problème que l'élève présente et que nous n'avons pas mentionné ci-dessus.

Appendix K

French Translation of the Conners' Scale – Teacher Version

Questionnaire de Conners pour les enseignants

Vous trouverez ci-dessous des énoncés décrivant des compotrements d'enfants qui se rencontrent parfois en milieu scolaire. Placez une croix dans la colonne qui décrit le mieux l'élève concerné(e). Répondez à toutes les questions.

	Pas du tout	Un petit peu	Beau-coup	Énormé-ment
1. Est agité(e), se tortille sur sa chaise.				
2. Fait des bruits inappropriés quand il ne faut pas				
3. Ses demandes doivent être satisfaites immédiatement.				
4. Est impertinent(e), effronté(e).				
5. Fait des crises de colère et a des conduites imprévisibles.				
6. Est trop sensible à la critique.				
7. Est distrait(e).				
8. Perturbe les autres enfants.				
9. Est rêveur(euse).				
10. Fait la moue et boude.				
11. A une humeur qui change rapidement et de façon marquée.				
12. Est bagarreur(euse).				
13. A une attitude soumise à l'égard de l'autorité.				
14. Est agité(e), va constamment à droite et à gauche.				
15. S'excite facilement, est impulsif(ive).				

16. Demande une attention excessive de l'enseignant.				
17. Semble mal accepté(e) par le groupe.				
18. Se laisse mener par les autres élèves.				
19. Est mauvais(e) joueur(euse).				
20. Semble manquer de capacités à entraîner ou à mener les autres.				
21. A de la difficulté à terminer ce qu'il (elle) commence.				
22. Est puéril(e), immature.				
23. Nie ses erreurs ou accuse les autres.				
24. A de la difficulté à s'entendre avec les autres élèves.				
25. Coopère peu avec ses camarades de classe.				
26. S'énerve facilement quand il (elle) doit faire une effort.				
27. Coopère peu avec l'enseignant.				
28. A des difficultés s'apprentissage.				

Appendix L

French Translation of the Social Competence Scale

Échelle de compétence sociale

Veuillez indiquer à quel point chacun des énoncés décrit l'enfant concerné(e) en vous servant de l'échelle suivante.

0. Ne décrit **pas du tout** l'enfant
1. Décrit **un peu** l'enfant
2. Décrit l'enfant de façon **assez vraie**.
3. Décrit l'enfant de façon **vraie**.
4. Décrit l'enfant de façon **très vraie**.

	Pas du	**Un peu**	**Assez vrai**	**Vrai**	**Très vrai**
1. Fonctionne bien malgré les distractions.					
2. Accepte que les choses n'aillent pas comme il (elle) veut.					
3. Accepte bien les défaites ou les échecs.					
4. Est une personne qui prend des initiatives.					
5. Travaille/joue bien sans le soutien d'un adulte.					
6. Accepte bien qu'on lui impose des limites raisonnables.					
7. Exprime ses besoins et ses sentiments de façon appropriée.					
8. Réfléchit avant d'agir.					
9. Résoud seul les problèmes qu'il (elle) rencontre avec ses pairs.					
10. Capable de derneurer concentré (e) sur son travail.					
11. Arrive à se calmer lorsqu'il (elle) est excité (e) et agité(e).					
12. Peut attendre patiemment en ligne lorsque nécessaire.					
13. Sensible aux sentiments des autres.					
14. Est conscient de l'impact de son comportement sur les autres.					
15. Travaille bien en groupe.					

16. Respecte les règles du jeu.					
17. Porte attention.					
18. Contrôle sa colère lors d'une dispute.					
19. Partage l'équipement et les jeux avec les autres.					
20. Coopère avec les autres enfants sans qu'on lui demande.					
21. Respecte les consignes de l'enseignant.					
22. Est serviable.					
23. Écoute le point de vue des autres.					
24. Fait part de ses suggestions et opinions sans les					
25. Est arnical avec les autres.					

Appendix M

Consent Form for School Study

«L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants»

Directeurs du projet: -Lisa A. Serbin, Ph.D.
-Dale M. Stack, Ph.D.

Numéro d'identification:

Formulaire de consentement

Je, soussigné(e), autorise les chercheurs du projet *«L'individu dans son milieu»* de l'université Concordia à rencontrer mon enfant _____,à l'école durant la période de classe et à avoir accès à son dossier scolaire. Je suis informée que durant la rencontre, mon enfant aura à remplir quelques questionnaires permettant d'évaluer son rendement scolaire et aussi, à répondre à différentes questions portant sur sa vie à l'école. Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche.

Dans l'éventualité où j'aurai des questions concernant cette recherche, je pourrai m'adresser soit à Nadine Girouard ou bien à Christina Saltaris au (514) 848-2253.

Nom: _____ Date:
EN LETTRES MOULÉES

Signature:

****

Nom de l'enseignant/e:

Nom du directeur/de la directrice:

Nom de l'école:

Numéro de téléphone:

Adresse:

Appendix N

Multiple Regression Predicting Age and Gender Patterns on the EAS Shyness Subscale at Time 2

Multiple Regression Predicting Age and Gender Patterns on the EAS Shyness Subscale at Time 2 (N = 127)

Variables	Beta	sr^2	t
Child age	.01	.01	.11
Child gender[a]	-.16	-.16	-1.75^t
Total	R^2 =.02	R^2Adj = .01	F = 1.54

[a] 1 = boys; 2 = girls
$^t p < .10$.

Appendix O

Multiple Regression Predicting Age and Gender Patterns on the EAS Sociability Subscale at Time 2

Multiple Regression Predicting Age and Gender Patterns on the EAS Sociability Subscale at Time 2 (N = 127)

Variables	Beta	sr^2	t
Child age	.09	.09	1.05
Child gender[a]	.10	.10	1.18
Total	R^2 =.02	R^2Adj = .00	F = 1.23

[a] 1 = boys; 2 = girls

Appendix P

Multiple Regression Predicting Age and Gender Patterns on the EAS Emotionality Subscale at Time 2

Multiple Regression Predicting Age and Gender Patterns on the EAS Emotionality Subscale at Time 2 (N = 127)

Variables	Beta	sr^2	t
Child age	.10	.10	1.12
Child gender[a]	-.10	-.10	-1.18
Total	R^2 =.02	R^2Adj = .01	F = 1.33

[a] 1 = boys; 2 = girls

Appendix Q

Multiple Regression Predicting Age and Gender Patterns on the EAS Activity Subscale at Time 2

Multiple Regression Predicting Age and Gender Patterns on the EAS Activity Subscale at Time 2 (N = 127)

Variables	Beta	sr^2	t
Child age	-.01	-.01	-.07
Child gender[a]	-.12	-.12	-1.34
Total	R^2 =.01	R^2Adj = -.00	F = .90

[a] 1 = boys; 2 = girls