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Maternal Childhood Risk Status as a Predictor of Emotional  
Availability and Physical Contact in Mother-Child  
Interactions: An Intergenerational Study

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in  
The Department  
of  
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## ABSTRACT

### Maternal Childhood Risk Status as a Predictor of Emotional Availability and Physical Contact in Mother-Child Interactions: An Intergenerational Study

Vivianne Bentley

The present study examined the quality of mother-child interactions in a sample of mothers with a history of childhood aggression and social withdrawal, and their at-risk children. The relationship between maternal childhood risk status, maternal scaffolding and child developmental competence was also examined.

Participants were recruited from the subjects making up the Concordia Risk Project, which commenced in 1977 when children in Grades 1, 4, or 7, from low SES, inner-city neighbourhoods, were classified along the dimensions of aggression and social withdrawal. Interactions of 42 mothers and their children aged 13 to 42 months were videotaped in their homes during a 15 minute free play session. Quality of mother-child interactions was assessed using the Emotional Availability Scales (Biringen & Robinson, 1991). Quality and quantity of physical contact were also coded. Child developmental status was assessed using the Bayley Scales of Infant Development (Second Edition, Bayley, 1993).

Findings lent partial support for the prediction that the quality of mother-child interactions in the next generation would be disrupted by maternal risk status.

Mothers with higher levels of childhood aggression and social withdrawal were more likely to demonstrate hostile behaviours in interactions with their children. Mothers' risk status did not predict child developmental status or physical contact. Consistent with previous research findings, both maternal education and maternal scaffolding were important in the prediction of child developmental status. Moreover, the child's age was an important predictor of child responsiveness and physical contact. The findings have implications for understanding the processes by which maternal childhood psychosocial functioning may represent a risk for the next generation.

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In the past decade there has been an increased interest in the identification of risk and protective factors that play a role in the development of psychopathology. Risk factors increase the likelihood of a child developing psychosocial problems, e.g., parental psychopathology, family stress, low socioeconomic status (Grizenko & Fisher, 1992; Luthar & Zigler, 1991). Protective factors are elements, which when present, can reduce the likelihood of a child developing problems even when they are within at-risk environments, e.g., parent-child interactions, family cohesion, and external social support systems (Sameroff & Seifer, 1992). Previously it was thought that risk variables were biological, and their transmission were largely considered genetic (Dodge, 1990; Kopp, 1994; Sameroff & Seifer, 1992). This "biomedical model", however, has not provided an adequate explanation for the development of psychopathology and researchers are now conducting more in-depth analyses of family and social factors in order to understand the mechanisms of risk that may be present for a child growing up in a risk environment (Achenbach, 1992; Kopp, 1994; Rutter, 1991). In particular, it is thought that a child may be exposed to an impaired family environment characterized by poor social interactions as a result of parental psychosocial functioning. The mechanisms by which environmental transmission of risk occurs have been

the focus of very few studies (Hammen, Burge & Stansbury, 1990; Sameroff & Seifer, 1992; Rutter, 1992).

The study of early social relationships and thus the context within which a child first develops affective ties and organizes emotional experiences, may provide the key to better understanding the processes by which development becomes adaptive or maladaptive (Emde, 1989; Fogel, 1993; Sameroff & Seifer, 1992). In particular, the early caregiving relationship is believed to have a profound effect on the developing child. Preliminary investigations conducted on resilient children consistently demonstrate that a positive mother-infant relationship is one of the most important aspects of a child's development and it has been found to be a protective factor in those children who may be considered at risk (Musick, Stott, Spencer, Goldman, & Cohler, 1987; Werner & Smith, 1992). However, the mechanisms by which good parenting affects developmental and social outcomes have only recently been examined and are less well understood.

Empirical investigations of the early mother-infant relationship in child development (Bretherton, 1987; Field, 1987; Kaye, 1982; Ricks, 1985) have begun to explore how this early relationship can affect future development. To date, the focus of the research has largely been on the examination of maternal behaviours. For example, studies conducted with normal populations consistently show that

healthy child outcomes are associated with warm and caring mothers who are sensitive to their child's signals and needs. Specifically, studies have shown that maternal responsiveness and sensitivity are linked to cognitive development in infancy (Donovan & Leavitt, 1978) and toddlerhood (Bornstein & Tamis-LeMonda, 1989), and differentiate securely attached from insecurely attached infants (Crockenberg 1981; Goldberg, MacKay-Soroka, & Rochester, 1994; Pederson et al., 1990). There is also evidence that suggests that children develop expectancies regarding a mother's availability and responsiveness from the early mother-infant relationship, and that these expectancies are carried forward into future interpersonal relationships (Aber & Allen, 1987; Crockenberg, 1981; Main, Kaplan, & Cassidy, 1985; Sroufe & Fleeson, 1986).

Recently, researchers have examined parent-child interactions within risk populations to further examine the effect of early childhood experiences. Studies that have been conducted to date include samples of parents who are abusing or neglecting (Crittenden, 1981), depressed mothers, and parents with psychiatric disorders such as schizophrenia or bipolar disorders (Dodge, 1990; Zahn-Waxler, Cummings, McKnew & Radke-Yarrow, 1984). A comparison of risk samples to normative groups provides a means of examining qualitative differences in early parent-child relationships among atypical populations and thus creates the opportunity



to isolate the processes most relevant to a healthy developmental outcome (Cicchetti, Cummings, Greenberg, & Marvin, 1990; Crowell, Feldman & Ginsberg, 1988). For example, Crittenden (1981) found that abusing mothers were less sensitive to their children and offered less physical closeness compared to controls. Neglecting mothers rarely responded to their infants' signals and offered minimal stimulation. Moreover, the infants of the abusing and neglecting mothers were characterized by depressed levels of involvement and were largely passive in their interactions. These infants did not demonstrate the pleasure and reciprocal engagement that was typical of infants with more sensitive mothers. Furthermore, Dodge (1990) described depressed mothers as more hostile towards their children, and more limited in their expression of emotional communication than non-depressed mothers. The findings from such comparisons confirm that the quality of the parent-child relationship in these atypical samples is poor and may place the child at risk for future developmental problems.

Findings from studies conducted with high risk samples also indicate that different patterns of parenting behaviour may emerge depending on the risk population being studied. The question arises as to whether one can identify a consistent parenting style which is particularly detrimental and more likely to place a child at risk, independent of the risk status of the parent. Egeland and Erickson (1987)

investigated the effect of mother-infant interactions on children's cognitive and emotional development within a sample considered at-risk due to their low socioeconomic status, disordered living conditions, and high levels of life stress. Within this sample, they identified four maltreatment groups; physically abusive, hostile/verbally abusive, neglectful, and psychologically unavailable. Results indicated that children from all the maltreatment groups presented with frequent behaviour problems and poor adjustment at different developmental stages. However, the group of children who appeared to suffer the worst outcome had mothers who were identified as "psychologically unavailable". Psychologically unavailable mothers were categorized as unresponsive and detached from their infants. Although these mothers were not physically abusive, they showed no positive emotion or pleasure in their interactions with their infants and were rejecting of their infants' bids to engage and involve them. The children of mothers who were psychologically unavailable were all insecurely attached, and showed marked declines in competence from 9 months to 24 months, as measured by the Bayley Scales of Infant Development (Bayley, 1969).

Egeland and Erickson concluded that emotional responsiveness in the mother-infant relationship seems to be an especially important factor in fostering a secure and healthy attachment, and that the lack of emotional

availability can place a child at risk for subsequent maladaptive social and emotional development. Further research, however, is required to more fully understand how both unresponsive and neglectful parenting within normal and atypical samples affect the developmental sequelae of children who are in a relationship which may not be meeting their needs. In addition, there may be conditions which make it more difficult for a parent to be emotionally available for their child, and these conditions require more exploration.

While results are slowly accumulating on the importance of the mother-child relationship, serious methodological issues continue to challenge those who assess the early caregiver-child relationship. In particular, how to best capture the quality of the interactions in the mother-infant relationship is an ongoing debate among researchers (Hinde & Stevenson-Hinde, 1986). Many believe (e.g., Ainsworth, Blehar, Waters & Wall, 1978; Pederson & Moran, 1995; Seifer, Schiller, Sameroff, Resnick & Riordan, 1996) that naturalistic observations in the home best capture the essence of the caregiver-infant relationship. Few studies, however, have been conducted in this way (Biringen & Robinson, 1991; Crowell et al, 1988). Rather, for the past decade assessments of mother-infant interactions have largely taken place in laboratory environments which limit the opportunity to observe and describe the dynamics of the

mother-child relationship as they engage in their day-to-day activities. Some researchers have also used examiner-completed and self report questionnaires in order to assess the quality of the mother-child relationship. These can be open to examiner and subject biases and provide a too simplistic account of mother-child interactions.

There has also been a call for more sophisticated models of parent-child interactions (Lafreniere & Dumas, 1992). Sameroff and Chandler (1975) proposed a transactional model in order to take into account the multiple influences in early development. Their transactional model suggests that there is a reciprocal influence of the environment and the infant during the course of development. Assessing different aspects of maternal and infant behaviours, and their stability and change across developmental stages in the infant becomes important in order to more fully understand the processes involved in the development of relationships, and the problems that may occur when these processes are disrupted. Despite increased awareness regarding the reciprocal nature of the mother-infant relationship, few studies include the child's responsiveness to their mother in their analyses (Biringen & Robinson, 1991). By excluding the child from these studies, the dynamic nature of early interaction has been left unexplored and maternal behaviours which may be

affecting the child in the relationship with his or her mother are unknown.

Maternal sensitivity, defined by a mother's ability to respond contingently to her infant's signals for proximity and contact, represents the most common construct used by researchers to evaluate mother-infant interactions and attachment behaviours. Ainsworth (Ainsworth et al., 1978) was one of the first to develop a scale that measured maternal sensitivity in home settings. Since their development, the Ainsworth scales have been used extensively by researchers, however, in order to work with these scales, observations conducted over extended periods of time are required, and these scales are only suitable for infants up to one year of age. In fact, very few measurement instruments exist that focus on mother-child interactions beyond the first year of life.

An important and related issue is whether maternal sensitivity is in fact the only important dimension of the mother-infant relationship. Some researchers propose that a multi-dimensional approach to parenting better captures the complexity of the parenting role (Seifer & Schiller, 1995). Maternal flexibility, ability to respond contingently to infant's signals and maternal warmth are all associated with positive parenting characteristics, and other behaviours, such as skills in scaffolding and structuring, are also emphasized (Biringen, Robinson, & Emde, 1994). As an infant

develops, a mother may begin to involve objects in their play activities and in so doing helps the child to attend and explore objects of interest. This manner of maternal scaffolding has been found to be important in the development of language and cognitive development (Hodapp, Goldfield, & Boyatzis, 1984; Moore & Corkum, 1994). Other aspects of maternal scaffolding that are important for child development include directing and supervising a child's behaviour. Baumrind (1971) reported that mothers of competent children were warm and sensitive but that they also demonstrated moderate levels of control. There are also aspects of good parenting that are not always included in the construct of sensitivity, such as the ability to set limits, structure activities and provide a safe environment (Seifer and Schiller, 1995). As a result, researchers have begun to develop new measures of mother-child behaviours that capture the complexity of their interactions and provide more information concerning the quality of emotional communication for both the mothers and the children (Biringen & Robinson, 1991; Pederson & Moran, 1995).

#### Emotional Availability

For some time, theorists have used the term "emotional availability" to describe the emotional quality of the mother-infant relationship (Emde, Gaensbauer, Harmon, 1982; Mahler, 1975). This term, however, has largely been applied in a clinical context, and the significance of different

patterns of emotional expressiveness present within the mother-child relationship has rarely been studied empirically. Biringen, Robinson and Emde (1988) recently reconceptualized emotional availability as a relational construct that includes the integration of different components of maternal and child behaviour that are present in an early relationship. They developed the Emotional Availability Scales which tap three maternal dimensions of behaviour, i.e., maternal sensitivity, maternal structuring/intrusiveness and maternal hostility; and two child dimensions, child responsiveness and child involvement. They believe that these five dimensions, together, reflect the quality of the mother-child relationship as a whole and provide a means to assess complex components of this interaction empirically. The scales thus address some of the methodological issues that have been raised from previous research where the complexity of the mother-infant relationship has not always been captured. For example, in assessing an emotionally available mother both sensitivity and contingency to her child's needs are considered. However, the quality and the appropriateness of the emotional communication are also assessed. In addition, the extent to which a mother supports and structures the child's play in her interactions is included in the definition of an emotionally available mother. In the assessment of emotional availability, the

infant's responsiveness to the mother is also important. In a relationship that is marked by high levels of emotional availability, the infant will show pleasure and enthusiasm as he or she engages fully with his or her mother (Robinson, 1995).

Within the emotional availability framework, the mother-infant relationship is viewed as a dynamic system whereby both mother and infant are rewarded by their emotional transactions. The importance of considering emotions in the mother-infant relationship has been emphasized by many researchers (Berscheid, 1986; Sameroff & Emde, 1989; Malatesta, 1982; Tronick, 1989). For most children, the mother-infant relationship is a child's first experience with an interpersonal relationship. It provides infants with the opportunity to explore their emotions and to test out how their expressions are received and attended. When development within the infant is healthy, pleasure and a full range of emotions can be observed within the mother-infant relationship. When development is maladaptive, there may be evidence of a "turning off" in both the mother and the child, and the range of emotions will be restricted (Emde et al., 1982; Goldberg et al., 1994).

Studies that have been conducted using the emotional availability scales show that higher levels of emotional availability are associated with positive mother-infant attachment (Ziv, Sagi, Karie-Koren & Joaels, 1996). In



addition, increased levels of emotional availability characterized by higher levels of maternal sensitivity and infant involvement, and lower levels of maternal hostility, have been found to differentiate low versus high risk samples (Pipp-Siegel, 1996). The present study used the Emotional Availability Scales as a means of assessing the emotional quality of the mother-infant relationship in a sub-sample of mothers from the Concordia Risk Project.

The emotional availability scales were designed specifically for children aged 12 - 48 months of age and, are therefore, appropriate for the age range under investigation. In addition, the scales provide information concerning not only a mother's ability to be sensitive and responsive but also how she structures and scaffolds the child's play activities, behaviours which have been found to be important in predicting child competence. The extent to which the child responds affectively and is involved in the mother-child relationship can also be assessed, thus capturing the relational aspect of the interactions.

#### Importance of Touch in Mother-Infant Emotional Communication

Global assessments of mother-infant interactions are clearly required to capture the dynamic aspect of the relationship. However, the best evaluation of mother-infant interactions is one that considers the relationship at different levels of analysis. Global assessment, in combination with a more microscopic analysis of mother-

infant behaviours allows for a more in-depth understanding of how a particular behaviour may affect the mother-infant relationship.

The quality of physical contact between a mother and her infant is another important component of the mother-infant relationship (Montagu, 1986). Both Bowlby (1969) and Ainsworth (1978) found that proximal behaviours were integral features of emotional communication between a mother and her infant and higher levels of touch were related to secure positive attachment. A mother who is emotionally available and sensitive will offer physical comfort by hugging and holding a child who is distressed and needs reassurance. An infant who is not able to seek proximal contact may soon learn to expect that his or her needs are not likely to be met, which can lead to an insecure attachment (Egeland & Erickson, 1987). Despite the importance of touch in normal development it is only recently that attention has been paid to the tactile modality and its role systematically researched in studies of mother-infant interactions (e.g., Kisilevsky, Stack, & Muir, 1991; Stack & Muir, 1990, 1992). It has been demonstrated that mothers touch their infants over 65% of the time during periods of normal face-to-face interactions (Stack & Muir, 1990). Using the Caregiver-Infant Touch Scale (CITS), Stack, Lepage, Hains & Muir (1996) found that mothers use different tactile behaviours depending on the

instructional context. Both static and active positive touch are important components of the mother-infant interchange (Kaye and Fogel 1989; Twardosz, Schwartz, Fox & Cunningham, 1979). In normal samples, mothers use mostly positive active touch to communicate with their infants. Some caregiving behaviours may also be used in order to adjust postures, or wipe their infants' faces, however, negative touch is rarely observed.

The role of touch in reducing an infant's stress has been examined (Stack & Muir, 1990) using the Still-Face Paradigm (SF) (Tronick, Als, Adamson, Wise, & Brazelton, 1978). During a Still-Face procedure mothers are asked to remain silent, maintain still, neutral faces and refrain from touching their infants. Thus, there is both physical and emotional unavailability during the SF period. This procedure is carried out after a period of interacting normally with their infants. Infants typically demonstrate a negative reaction to the still-face in the form of decreased smiling, increased fretting and looking away, and some infants withdraw from the interaction altogether (Tronick et al., 1978). In an adaptation of the Still-Face procedure, Stack and Muir found that by allowing mothers to touch during the SF period, touch could elicit smiling, moderate the levels of distress and increase attention relative to a typical SF period. These findings suggest

that proximal contact can soothe and modulate positive affect and attention at least for brief periods of time.

Research that has been conducted with preterm and failure to thrive infants also sheds light on the role of touch in infants' development. For example, Scafadi et al. (1990) found that touching and handling facilitated growth in preterm human infants. Polan and Ward (1994) found that tactile behaviours that could promote growth were less frequent among mothers of children with failure to thrive as compared to the comparison group mothers, suggesting that the lack of touch was contributing to the children's health problems. Findings such as these suggest that infants who do not receive adequate physical contact and nurturing may be at risk for abnormal development. These findings support the classic work by Spitz (1946) who found that infants deprived of interpersonal contact for long periods of time would exhibit extreme behaviours characteristic of despair and depression resulting in ill health.

Given the apparent importance of touch in a child's physical and emotional development further research is required to broaden the understanding of the role that touch plays for the developing child. Most studies focus on touch in the first year of life and there is a paucity of research devoted to a consideration of touch behaviours in toddlerhood and beyond. In addition, touch has primarily been studied within normal samples and little is known about

touch behaviours within risk dyads where negative tactile behaviours (Tronick, 1995), and/or absence of positive touch may characterize emotional communication. There may be mothers who are not aware of the significance of touch or who may have difficulty expressing themselves through this communicative channel. Little is known as to the amount or types of touch mothers use in high risk populations, nor the impact on a child's development when positive physical contact is infrequent, or absent. Thus, the absence of positive touch in a child's early development may constitute another important variable that should be taken into account with other parenting behaviours when considering whether a child may be at risk for abnormal development. In addition, an exploration of how touch behaviours are expressed in conjunction with other parenting behaviours such as maternal sensitivity and scaffolding is an important contribution and will permit a description of how mothers use this mode of communication to facilitate their child's development.

#### Intergenerational Transmission of Risk

In order to understand the processes involved in mother-child relationships and their effect on the developing child, the importance of considering intergenerational continuities has been underscored (Cicchetti et al., 1990). Intergenerational research is especially relevant to understanding how early childhood experiences may affect the formation of future adult

relationships, including the parent-child relationship in the next generation. Central to Bowlby's (1969) view of attachment was the idea of intergenerational continuity in the quality of parenting behaviours. How a mother will interact with her infant will be affected by the quality of her interpersonal relationships with her family of origin and the emotional qualities that she possesses and brings to the relationship (Ricks, 1985). Emotional and behavioural problems established in childhood can thus be continued in the next generation. Retrospective reports have confirmed that difficult childhood behaviour in mothers is associated with negative emotional expression in the parenting role (Elder, Caspi, & Downey, 1986). In an attempt to identify how events in one generation can influence the well being of the next generation, Elder et al. (1986) proposed that childhood problem behaviour in one generation may result in unstable and problematic social and family relationships which will ultimately affect the behaviour of the next generation.

Longitudinal research that follows individuals from one generation to the next presents the best approach to understanding the underlying processes in the intergenerational transmission of risk. A longitudinal intergenerational design provides an opportunity to examine the processes by which maladaptive patterns identified in childhood may be transmitted, potentially constituting risk

to the next generation. These designs also provide an opportunity to consider the complexities of resiliency. Some individuals become competent parents despite disruptive childhood psychosocial problems (Main & Goldwyn, 1984). In addition, some children develop adaptively despite growing up within a multiple risk environment. These questions can be most clearly addressed within longitudinal prospective studies. However, these studies require following individuals for lengthy periods of time, and they are time consuming and costly. As a result, few studies have been designed in this way. Several prospective studies have followed children into adulthood over an extended period of time (Elder et al., 1986; Werner & Smith, 1992), however, the focus has primarily been on individual development across the life span, and risk samples are rarely considered (Serbin, Peters, McAffer & Schwartzman, 1991). The Concordia Risk Project is one such longitudinal and prospective study of aggressive, withdrawn, and aggressive-withdrawn males and females who were first studied in 1977.

The Concordia Risk Project is an ongoing 20-year longitudinal study designed to follow the development of individuals who during childhood were identified as aggressive and/or socially withdrawn. The criteria for risk is thus atypical social behaviour identified in childhood, which differs from other risk studies that focus primarily on parental psychopathology. The study of aggressive and

socially withdrawn behaviour has been of interest to many developmental researchers since both of these behaviours have been found to underlie many social and emotional problems (Lyons, Serbin & Marchessault, 1988; Pepler & Rubin, 1991; Moskowitz & Schwartzman, 1989). Research findings from the Concordia Risk Project have shown that this population represents a high risk group for multiple problems (Serbin, Moskowitz, Schwartzman, & Ledingham, 1991).

Although there is some controversy over how researchers in the past have defined and measured these dimensions of aggression and social withdrawal (Rubin, Hymel & Mills, 1989; Tremblay, 1991), aggression is commonly defined as behaviours that attempt to injure others or property either through physical or verbal means (McCord, 1988). In contrast, social withdrawal is defined as behaviours that are socially isolating and can be associated with avoidance, anxiety, shyness and fear (Moskowitz & Schwartzman, 1989). Individuals who show a combination of aggressive and withdrawn behaviour have also been found to be at risk for major psychosocial problems in adulthood. Outside of the Concordia Risk Project, however, these combined dimensions of behaviour have rarely been systematically examined.

A considerable amount of research has been conducted on aggressive behaviour. The majority of studies, however, have focused on aggression in males while less is known



about aggressive behaviour in females. Research conducted thus far has found that aggression in males is quite stable throughout the life span and can also be transmitted from one generation to the next (Huesmann, Eron, Lefkowitz & Walder, 1984; McCord, 1988; Peters, 1990). These findings have been validated through cross cultural research and across diverse measurement instruments (Rubin, Bream & Rose-Krasnor, 1991).

Studies that have included females in their samples have reported mixed evidence for the stability of aggression in females. Roff and Wirt (1984) found that, for boys, negative outcomes were related to childhood measures of aggression, but not for girls. Findings from the Concordia Risk project (Moskowitz, Schwartzman & Ledingham, 1985) suggest that moderately high stabilities of aggressive behaviour can be found for both boys and girls over a 3-year time span. It was found that higher levels of aggression in early childhood predicted difficult social functioning and poor academic achievement later in childhood. It is possible, however, that the developmental pathways for aggression in women are different from those of men. Childhood aggression in girls may result in other kinds of negative outcomes such as academic difficulties, and unstable family and social relationships (Moskowitz & Schwartzman, 1989).

In contrast to aggression, less is known about the stability of withdrawn behaviours. Earlier research suggested that childhood withdrawal was relatively unstable and not necessarily predictive of maladjustment in later life (Rubin & Mills, 1991; Moskowitz & Schwartzman, 1989). However, over a 3 year time span, Moskowitz et al., (1985) found evidence for moderate stability of withdrawn behaviours and that these behaviours did increase over time. It has also been suggested that internalizing difficulties such as withdrawal may be harder to detect than aggressive behaviours (Rubin & Mills, 1991; Serbin, Marchessault, McAffer, Peters, & Schwartzman, 1995), and that socially withdrawn children may develop problems in their social interactions, leading to loneliness and social dissatisfaction (Rubins & Mills, 1991). If problems in social functioning do develop as a consequence of early childhood withdrawal, then these problems may subsequently affect the ability of withdrawn girls to engage in healthy parent-child relationships in the next generation.

Knowledge concerning the developmental sequelae of childhood aggression in combination with social withdrawn behaviours has mostly been gathered as a result of research conducted within the Concordia Risk Project. The results to date support the contention by Moskowitz and Schwartzman (1989) that this group may be particularly at risk for psychosocial problems as adults. The aggressive-withdrawn

children have been found to be developmentally immature (Ledingham, 1981) and have poor academic achievement (Ledingham & Schwartzman, 1984). They were also found to have poor social relationships and were less liked by their peers (Lyons et al., 1988). These findings suggest that being identified as both aggressive and withdrawn in childhood may represent a significant risk factor for the development of maladaptive social and family relationships in adolescence and adulthood.

The participants from the original Concordia Risk Project are now in early adulthood and are having children of their own. This provides a unique opportunity to examine the quality of parenting within this subsample and how mothers' childhood psychosocial functioning may affect the next generation. Some preliminary investigations regarding the parenting characteristics of mothers within the Concordia Risk Study suggest that parenting and environmental factors will be important variables in predicting the developmental outcome of the next generation. Serbin et al. (1991) considered the sexual and reproductive patterns of a subsample of mothers. They found that the aggressive and aggressive/withdrawn girls were more likely to engage in high risk sexual behaviour and have elevated levels of teen pregnancy and parenthood. In a further study that considered the quality of parenting and home environment, mothers' childhood aggression was associated

with an unresponsive parenting style, while withdrawn mothers were less likely to provide a stimulating home environment for their offspring (McAffer, 1990). Cooperman (1996) also found that aggressive and socially withdrawn mothers were more likely to show unresponsive maternal behavioural styles. In addition, mothers who were socially withdrawn as children showed less supportive behaviour as parents. Findings also indicate that the offspring are at risk for multiple problems such as poor health, low academic achievement and behavioral adjustment (Granger et al., 1994; Serbin, Peters & Schwartzman, 1996).

These preliminary investigations of the current phase of the Concordia Risk Project suggest that parenting in the original participants is an important area of study. Such explorations may provide a window into further understanding the developmental sequelae of aggressive and socially withdrawn behaviours and the extent to which these childhood patterns of behaviour represent an intergenerational risk to the healthy development of their offspring. Research findings to date suggest that being identified as aggressive and socially withdrawn in childhood places individuals at risk for a variety of psychosocial problems during their lives. These maladaptive outcomes may result in increased difficulty for these individuals in forming attachments in early adulthood, thus, representing a pathway by which family relations and the parent-child relationship in the

next generation may be particularly at risk. More research is required, however, to evaluate to what extent the mother's risk status of aggression and/or social withdrawal may disrupt parenting behaviours and the quality of the mother-infant relationship.

### The Present Study

The present study was designed to examine the quality of the emotional and physical communication within the mother-child relationship within a sample of high risk mothers who have a history of aggression and social withdrawal, and their at-risk children. The developmental status of the child was also examined as measured by the Bayley Scales of Infant Development (Second Edition, Bayley, 1993). The prospective nature of the design enables a direct examination of how parenting behaviours might be disrupted by the risk status of the mother and the processes by which this may constitute a risk to the next generation.

One of the primary objectives was to identify whether qualitative features of mother-child interactions differentiated the risk dyads from a matched comparison group. A subsidiary goal was to consider whether there was an association between maternal risk status, parenting behaviours, and the developmental status of the child. The early mother-infant relationship (age 13 - 42 months) was selected for study since this is a time which is especially important for a child's social and emotional development and

during which important developmental transformations take place, e.g., the onset of language. To date, very few investigations have focused on mother-child play interactions in the second and third years of life (Emde, 1989). Within the Concordia Risk Project itself, few have examined the interactions of mothers and their young children using naturalistic observations of mother-child play.

Levels of emotional availability within the mother-infant relationship were assessed taking into account both maternal and child behaviours expressed in their interaction with each other. The amount and quality of physical contact expressed by the mother and her infant was also explored since touch is considered an important aspect of the attachment process and communication between a mother and her child. This feature of the mother-infant relationship has rarely been studied in toddlerhood, nor has its role in mother-infant interactions within a risk sample been examined.

Several important methodological features that have been limitations in previous studies were addressed in the present study. First, direct videotaped naturalistic observations of mother-infant interactions were used to assess the quality of the relationship. The complexities of the mother-infant interaction are best captured by naturalistic observations within which different aspects of

maternal and infant behaviours can be closely examined (Biringen & Robinson, 1991; Crowell et al, 1988). Second, both maternal and child behaviours were examined. Typically studies that consider the quality of the mother-infant relationship only examine maternal behaviours and the relational aspect of the interaction is rarely considered. Many unanswered questions regarding the affective response of the child in the context of the mother-infant relationship thus remain. Third, the age span of the infants, i.e., 13 to 42 months, provided an opportunity to explore whether levels of emotional availability and physical contact differ developmentally and how they may be associated with risk status. Studies that consider attachment processes beyond infancy are warranted to understand the developmental sequelae of the attachment process. The present study was designed to further our knowledge regarding important environmental and parenting factors that may be present in this high risk sample, and contribute to better understanding the processes through which intergenerational transfer of risk may occur.

### Hypotheses

There were three main hypotheses explored by the present study, each of which is believed to be important and to affect the emotional development of the next generation. Based on previous research findings some predictions were made regarding the association between the childhood risk

status of the mothers and parenting behaviours. The study was also exploratory in nature and attempted to clarify to what extent, and by what mechanisms, mothers' childhood levels of aggression and/or social withdrawal represented a risk to the next generation.

#### Hypothesis 1:

The first hypothesis was that mothers' risk status would predict levels of emotional availability within the mother-infant dyads. It was predicted that lower levels of maternal sensitivity and maternal scaffolding, higher levels of hostility, and lower levels of child responsiveness and involvement would be associated with mothers' levels of childhood aggression and social withdrawal. In particular, it was expected that negative outcomes would be associated with mothers' childhood levels of withdrawal and the combination of aggression and withdrawal since these childhood behaviours represent the highest risk for later psychosocial problems.

#### Hypothesis 2:

The second hypothesis considered the relationship between maternal risk status, parenting behaviours (as measured by the emotional availability scales) and the developmental status of the child. It was predicted that both maternal risk status and parenting behaviours would contribute to the prediction of the developmental outcome in the child.



### Hypothesis 3:

The third hypothesis concerned the frequency of levels of physical contact present in the mother-infant dyads. Very few studies have considered the role of physical contact in toddlerhood within risk or normal samples, making predictions difficult. However, because it was believed that parenting may be disrupted by maternal risk status, it was expected that mothers' childhood levels of aggression and/or social withdrawal would be associated with less closeness and less physical contact. It was also expected that mothers' risk status would predict less positive and more negative touch behaviours.

Finally, given the age range of the children (i.e., 13 - 42 months), it was also possible to examine whether there were observable differences in levels of emotionally availability and physical contact that were associated with age, and thus the development of the child. However, a complete exploration of these developmental questions was limited by the sample size.

## Method

### Participants

The participants for the present study were recruited as a subsample from the pool of 1,774 subjects (864 boys and 910 girls) making up the Concordia Risk Project (Ledingham, 1981). The Concordia Risk Project commenced in 1977 with the screening of 4,109 school children when they were in grades 1, 4, or 7. The children were selected from a community sample attending French language public schools in Montreal inner city, low socio-economic neighbourhoods. This selection procedure differs from other risk studies in which children are often selected on the basis of clinical referral. The children were screened for aggression and social withdrawal using a peer nomination procedure (Pekarik, Prinz, Leibert, Weintraub & Neale, 1976; see Appendix A). A normative comparison group was also identified at that time. A thorough description of the initial screening method used in the Concordia Risk Project is outlined in Appendix B.

The Concordia Risk Project has retained 909 traceable women. For the present study, women from the original sample who are now mothers of young children were asked to participate. The mothers were selected on the basis of their fulfilling two criteria: (a) having one offspring in the age range of 12 - 42 months; and (b) their child was currently living with them. In total, the sample for the

present study consisted of 42 mothers and infants (27 girls and 15 boys), of which 24 were from risk groups while 18 were from the comparison group. Based on the mothers' original risk classifications, the sample was drawn from the four groups as follows: aggressive (n=8), withdrawn (n=10), aggressive-withdrawn (n=6), and controls (n=18). At the time these women were originally identified in 1977, 15 (36%) were in Grade 1, 11 (26%) were in Grade 4, and 16 (38%) were in Grade 7.

The four risk classifications were not used as separate groups for the purposes of the present study due to the small sample size. Rather, mothers' childhood aggression and withdrawal scores were treated as dimensions. The dimensional approach has been the preferred option for analyses in the past and it has generally yielded informative results. A test of skewness revealed that the distribution of aggression and social withdrawal z scores in the present sample followed a normal distribution.

The mothers who participated ranged in age from 25.71 to 33.35 years (M = 29.20, SD = 4.99). The children ranged in age from 1.09 to 3.46 years (M = 2.30, SD = 0.71). In terms of marital status, 33% of the mothers were married, 48% were cohabitating, 12% were single, 2% were divorced and 5% were separated. In terms of education, the mothers had between 5 and 17 years of schooling (M = 11.7, SD = 2.60). Mothers' occupational prestige ratings ranged from 184.00 to

656.00 ( $\underline{M}$  = 315.76,  $\underline{SD}$  = 119.22). The mean prestige rating corresponds to the following types of jobs: salesperson, filing clerk, cashier and hairdresser (Nock & Rossi, 1979). The age of the mothers at the birth of their first child ranged from 23.71 to 32.03 years ( $\underline{M}$  = 24.15,  $\underline{SD}$  = 3.36). The means, standard deviations and ranges of mothers' age, children's age, as well as, educational level are presented in Table 1.

In order to ensure that mothers and children from risk groups were similar to mothers and children from the comparison group across important sociodemographic variables, a comparison was conducted of mothers' age, children's age, mothers' education, mothers' occupational prestige rating, as well as, age of the mothers at the birth of their first child. The results indicated no significant difference between groups on any of these variables. The means and F values are displayed in Appendix C, Table 1.

It was also important to assess the representativeness of the current sample as compared to the participants in the original Concordia Risk Project. The mothers who participated in the present study were compared to a subsample of 194 women who were contacted to participate in studies during 1993 - 1997, as well as a subsample of 263 women (who were part of the original sample of the Concordia Risk Project) and who are also known to be mothers. The women were compared along the dimensions of aggression and

Table 1

Means, Standard Deviations and Ranges of Demographic  
Information (N=42)

	Mean	Standard Deviation	Range
Mothers' current age (yrs)	29.20	4.99	25.71 - 33.35
Mothers' age at first child (yrs)	24.15	3.36	23.71 - 32.03
Childrens' current age (yrs)	2.30	0.71	1.09 - 3.46
Yrs of Education	11.70	2.60	5.00 - 17.00
Social Prestige Level	315.76	119.22	184.00 - 656.00

social withdrawal, as well as years of education, occupational prestige ratings and age at birth of first child. The results of the comparisons are illustrated in Table 2. In terms of risk status, no differences were found along the dimensions of aggression and social withdrawal between the three groups. The present sample was, therefore, considered to be representative of the original sample along these dimensions. In general, however, women who were not mothers completed more years of schooling and had higher occupational prestige ratings than women who were mothers. In addition, the mothers in the current sample had their first child later in life as compared to other mothers in the representative sample.

#### Apparatus

Mothers and infants were asked to play on a blanket (12.5 cm length x 16 cm width) which was situated either on the participants living room floor, or on the floor of any other appropriate room in the house. During each home visit, toys were laid out on the blanket according to a standardized format. The toys consisted of a tea set, a telephone, a doll, three books and some building blocks. Toys were carefully selected for their appropriateness and appeal to the age group being tested. Mother-child interactions were videotaped using a Sony Video 8AF camera which was fixed on a tripod during the observations. A Sony directional microphone attached to the video camera recorded

Table 2

Comparison of selection variables between women (contacted 1993-1997 (n = 194)), mothers from original sample (n = 263) and the current subsample of mothers (n = 42): Means and F values

	Non-Mothers	Representative Sample (mothers)	Current Sample	F-Value
Aggression	.22	.28	.35	.40
Social Withdrawal	.28	.33	.56	1.66
Education	12.83	11.38	11.71	21.47**
Social Prestige	363.81	315.05	315.76	8.63**
Mothers' age at birth of first child		23.50	24.86	5.61*

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

mother and child verbalizations and vocalizations. A stopwatch was used to time all interactions.

### Procedure

All participants were contacted by telephone in order to arrange an appointment for two home visits. Participants were informed that each visit would take place in their homes and would last approximately 2 to 3 hours. Mothers were given some information regarding the general nature of the study and procedures. They were not informed, however, of the specific hypotheses of the present study. Mothers were informed that they would be paid \$80 upon completion of all the visits and questionnaires.

The present study was part of a larger research project during which a number of naturalistic observations, as well as interviews, took place. Some questionnaires were completed at the time of the home visits and mothers were also asked to complete questionnaires between the first and second visits. For the purposes of the present study the session of interest was a 15 minute videotaped free play interaction which took place between the mother and infant during the first home visit (described in detail below).

Two members of a research team consisting of one part-time researcher (experimenter) and one research assistant/or graduate student visited each home for approximately 3 hours. The senior person on the team (experimenter) was a mental health professional with a M.A. degree.



Experimenters were blind as to the risk status of the dyad being assessed. The experimenter spent some time with the mother and infant at the beginning of each session in order to explain the overall procedure of the visit and build rapport with the infant. Mothers were asked to read and sign an informed consent form at that time (Appendix D).

At the start of the first home visit, the examiner administered The Bayley Scales of Infant Development (Second Edition, Bayley, 1993) in order to assess the current status of the child's cognitive and motor development. The free play interaction followed the administration of the Bayley scales on the first home visit.

Before commencing the free play interaction, the examiner selected an appropriate room in the home for the interaction to take place. The blanket was placed on the ground and the toys were spread out in a standardized format so that they were facing the mother and infant. The camera equipment was set up facing the blanket in order to capture both mother and child play activities. Mothers were instructed to play with their infants as they normally would at home for 15 minutes. They were also asked to limit their play activities to the blanket provided and informed that they could use the toys if they so wished. All instructions were provided in French. The specific instructions used are found in Appendix E.

If during the testing procedure, a child became distressed, or needed to take a restroom break for longer than 2 minutes, the session terminated and resumed at the next home visit (n = 2). For session breaks that lasted less than 2 minutes, the stopwatch was temporarily stopped and resumed when the mother and infant returned to the carpet and play activities (n = 4). After each play interaction, mothers were asked to rate how natural they believed their interaction had been with their child on a scale of 1 to 4 (1 = not at all natural, 4 = very natural). For those who reported that their interaction was rated as a 2 or below, the play session was videotaped again at the next home visit (n = 1). Upon completion of the assessment protocol, a feedback session took place to discuss the participants' experiences of the testing procedure and to answer any questions mothers had at that time.

### Measures

#### Demographics:

A Demographic Information Questionnaire (DIQ; see Appendix F) was used to gather sociodemographic information concerning the families participating in the study. From this questionnaire information was obtained concerning mother's current age, age at the birth of her first child, marital status, number and ages of children in her family, as well as, number of years of education and occupational status. The DIQ was completed by the experimenter over the

telephone at the time that the home visit was being scheduled.

Maternal education was used as a predictor in the present study since it has been found to be correlated both with maternal behaviours and child outcome measures (Auerbach, Lerner, Barasch & Palti, 1992; Cooperman, 1996). By including this variable in the analyses, it was possible to evaluate if maternal risk status predicted maternal and child interaction measures over and above important demographic variables.

#### Emotional Availability:

The Emotional Availability Scales (Biringen & Robinson, 1991) are global rating scales designed to assess the quality of the mother-infant interaction (see Appendix G for details). The scales consist of five general measures of the emotional availability of the mother toward the infant and of the infant toward the mother.

The maternal dimensions consist of: 1) maternal sensitivity which refers to maternal qualities that tap the mother's ability to be warm and emotionally responsive and connected to the child; 2) maternal structuring/intrusiveness refers to the degree to which the mother appropriately structures the infant's play and sets limits for the infant's behaviour; 3) maternal covert and overt hostility which assesses the degree of hostility, ranging from mother being facially and vocally hostile towards her

infant to more covert hostile behaviours such as impatience or sarcasm. The child dimensions consist of: 1) the child's responsiveness to mother, reflecting both the infant's eagerness to engage with mother following her bid for exchange and, pleasure that the infant shows in being in the interaction; 2) the child's involvement with mother, assessing the degree to which the infant engages mother in play and makes mother his/her audience.

All five dimensions are viewed as relationship variables and make a judgement about a particular behavioural style that occurs within the relationship context as opposed to making a judgement about an inherent trait of emotional availability that may be present in a mother or infant. Maternal sensitivity is coded according to a 9-point scale (1 = insensitive, 9 = highly sensitive). Maternal scaffolding is coded according to a 9-point scale (1 = none, 9 = overly high, 5 = optimal). Maternal hostility is coded according to a 5 point scale (1 = not hostile, 5 = overt hostility). Child responsiveness is coded according to a 9-point scale (1 = unresponsive, 9 = overly responsive, 7 = optimal). Child involvement is coded according to a 9-point scale (1 = uninvolving, 9 = over-involving, 7 = optimal).

Researchers have used the emotional availability scales to assess the quality of the mother-infant emotional communication in both normal and risk samples with children

from 1 to 8 years of age. For example, Easterbrooks, Biesecker, Lyons-Ruth and Carper (1996) found that maternal depression predicted impaired emotional availability in mother-child dyads. Excellent inter-rater reliabilities have been obtained (Cohen's Kappas of .76 for short interactions and over .90 for interactions of 15 minutes or more, (Biringen & Robinson, 1991; Robinson, Little & Biringen, 1993)).

### Touch

Frequency of mother-infant touch was coded according to the following categories: a) active affection, e.g., kiss, caress, hug; b) passive affection, e.g., infant seated on lap, mother and infant were leaning against one another; c) touch through toys, e.g., touch behaviours such as hand-to-hand and hand-to-arm/forearm contact that might have occurred while mother and infant are playing with toys; d) soft restraint, e.g., restraint which was gentle and designed to set appropriate limits; e) hard restraint e.g., physical restraint which was forceful, abrupt or had an angry or punitive quality. Other forms of negative touch were also coded when it was observed, e.g. pokes, jabs (n=2). There were so few instances of negative touch, however, that this category was not used in the analyses. The coding scheme for touch was designed specifically for the purpose of the present study and is based on measures that have been used in the past to assess the quality of

physical contact between a caregiver and infant (e.g., Cohn & Tronick, 1989; Stack et al., 1996; Twardosz et al., 1979).

Since it was unclear at the outset of this study as to how much touching might be elicited during a free play interaction, it was decided to code the extent to which mothers and infants remained within proximity to each other during the interaction. This measure has been used by other researchers as a way of assessing the mother and child's use of interpersonal space (Brown, Pipp, Martz & Waring, 1993). The measure provided an indication as to whether dyads remained close enough and, therefore, had the potential to touch each other as compared to dyads that remained more distant from each other during the interaction. Proximity was coded when the infant and child were within one arm's length of each other and separation was coded if this criterion was not met. Appendix H provides detailed descriptions of the operational definitions for all categories of touch.

#### Child Status

The Bayley Scales of Infant Development (Second Edition, Bayley, 1993) were used to assess child cognitive and motor development. The Bayley Scales are a well-standardized, reliable and widely used measure of infant development. For the present study only the scores on The Bayley Mental Development Index (MDI) were analyzed. The Bayley Mental Development Index (MDI) has 163 items

presented as a graded series and can be converted to a standardized score with a mean of 100 and a standard deviation of 16. Trained examiners, blind to group membership, administered the Bayley Mental Development scale. The examiners were monitored carefully, by a trained clinician who uses the Bayley, through observations of videotaped examples in order to ensure consistency in the administration of the scales.

#### Observational Coding:

##### Emotional Availability:

Coders were trained to use the emotional availability scales during a 3-day workshop given by Dr. J. Robinson, one of the authors of these scales. Prior to the workshop taking place, coders were given some literature to read, as well as a series of training videos to watch in order to become familiarized with the coding procedure. During the workshop itself, in addition to a comprehensive explanation of scales, measurement and interpretation, a number of practice sessions took place which ensured that coders mastered the key aspects of the coding procedure. When discrepancies in coding occurred, participants had the opportunity to discuss and fine-tune their scoring with other participants of the workshop.

Dr. Robinson scored 14 of the projects' videotapes which were subsequently used for training purposes. Coders scored these tapes blind and only proceeded to score the

current data once a high reliability was attained. Coders were considered highly reliable if the scores obtained were within .5 to 1 point of each other. To ensure the accuracy of the coding, 25% of the current sample was double coded. Both coders were completely blind to the risk status of the participants. Inter-rater reliability was assessed following completion of coding using intraclass correlation coefficients (Shrout & Fleiss, 1979), and  $r$ 's ranging from .84 to .99 were obtained.

#### Touch:

The coding scheme for the touch measure was developed specifically for the purposes of the present study. The primary coder was trained to use the scale during its development. A second coder, a Ph.D. student, who had considerable prior experience coding tactile measures, was subsequently also trained using videotaped examples. The presence or absence of touch categories were coded according to a time sampling measure. Videorecordings of the 15 minute free play were divided into 60, fifteen second, intervals for the purpose of coding. Coders observed the taped interactions for 15 seconds and then recorded the presence or absence of the target behaviour which occurred during each interval. Coders viewed each 15 second interval three times, in order to ensure that all categories of touch were accurately reported. High reliability was attained prior to commencing the inter-rater reliability. Inter-



rater reliability was conducted on 25% of the total sample. Intraclass correlation coefficients ranging from  $r = .89$  to  $r = 1.00$  were obtained. Cohen's kappas were also conducted to consider whether raters also agreed on the intervals within which touch behaviours were coded. The overall Kappa obtained was .85, with kappas for individual categories ranging from .64 to 1.00.

#### Data Reduction

Scores for every mother and child for each of the emotional availability measures were entered manually into the computer. Due to the fact that one of the emotional availability measures, maternal scaffolding, has a maladapted upper as well as lower bound (1= none, 9 = overly high, 5 = optimal), scores were collapsed across this scale to form a continuous scale that ran from impaired to optimal levels of scaffolding ( 1 = impaired, 5 = optimal).

Raw frequency data were entered for each of the touch measures. Proportions were calculated in order to correct for minor inconsistencies with respect to the timing of free play interactions ( $n=7$ ). A mean percentage score was obtained for each touch behaviour by dividing the number of touches present within each category by the number of 15 second intervals observed and multiplying by 100. In addition, two further categories of touch were created. A new category (Total Affection) was calculated by averaging the proportions obtained for passive affection and active

affection generating a mean percentage frequency of total affectionate behaviour. A total touch score (Total Positive Touch) was created by averaging the proportions for passive and active affection, touch through toys and soft restraint, thus generating a mean percentage frequency that mothers and children engaged in physical contact. These categories were all selected for inclusion in the total touch score since they were considered to be positive touch behaviours. Out of a possible 240 occurrences, the frequency of physical contact across the four touch categories ranged from 12 to 134 (median = 42). Negative touch as observed in Hard Restraint was excluded from the total positive touch category.

## Results

### Preliminary Analyses and Data Screening

Before the commencement of data analyses, all variables were examined for accuracy of data entry and missing values. Variables with missing values were replaced by the mean value of all subjects on that particular measure. There were no missing data for any of the primary predictors or dependent measures. However, there were missing data in the case of two child Bayley scores which were not obtained at the time of testing. Descriptive statistics were first conducted on each dependent measure to evaluate the normality of the distribution, assess outliers and determine if significant skewness and/or kurtosis were present. No cases were identified as outliers for any of the emotional availability measures. Among the touch measures, outliers were present in the case of proximity, active affection, hard restraint, soft restraint and total affection. These outliers were controlled by assigning the subjects a score that was one point lower or higher than the next extreme score (Tabachnick & Fidell, 1989). After controlling for univariate outliers, examination of multivariate outliers via Mahalanobis' distance, Cook's distance, and visual scanning of residuals revealed no significant outliers at  $p < .001$ .

Following the descriptive statistics, intercorrelations between predictors were assessed for multicollinearity or

singularity. In cases where multicollinearity occurred, variables were selected on the basis of theoretical importance to the hypotheses being tested. The selection of variables is discussed in detail in the following section. The correlations between predictors are presented in Table 3. Table 4 depicts the correlations between predictor variables and emotional availability dependent measures. Table 5 depicts the correlations between predictor variables and touch dependent measures. The intercorrelations between predictors and child Bayley scores are presented in Table 6. Finally, the intercorrelations among the emotional availability measures are presented in Table 7.

#### Reduction of Variables and Data Set

Given the sample size (N=42) and analyses planned, the number of variables required reduction. The selection of variables to be retained was based on their theoretical relevance for the hypotheses being tested and the statistical properties and intercorrelations of the different measures.

The study was concerned with how childhood levels of maternal aggression and social withdrawal predict parenting behaviours within the next generation. Therefore these two predictors were included in the analysis. The interaction between levels of aggression and withdrawal was also used as a predictor since previous research findings from the

Table 3

Correlations Among Predictor Variables (N = 42)

	Mothers' Education	Child Age	Mothers' Childhood Aggression	Mothers' Childhood Withdrawal
Mothers' Education		-.25	-.08	-.09
Child Age			-.05	.04
Mothers' Childhood Aggression				-.27
Mothers' Childhood Withdrawal				

\*  $p < .05$     \*\*  $p < .01$

Table 4

Correlations Among Predictors and Measures of Emotional Availability (N = 42)

	Maternal Sensitivity	Maternal Scaffolding	Maternal Hostility	Child Responsiveness
Mothers' Education	.04	.06	.05	.01
Child Age	.15	.26	-.12	.47**
Mothers' Childhood Aggression	-.02	.13	.17	-.03
Mothers' Childhood Withdrawal	-.04	-.06	-.07	-.16

\*  $p < .05$     \*\*  $p < .01$

Table 5

Correlations Among Predictors and Measures of Touch (N=42)


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	Total Touch	Soft Restraint
<hr/>		
Mothers' Education	-.25	.34*
Child Age	-.34*	.34*
Mothers' Childhood Aggression	-.22	-.16
Mothers' Childhood Withdrawal	.21	.25

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\*  $p < .05$     \*\*  $p < .01$

Table 6

Correlations Among Predictors and Scores on Bayley Mental  
Scale (N=42)

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Bayley Mental Scale	
<hr/>	
Mothers' Education	.33*
Mothers' Childhood Aggression	-.09
Mothers' Childhood Withdrawal	-.33*
Maternal Scaffolding	.42**

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\*  $p < .05$     \*\*  $p < .01$



Table 7

Correlations Among Emotional Availability Measures (N=42)


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	Maternal Sensitivity	Maternal Scaffolding	Maternal Hostility	Child Responsiveness
Maternal Sensitivity		.73**	-.64**	.62**
Maternal Scaffolding			-.43**	.60**
Hostility				-.28
Child Responsiveness				

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\*  $p < .05$     \*\*  $p < .01$

Concordia Risk Study have indicated that the presence of both childhood aggression and social withdrawal together may be more strongly predictive of negative outcomes than aggression or withdrawal alone. Although other interaction effects might also be important to consider, (e.g., aggression or withdrawal by child age), given the relatively small sample size, it was deemed necessary to limit the number of predictors that were included in the analysis to as few as possible. Therefore, no other interactions were included in the analyses.

The demographic variable of years of maternal education was included in the analyses since it has been found to be correlated both with maternal behaviours and child outcome measures in a number of studies (e.g., Auerback et al., 1992). Child's age was also included given that the present study included children aged 13 - 42 months and parenting behaviours have been found to change as a child makes the transitions through different developmental stages.

Another demographic variable that was considered for inclusion in the analyses was child sex. In the present sample there was an unequal number of boys and girls (i.e., 15 boys and 27 girls) which was not evenly represented across risk dimensions, thus biasing the sample. It was also necessary to limit the number of predictors selected for analysis due to the relatively small sample size.

Taking these two factors into consideration, it was decided to exclude child sex from the planned regression analyses.

In terms of outcome variables, the following measures were used to assess levels of emotional availability: maternal sensitivity, scaffolding, hostility and child responsiveness. Child involvement was excluded from the analyses since it was found to be highly correlated with child responsiveness ( $r = .90$ ).

Given the number of touch measures coded and the limited sample size, it was necessary to reduce the number of touch-related dependent measures to be evaluated. Total positive touch was selected since this represents the total frequency of physical contact present between a mother and her child and was highly correlated with a number of separate touch measures, i.e., passive affection, active affection and touch through toys ( $r$ 's ranging from  $r = .70$  to  $.91$ ). This combined category thus provided an important amount of information from which to draw conclusions, while avoiding the necessity of running separate analyses for each touch measure and thus increasing the likelihood of Type 1 error. Soft restraint was also included since it was only moderately correlated with total positive touch ( $r = .37$ ) and allowed for a qualitative examination of how mothers used touch to control their child's behaviour.

A subsidiary goal of the present study was to consider the relationship between maternal risk status, parenting

behaviour and child Bayley scores. Both maternal sensitivity and maternal scaffolding were found to be correlated with child Bayley scores, however, it was not possible to include both of these predictors in the analysis due to the limited sample size. Maternal scaffolding was selected for inclusion in the present analysis given that a number of studies have suggested that the manner in which the mother structures and stimulates the child's play may be related to child outcome measures (Landry, Garner, Swank & Baldwin (1996).

### Analyses

All of the primary analyses were conducted with the Statistical Package for Social Sciences program (SPSS; Norusis, 1990). A critical alpha level of  $p < .05$  was used as the criterion for all analyses and significance levels of .05, .01 and .001 are reported in the text. Only significant findings are reported; however, due to the exploratory nature of this study, results at  $p < .10$  were also considered worthy of examination if they were relevant to the theoretical hypotheses of this study and were consistent with the literature.

Three series of hierarchical regression analyses were conducted on the data. The first set of analyses was conducted in order to assess the relationship between maternal risk status and levels of emotional availability defined by maternal sensitivity, maternal scaffolding,

maternal hostility and child responsiveness. The second set of analyses considered the relationship between maternal risk status, maternal scaffolding and child Bayley scores. The third set of analyses was conducted in order to consider the relationship between maternal risk status and levels of touch. When significant interactions were obtained, post-hoc tests were conducted in order to isolate the source of the interaction. Regression slopes were calculated and tested to evaluate whether they were significantly different from zero.

In all sets of analyses, mothers' childhood levels of aggression and social withdrawal, mothers' education and age of child were used as the predictors and were entered in three blocks. Mothers' education was entered in the first step. Child's age was entered in a second step. Mothers' childhood levels of aggression and social withdrawal were entered together in a third step. By entering mother's education and child's age first, it was possible to consider if the maternal risk status of aggression and withdrawal accounted for variance beyond the demographic set of variables (Cohen & Cohen, 1983). An interaction term between dimensions of aggression and withdrawal was entered in a fourth step in order to consider if levels of emotional availability and touch behaviours varied as a function of these variables being together.

In the second analysis where the relationship between maternal risk status, maternal behaviours and child Bayley scores was considered, maternal behaviours were entered after all the other predictors in a last step. Since child's age was not significantly correlated with the child Bayley scores, age was not included as a predictor in this analysis. Thus, the number of steps in all analyses was four. The analyses involved a minimum of eight subjects per predictor variable which is within the recommended minimum number of five subjects per predictor variable required for a hierarchical regression analysis (Tabachnick & Fidell, 1989).

For each of the regression analyses that were found to be significant, a table is provided in the text (Tables 8 - 13). When the results of an analysis were not significant, a summary table of the regression analyses is provided in an Appendix (Appendix I, Tables 1, 2). Each table reports the standardized regression coefficient (Beta), the semi-partial correlation (sr<sup>2</sup>) and the t value associated with each predictor, as well as  $R^2_{ch}$  and  $F_{ch}$  after the entry of all predictors for each step.

#### Hypothesis 1: Mothers' risk status as a predictor of levels of emotional availability

The first hypothesis explored the relationship between mother's childhood levels of aggression and social withdrawal and levels of emotional availability as measured

by maternal sensitivity, maternal scaffolding, maternal hostility and child responsiveness. Four separate hierarchical regression analyses were conducted. In addition to aggression and social withdrawal, maternal education and child's age were entered as predictors in the regressions as a first step.

#### Maternal Sensitivity

In the regression examining mother's childhood aggression and withdrawal as a predictor of maternal sensitivity, the results indicated that the hierarchical regression accounted for 11% (0% adjusted) of the total variance. After all the independent variables were entered at Step 3 the multiple R did not reach significance (Appendix I, Table 1). The demographic variables of maternal education and child age did not emerge as significant predictors of maternal sensitivity. In addition, there were no significant main effects or interaction effects of childhood aggression and social withdrawal.

#### Maternal Scaffolding

In the regression examining mother's childhood aggression and withdrawal as predictors of maternal scaffolding, the results indicated that the hierarchical regression accounted for 12% (0% adjusted) of the total variance. After all the independent variables were entered at Step 4 the multiple R did not reach significance (Appendix I, Table 2). Thus, mothers' years of education,

child age and maternal risk status of childhood aggression and social withdrawal did not emerge as significant predictors of how mothers structured the play activities with their children.

### Maternal Hostility

In the regression examining mother's childhood aggression and withdrawal as a predictor of maternal hostility, Table 8 indicates that the hierarchical regression accounted for 31% (21% adjusted) of the total variance. After all the independent variables were entered at Step 4 the multiple R did reach significance,  $F = 3.25$ ,  $p < .05$ . Mothers' years of education and child age did not emerge as significant predictors of maternal hostility. Mothers' childhood levels of aggression or withdrawal did not significantly increase the likelihood that mothers would show hostile behaviours with their children. However, there was a significant interaction of mothers' levels of aggression and social withdrawal,  $Beta = 1.81$ ,  $p < .05$ . which accounted for an additional 25% of the variance. This indicated that mothers' levels of hostility were modulated by mothers' childhood levels of aggression and social withdrawal. To isolate the source of the interaction, a subsequent post-hoc analysis was conducted. Using a median split, two groups were created based on levels of withdrawal (low, high). It was then possible to consider the association between high and low withdrawal and levels of



Table 8

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Maternal Hostility (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.00	.08
Mothers' Education	.05	.05	.29		
<u>Step 2</u>				.01	.49
Child Age	-.12	-.11	-.70		
<u>Step 3</u>				.04	.87
Mothers' Childhood Aggression	.20	.20	1.23		
Mothers' Childhood Withdrawal	.14	.13	.82		
<u>Step 4</u>				.25	13.16***
Mothers' Childhood Aggression/ Withdrawal	1.81	.50	3.62***		
$\underline{R} = .56 \quad \underline{R}^2_{adj} = .21 \quad F = 3.25^*$					

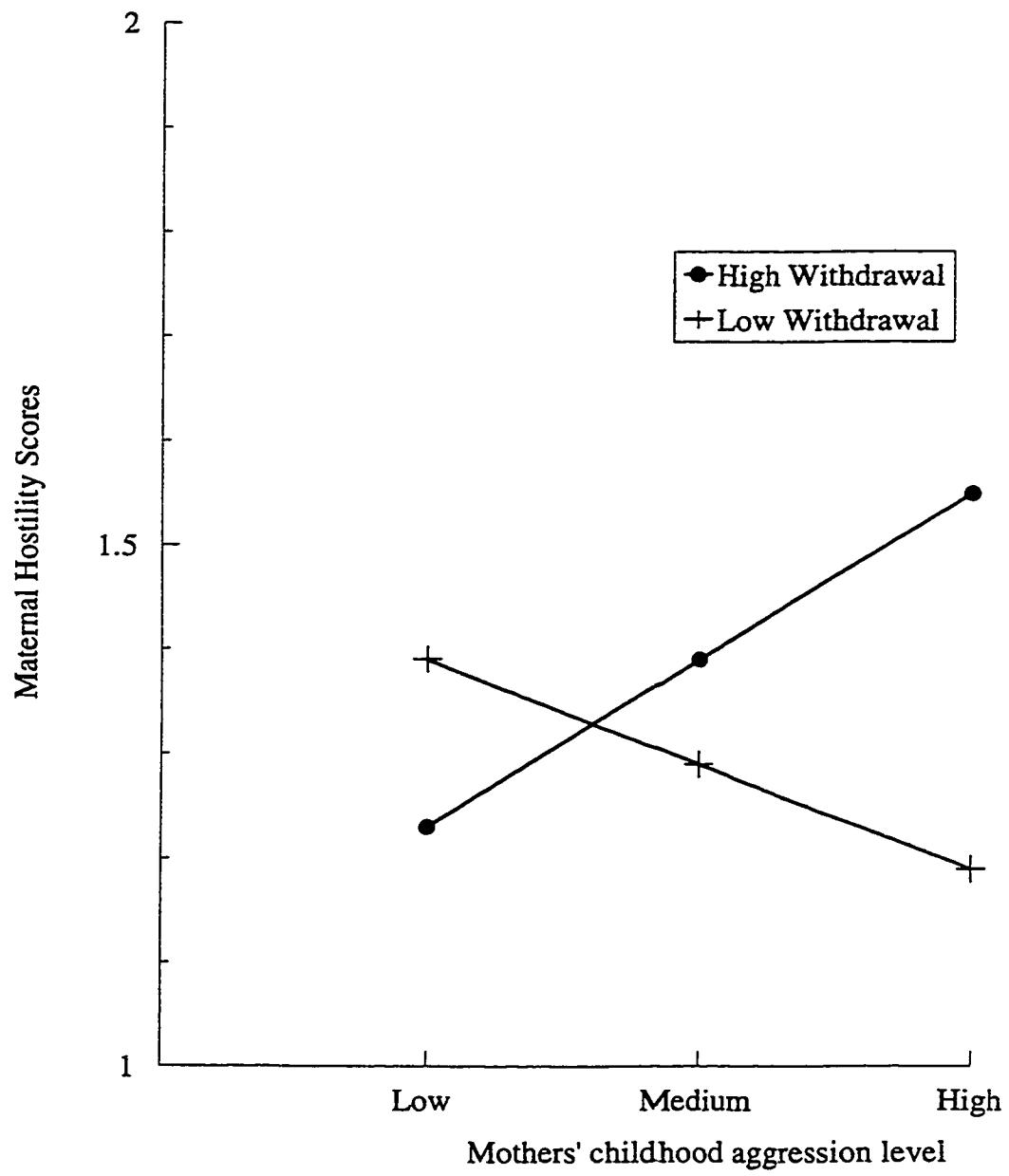
\*  $p < .05$     \*\*  $p < .01$     \*\*\*  $p < .001$

aggression as they related to maternal hostility. The results indicated that the simple slope was significantly different from zero for high levels of withdrawal ( $t = 3.21$ ,  $p < .01$ ) but not for low levels. This interaction is illustrated in Figure 1 and indicates that mothers with high childhood levels of social withdrawal in combination with higher levels of aggression were more likely to express hostile behaviours when interacting with their children.

#### Child Responsiveness

In the regression examining mothers' childhood aggression and withdrawal as predictors of child responsiveness, Table 9 indicates that the total variance accounted for by the hierarchical regression was 28% (18% adjusted). Maternal education did not significantly predict levels of child responsiveness. Child's age, however, entered at step 2 did significantly predict child responsiveness,  $Beta .50$ ,  $p < .01$ , and accounted for 23% of the variance. Older children were likely to be more responsive than younger children in their play interactions with their mothers. Mothers' childhood levels of aggression and/or social withdrawal did not add to the prediction of child responsiveness.

In summarizing the findings from the first hypothesis, maternal levels of aggression and social withdrawal alone did not predict levels of emotional availability. However, the interaction of aggression and withdrawal together



**Figure 1.** Maternal hostility as a function of mothers' childhood levels of aggression and social withdrawal.

Table 9

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Child Responsiveness (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.00	.00
Mothers' Education	.00	.00	.06		
<u>Step 2</u>				.23	11.89**
Child Age	.50	.48	3.44**		
<u>Step 3</u>				.03	.75
Mothers' Childhood Aggression	-.04	-.04	-.28		
Mothers' Childhood Withdrawal	-.18	-.17	-1.22		
<u>Step 4</u>				.01	.65
Mothers' Childhood Aggression/ Withdrawal	-.41	-.11	-.80		
$\underline{R} = .53 \quad \underline{R}^2_{adj} = .18 \quad F = 2.75^*$					

\*  $p < .05$     \*\*  $p < .01$

emerged as a significant predictor in one of the regressions. Higher levels of childhood aggression in combination with high levels of social withdrawal significantly predicted higher levels of maternal hostility. With respect to demographic variables, maternal education did not predict any of the measures of emotional availability. Child age, however, significantly predicted child responsiveness, indicating that older children were more responsive than younger ones.

Hypothesis 2: Mothers' risk status and maternal scaffolding behaviour as a predictor of child Bayley scores

The results of the regression examining mother's childhood aggression and withdrawal and maternal scaffolding behaviours as predictors of child Bayley scores indicated that the total variance accounted for by the hierarchical regression was 37% (29% adjusted, Table 10). After all the predictors were entered the multiple R was significant,  $F = 4.29$ ,  $p < .01$ . At step 1, maternal education accounted for 11% of the variance and significantly predicted child Bayley scores,  $Beta = .33$ ,  $p < .05$ . Thus, mothers who were more educated were more likely to have children who had higher scores on the Bayley Mental Developmental Index. At steps 2 and 3, mothers' childhood levels of aggression and/or social withdrawal did not significantly contribute to the prediction of child Bayley scores. At step 4, maternal scaffolding accounted for 13% of the variance and

Table 10

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Scores on Bayley Mental Scale (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.11	4.82*
Mother's Education	.33	.33	2.20*		
<u>Step 2</u>				.08	2.02
Mothers' Childhood Aggression	.04	.04	.28		
Mothers' Childhood Withdrawal	-.28	-.27	-1.83 <sup>t</sup>		
<u>Step 3</u>				.05	2.38
Mothers' Childhood Aggression/Withdrawal	-.79	-.22	-1.54		
<u>Step 4</u>				.13	7.55**
Maternal Scaffolding	.37	.37	2.75**		
R = .61			R <sup>2</sup> <sub>adj</sub> = .29		F = 4.29**

<sup>t</sup> p < .10    \* p < .05    \*\* p < .01

significantly predicted child Bayley scores, Beta = .37,  $p < .01$ . Thus, mothers who displayed increased competence in scaffolding their children's play had children with higher child Bayley scores.

Hypothesis 3: Mothers' risk status as a predictor of levels of physical contact

Total Positive Touch:

In the regression examining mother's childhood aggression and withdrawal as a predictor of total touch, Table 11 indicates that the total variance accounted for by the hierarchical regression was 31% (21% adjusted). After all the predictors were entered the multiple R was significant,  $F = 3.19$ ,  $p < .05$ . Child age significantly contributed to the prediction of total touch, Beta = -.40,  $p < .01$ , accounting for 15% of the variance. Mothers with children who were younger engaged in more physical contact than those with older children. Maternal education as a predictor of touch approached significance, Beta = -.25,  $p < .11$ , indicating that mothers with less education touched their children more. Contrary to prediction, mothers' childhood levels of aggression and/or social withdrawal were not associated with positive physical contact.

Soft Restraint

In the regression examining mother's childhood aggression and withdrawal as a predictor of soft restraint, Table 12 indicates that once all the predictors were

Table 11

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Total Positive Touch (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.06	2.68 <sup>t</sup>
Mothers' Education	-.25	-.25	-1.64		
<u>Step 2</u>				.15	7.48**
Child Age	-.40	-.39	-2.74**		
<u>Step 3</u>				.08	2.26
Mothers' Childhood Aggression	-.24	-.23	-1.65		
Mothers' Childhood Withdrawal	.12	.11	.82		
<u>Step 4</u>				.01	.41
Mothers' Childhood Aggression/ Withdrawal	-.32	-.09	.64		
$\underline{R} = .55 \quad \underline{R}^2_{adj} = .21 \quad F = 3.19^*$					
<sup>t</sup> p < .11    * p < .05    ** p < .01					



Table 12

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Soft Restraint (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.05	2.13
Mothers' Education	-.22	-.22	-1.46		
<u>Step 2</u>				.18	9.24**
Child Age	-.44	-.43	-3.04**		
<u>Step 3</u>				.05	1.32
Mothers' Childhood Aggression	-.14	-.14	-.99		
Mothers' Childhood Withdrawal	.14	.13	.96		
<u>Step 4</u>				.06	3.13 <sup>t</sup>
Mothers' Childhood Aggression/ Withdrawal	-.86	-.24	-1.77 <sup>t</sup>		
$\underline{R} = .58 \quad \underline{R}^2_{adj} = .25 \quad F = 3.72**$					

<sup>t</sup> p < .10    \* p < .05    \*\* p < .01

entered, the total variance accounted for by the hierarchical regression was 34% (25% adjusted). The multiple R was significant,  $F = 3.72$ ,  $p < .01$ . At step 1, maternal education did not significantly contribute to the prediction of soft restraint. At step 2, however, child age was significantly associated with levels of soft restraint  $Beta = -.44$ ,  $p < .01$ , accounting for 18% of the variance. This finding indicates that mothers with younger children used more soft restraint. Mothers' childhood levels of aggression and/or social withdrawal were not associated with levels of soft restraint.

#### Relationship Between Measures of Emotional Availability and Touch

The relationship between measures of emotional availability and touch was also considered using Pearson's correlations. In general, the correlations between measures of maternal sensitivity, maternal scaffolding, maternal hostility, child responsiveness and total positive touch were not significant. There was, however, a significant association between child responsiveness and soft restraint,  $r = -.39$ ,  $p < .05$ . This indicates that lower levels of child responsiveness were associated with mothers' more frequent use of soft restraint. The relationship between maternal hostility and hard restraint approached significance ( $r = .28$ ,  $p < .10$ ). Thus, mothers who expressed more hostility in their play interactions were

also likely to use higher levels of hard physical restraint when controlling their childrens' actions. These results are displayed in Table 13.

Table 13

Correlations Among Measures of Emotional Availability and Touch (N=42)

	Total Touch	Soft Restraint	Hard Restraint
Maternal Sensitivity	.11	-.07	-.10
Maternal Scaffolding	-.21	-.18	-.01
Hostility	-.02	-.12	.28 <sup>t</sup>
Child Responsiveness	-.11	-.39*	-.14

<sup>t</sup>  $p < .10$     \*  $p < .05$     \*\*  $p < .01$

## Discussion

The present study was designed to examine the relationship between mothers' childhood levels of aggression and social withdrawal and the quality of the emotional availability and physical contact present in their interactions with their offspring. The association between maternal risk status, maternal scaffolding behaviours and cognitive development of the child was also explored.

The results lent partial support for the prediction that maternal risk status would disrupt levels of emotional availability within the next generation, although no distinct pattern emerged. In particular, mothers with high childhood levels of both aggression and social withdrawal were more hostile in their interactions with their children. Contrary to expectations, however, quality of physical contact was not associated with mothers' childhood risk status. In considering the relationship between maternal risk status, parenting behaviours and current child developmental status, mothers' childhood levels of aggression and/or social withdrawal were not associated with child Bayley scores.

In terms of the other predictor variables that were considered, maternal education did not emerge as a significant predictor of emotional availability present within the dyad as measured by maternal scaffolding, sensitivity, hostility and child responsiveness. There was,

however, a modest relationship between education and overall levels of touch. Mothers with less education tended to touch their children more. Maternal education also proved to be a significant predictor of current child developmental status which is consistent with available research findings (e.g., Auerbach et al., 1992; Bee et al., 1982).

Age of the child proved to be important in the prediction of both measures of emotional availability and physical contact. Child age contributed to the prediction of child responsiveness, whereby older children were found to be more responsive than younger children. The age of the child, however, was not associated with levels of maternal sensitivity, scaffolding or hostility. Child age was also significantly associated with touch behaviours. Mothers of children who were younger engaged in more physical contact than those with older children. Mothers were also likely to use more soft restraint with younger children than older ones.

Given the relatively small sample size, these results should be interpreted with caution. While some significant findings emerged, other findings only approached significance. Consequently, while these findings are meaningful and in line with predicted hypotheses and current research findings, they warrant replication and extension in order to confirm the interpretations made.

### Maternal risk status as a predictor of levels of emotional availability

Within the present investigation some support for the hypothesis that maternal risk status would be associated with lower levels of emotional availability was found. The relationship between maternal risk status and parenting, however, was only significantly associated with specific behaviours and risk dimensions. In particular, mothers who in their childhood were identified as being both aggressive and socially withdrawn were more likely to demonstrate hostile behaviours when interacting with their children. Child responsiveness, as measured by the emotional availability scales, was not disrupted by mothers' risk status. Mothers' aggression or social withdrawal alone, was not predictive of disrupted parenting behaviours in general.

The findings that higher levels of hostility characterized the interactions of this at-risk sample are consistent with those of other investigations that have found similar patterns of interactions within risk samples (Crittenden, 1981; Dix, 1991; Egeland & Erickson, 1991; Zahn-Waxler et al, 1984). For example, Dodge (1990) found that hostility and more limited emotional expression occurred in the mother-child interactions with depressed mothers. Stressed mothers have also been found to behave in this way (Hammen et al., 1990).

In interpreting the hostility findings an important consideration is that this pattern of behaviour was only seen within dyads whose mothers had high levels of aggression and withdrawal, suggesting that the quality of the mother-child relationship within these dyads may be particularly at risk. These findings become even more salient when considered within the context of earlier studies conducted with aggressive-withdrawn children. Previous findings have indicated that children with combined levels of aggression and withdrawal may be particularly at risk for maladaptive psychosocial functioning in adulthood (Ledingham, 1981; Lyons et al, 1988; Moskowitz & Schwartzman, 1989). Children identified as being both aggressive and withdrawn, have been found to be less liked by their peers and show increased levels of social aggression and problem behaviours as compared to withdrawn children (Ledingham, 1981). These documented problems in social functioning may now be revealed in mothers' interactions with their children which suggest both continuity for the aggressive and withdrawn behaviours and a pathway for the intergenerational transmission of risk.

In light of the fact that mothers who showed combined aggressive and withdrawn behaviours in childhood were more likely to show hostile behaviours with their children, it might also have been expected that lower levels of child responsiveness in their children would be found. Maternal



hostility has been identified by some researchers as a significant risk factor that increases a child's vulnerability to maladaptive outcomes (Grizenko & Fisher, 1992). This expected pattern was not confirmed, however, within the present study. One explanation for this finding is that mothers' parenting behaviours are affecting these children but not in ways currently under investigation. Within the present study parenting was observed in a play interaction which is expected to be positive for both mother and child. It may be that less than optimal behaviours may become more extreme when viewed in situations which involve conflict and stress. In a different context, the effect of maternal hostility on the child may become more apparent. This underscores the necessity of examining mother-child behaviours across different contexts in order to gain a complete perspective of the mother-child relationship (Brown et al, 1993; Cicchetti et al, 1990; Crowell et al, 1988).

An alternative explanation may be that the hostile behaviours observed are not extreme enough to place the child at-risk for maladaptive emotional development. In terms of hostility, primarily covert forms of hostility were seen such as sarcasm, boredom and irritability. No extreme hostile behaviours such as slapping and hitting were noted.

Given the free play context, and the relatively short time frame that mothers and children were interacting with each other, however, it is surprising that any forms of

hostility were observed. Given the young age of the children under investigation, it is not known to what extent the effects of hostility on the child will increase over time, especially since some researchers have found that mothers of older children will show more negative affect than those with younger children (Hammen et al., 1990). It would be necessary to continue to follow this young cohort of the present study, into their school years before drawing conclusions regarding their social and emotional health.

A final, but important, fact related to why mothers' childhood aggression and social withdrawal did not predict child responsiveness, was that many of the children born to mothers with high levels of aggression and withdrawal did in fact have lower than optimal scores on this measure suggesting impairment in terms of pleasure and engagement in the relationship. It is possible, therefore, that the emotional health of these children may be more at risk than the results actually suggest. Extension and replication of these analyses drawing from a larger sample of mothers who demonstrated both aggressive and withdrawn behaviours in childhood will help clarify some of these hypotheses.

At the outset of the study it was expected that the relationship between maternal risk status and levels of emotional availability might be more strongly associated across all risk dimensions and measures. Previous investigations of mother-child relationships within risk

samples have found lower levels of maternal sensitivity and stimulation in mother-child interactions, thus placing the children at-risk for future developmental problems (Crittenden, 1981; Serbin et al., 1991; Zahn-Waxler et al., 1984) There are several explanations as to why stronger findings, in terms of impaired parenting, were not associated with mothers' psychosocial risk status in the present study. First, mothers' childhood risk status was established twenty years prior to the present study being conducted. During this length of time, the mothers may have had many experiences that could have helped them to overcome their childhood difficulties and to prepare them to be competent parents (Werner & Smith, 1992). It may be that mothers' current psychological functioning is a stronger predictor of levels of emotional availability within the dyad and would be important to consider in any future research of this nature. Second, the mothers and children for this study were drawn from a community based sample as compared to clinical samples typically studied where parental psychopathology might indicate severe impairment. It may be that the magnitude of effects is greater in clinical samples and, therefore, easier to detect (Jensen, Bloedau, Degroot, Ussery, & Davis, 1989). The measures used in the current investigation may not be sensitive enough to isolate subtle maladaptive behaviours. Third, other variables such as marital conflict, social support systems

and psychosocial stress have all been found to impact the quality of the parent-child relationship (Rutter, 1985; Sameroff & Seifer, 1992). Although the mothers were assessed on some of these measures, the focus of the current research was not on these variables, thus it is not known to what extent the mothers in the present study may be subject to any of these other risk factors.

Within the present study, maternal education was not found to be significantly associated with either the maternal or child emotional availability measures. This finding is surprising given that maternal education has been found to be an important predictor of positive mother-infant interactions in early childhood (Cooperman, 1996; Lehoux, 1995; Werner & Smith, 1992). Many of the mothers within the present study were fairly well educated with between 11 to 15 years of education. Given the sample size, it may be that there was not enough variability in levels of education to detect meaningful differences. The mothers were also older when they had their first child compared to previous samples studied. Taken together, these factors may have resulted in education having reduced influence on the quality of interactions.

In terms of child characteristics and their relationship to emotional availability, child age was found to be significantly associated with child responsiveness. Older children were more responsive, in general, than

younger children. These findings are consistent with what some researchers have observed in play interactions within normal samples, that mothers and toddlers become more in harmony with each other in terms of play as the children get older (Dixon & Shore, 1993). The increased expressiveness shown by the child may result from the increased pleasure derived from both mother and child as their play interactions become more interesting. Previous research that has considered the association between quality of interactions and child age has also found that child developmental transitions can affect the quality of interactions (Biringen & Robinson, 1991). Studies conducted within risk samples suggest that the quality of the mother-child relationship can deteriorate as the child's age increases (Hammen et al., 1990). However, within the present study levels of emotional availability did not decrease over time. In fact, in the case of child responsiveness the opposite result was found. A limitation of the present study in assessing the effect of emotional availability on developmental transitions, however, is the fact that the children were not followed longitudinally, but rather the effect of age was considered within a cross sectional sample. It would be necessary to follow these children into their preschool years in order to determine the stability of these effects. Furthermore, with a larger

sample size it may be that child age may be an even more salient predictor of emotional availability.

Maternal risk status, maternal scaffolding and child Bayley scores

The contribution of mothers' childhood levels of aggression and social withdrawal and mothers' scaffolding behaviours in predicting child developmental status was also explored in the present study. Contrary to expectations, childhood aggression and/or social withdrawal did not contribute to the prediction of child developmental status. There were, however, many children within the current sample that had low child Bayley scores indicating developmental delays. Some of these children were born to mothers with elevated scores on withdrawal or aggressive/withdrawal dimensions. It is possible, therefore, that with an increased sample size, mothers' childhood risk status may emerge as a significant predictor of child developmental competence. Also, as mentioned previously, given the young age range of the children currently under investigation, it may be that the effects of risk are not yet readily apparent. Assessing these children at later stages of development would be necessary to confirm these hypotheses.

In considering the relationship between maternal risk status, maternal scaffolding and child developmental competence, the results indicated that social and parenting factors were more salient predictors of child developmental

status than the risk status of the mother. The two main predictors of child competence were maternal education and maternal scaffolding. The role of maternal education in determining child developmental status is consistent with numerous investigations that have found maternal education to be an important predictor of child intellectual and language development (e.g., Auerback et al., 1992; Bee et al., 1982). Maternal education is generally considered a marker for the quality of the rearing environment a child is exposed to. Mothers who have higher educations are more likely to provide stimulating toys, books and play activities that will foster the development of the child (Molfese, DiLallia & Lovelace, 1996).

Within the present study, it was also possible to consider the role of specific parenting behaviours in determining child competence over and above important demographic variables such as education. In fact, the results indicated that maternal scaffolding behaviour was a stronger predictor of child competence even after controlling for maternal education. These results are particularly interesting given that several researchers consider maternal education to be the single most important predictor of child developmental status. Many studies, however, do not combine in-depth assessments of maternal behaviours in predicting child functioning with socio-demographic variables (Bee et al., 1982). The results from

the present study indicate that using multiple social and environmental measures can improve the prediction of child status and that the quality of specific parenting behaviours can be important in assessing whether a child might be considered at risk.

In the present study a relational measure of maternal scaffolding was used based on naturalistic observations. Thus, both the appropriateness and impact of the maternal behaviour on the interactive child could be taken into consideration. Studies that typically consider the role of multiple determinants of child outcome have frequently used the HOME inventory (Caldwell & Bradley, 1978) as a measure of home environment and quality of parent-child interaction. These scales do not provide information as to the mechanisms by which child development is affected by specific parenting behaviours. As the results from the present study illustrate, using complex analyses of parenting behaviours permits a broader understanding of how certain aspects of mothers' behaviours may influence the competence of the child. This knowledge, in turn, can provide a means of developing useful interventions that focus on enhancing mothers' knowledge about how to modify their behaviour in order to provide the most healthy rearing environment. Due to the limited sample size, it was not possible to include other maternal behaviours such as maternal sensitivity and hostility as predictors of child competence within the



present analyses. Future research which includes several aspects of maternal behaviours in the assessment and their relationship to child outcome is required to further tease apart which aspects of maternal behaviour are particularly important for child functioning.

#### Maternal risk status and touch behaviour

The third and final focus of the present investigation was to consider the relationship between maternal risk status and mother-child touch behaviour. Contrary to prediction, mothers' childhood levels of aggression and/or social withdrawal did not significantly predict total positive touch behaviour.

At the outset of this study, it was hypothesized that maladaptive parenting behaviours would be predicted by the risk status of the mothers. It was thus believed that positive touch associated with affection and proximity seeking behaviours might be observed less among the risk dyads. It was also anticipated that negative touch behaviours might be observed. These hypotheses, however, were not supported by the present findings. In addition, very little negative touch was observed within the sample. In interpreting the results, it is important to consider the context within which these behaviours were observed. Within a play context with toys, mothers and children's social interactions might be centred mostly around the objects. Optimal parenting behaviours would most likely be associated

around keeping the play structured and stimulating, thus perhaps not the best context to consider affectionate behaviour. Consistent with this interpretation, researchers have found that the context of interaction accounts for more variance in touch behaviours than quality of the attachment, and that during a free play interaction mothers and children touched more briefly and infrequently compared to other situations (Brown et al., 1993). Physical contact may be more likely to be elicited during stressful or caregiving situations.

The suggestion that the free play context may not be the best setting to consider mother-child affectionate touch behaviour is also corroborated by the fact that, on the whole, the relationship between touch and emotional availability was not significant, indicating that mothers who were sensitive and attentive to their child did not necessarily also demonstrate positive physical affectionate behaviour as predicted. Within the present study, there were wide individual differences in the frequency with which mothers and children engaged in physical contact. Some dyads used very little touch, while others were in physical contact for a considerable portion of the free play session. Given that measures of emotional availability and touch were unrelated, it is not clear whether lower levels of touch necessarily mean increased risk for the child within the context of this study.

In terms of demographic variables, less maternal education was associated with higher frequencies of touch. Moss, Robson and Pedersen (1969) (as cited in Montagu, 1986) found a similar result although the focus was on younger infants. In their study, it was found that better educated mothers spent more time talking to their children to provide intellectual rather than physical stimulation. Within the present study, a fine grained analysis of mothers' use of verbal behaviours was not undertaken to confirm this hypothesis but such an avenue is worthy of future consideration.

Child age was also associated with levels of touch. Mothers and young children engaged in more touch behaviours than mothers and older children. This finding is consistent with other studies that have considered developmental differences in touch behaviours and found that the amount of physical contact between a mother and child decreases over time (Montagu, 1986; Tronick, 1995). Tactile stimulation with young infants appears critical for eliciting and maintaining infant attention and regulating emotions (Kisilvesky et al., 1991). Later in development, although still an important part of the mother-child relationship, the function of touch may be different especially when other expressive behaviours such as verbal communication can maintain the connection within the mother-child relationship. Before a child can talk, mother and child

have fewer means of communication and can use bodily contact as a way of connecting with one another (Brown et al., 1993).

Interpretations of the findings on physical contact are limited by the fact that analyses of touch behaviour were based on frequency of occurrence and not on duration. It may be that some mothers spent more time overall in physical contact with their children and this might be associated with the risk status of the mother. Another important consideration is the fact that, to date, few studies have considered the role of touch in toddlerhood within normal or risk populations (Field, Harding, Soliday, Lasko, Gonzalez & Valdeon, 1994). Consequently, while the findings from the present study contribute to our knowledge of touch behaviours between mothers and toddlers, comparability is limited especially within risk samples.

The relationship between maternal risk status and mothers' use of soft restraint was also examined. Mothers' childhood levels of aggression and social withdrawal alone, or in combination, did not predict use of soft restraint. Mothers' use of soft restraint was, however, predicted by child age, with mothers using higher levels of soft restraint with their younger children. This finding may be similar to the findings on total positive touch and reflect the developmental status of the child. In interactions with younger children less emphasis may be placed on verbal

communication and physical contact may be used more to control and direct behaviour.

As mentioned previously, on the whole the relationship between emotional availability and touch was not as predicted. However, lower levels of child responsiveness were associated with mothers' more frequent use of soft restraint. This may reflect the fact that mothers were more likely to have to control a child's behaviour through soft restraint if they were noncompliant. Since child age was associated with child responsiveness, however, this effect may also be mediated by age which was not considered within the analysis between emotional availability and touch. It may be that mothers use restraint more often with younger children who are less likely to be able to focus their attention in a play situation for lengthy periods of time. Finally, mothers' hostility was also associated with higher levels of hard restraint. Thus, mothers who in their play interactions with their children expressed boredom, impatience or sarcasm were also likely to use harsh physical behaviours to restrain their children from leaving the play mat.

#### Integration of findings

At the outset of the study it was anticipated that mothers' childhood levels of aggression and social withdrawal might be predictive of maladaptive parenting as measured by emotional availability and physical contact.

The results in the present study lend some support for these hypotheses and raise interesting questions regarding the processes by which maternal childhood psychosocial functioning may represent a possible pathway for the intergenerational transmission of risk. The quality of mother-child relationship within dyads whose mothers had higher levels of both aggression and social withdrawal in childhood was particularly disrupted. As reported in previous investigations, the combination of childhood aggression and social withdrawal may represent a possible marker for elevated aggressive behaviour as well as poor social skills (Moskowitz & Schwartzman, 1989). This impaired childhood psychosocial functioning may make it more difficult for mothers to establish healthy relationships with their children thus potentially continuing the cycle of problem behaviours. It is unclear from the present study to what extent children born to mothers with high levels of aggression and social withdrawal might consequently be at risk, although, there are some indications of impairment. It would be important to continue to follow this group of children, in particular, in order to re-evaluate this question.

Despite partial validation of the hypotheses under investigation, there are also indications that the effects of maternal risk are not always consistent across the risk groups or parenting measures studied. Within the context of

the present study, it was found that many mothers who had elevated levels of childhood aggression or withdrawal alone were able to demonstrate adequate levels of emotional availability in interacting with their children.

Importantly, when the relationship between risk status, parenting and demographic variables on child developmental status was considered, parenting and demographic variables accounted for a greater proportion of the variance in child development than risk status alone. Maternal education was found to be a strong predictor of developmental status of the child. Maternal competence in scaffolding behaviours was also found to be strongly associated with child cognitive abilities. This provides important information with which to develop interventions that can assist mothers to develop these skills. These findings suggest that while the risk status of the mother might be one pathway through which transmission of risk occurs, the quality of parenting and sociodemographic variables represent other means of evaluating the extent to which a child may be at risk.

#### Future directions

In discussing the findings of the present study, some future research directions have already been mentioned in relation to the hypotheses under consideration. Primary consideration was given to the need to consider multiple environmental and family risk factors such as marital conflict, stress and social support and how they may impact

the emotional availability present within the mother-child relationship. Another consideration would be to assess mothers' current psychological functioning. This is important for at least two reasons. First, mothers' current psychological functioning may further clarify the continuity or discontinuity of aggression and social withdrawal identified in childhood. Second, it is important to explore how mothers' current status affects maternal competence within the mother-child relationship and thus the developmental outcome of the child.

In addition, another factor which should provide clarity in the interpretation of the results is child sex. Previous investigations have found that parental psychological functioning is more predictive of impaired emotional availability in boys compared to girls (Robinson & Spieker, 1996; Weinberg, 1996). With an increased sample size and equal number of boys and girls it would be possible to examine whether the gender of the child affects parenting behaviours within the current investigation. Finally, an important area worthy of future research is the father-child relationship. Many developmental psychologists argue that the presence of one positive parent-child relationship can be important in terms of adaptive development regardless of whether it is the mother or the father (Luthar & Zigler, 1991). The focus of the majority of research studies is the mother-child relationship. In



current North American society, while mothers are often the primary caregivers in families, fathers are now taking a more active role in parenting. Little is known as to how father-child interactions, or in some cases the absence of father might affect the developing child. Given that sex differences are often found in developmental research of this nature, it may also be that the father-child relationship plays a differential role depending on the gender of the child.

#### Concluding comments

Underlying the search to better understand the risk and protective processes by which development becomes adaptive or maladaptive is the need for prediction (Lewis, 1990). Retrospective research has led us to believe that problematic outcomes are inevitable within a multiple risk environment (Werner & Smith, 1992). The results deriving from prospective research (such as those from the present study) which suggest that maladaptive development is not always inevitable, and the mechanisms which affect development are not always direct, raise the issue of whether prediction of development is in fact always possible. Why is it, as the results of the present study suggest, that some mothers despite their childhood risk status, are able to be responsive and sensitive to their children, while for others, the transmission of problematic psychosocial functioning continues with the next generation?

This question raises the issue of individual differences which is most salient in risk research of this kind. In-depth longitudinal research that considers many aspects of the familial and social context within which a child develops will lead to a better understanding of the mechanisms by which risk or resiliency occurs.

Increasingly researchers are emphasizing the importance of the parent-child relationship as a marker for problematic behaviour, and that other risks present within the environment are only important to the extent that they disrupt this important relationship (Sameroff & Seifer, 1992). The results from the present study suggest that mothers' childhood levels of aggression in combination with social withdrawal may represent one pathway by which parenting behaviour with the next generation may be disrupted, thus placing the child at risk. In addition, findings from the present study support the view that the quality of the parent-child relationship is important in terms of providing a stimulating and structured environment for the development of competence in a child. Further research that continues to follow and assess the parent-child relationship over time and its effect on the child will facilitate clarification of the processes by which this relationship protects the child from increased vulnerability or places the child at risk. Such investigations will also

elucidate how interventions can best be developed to support the child at critical points of development.

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Appendix A  
Screening Method of the Concordia Risk Project

The children in the original Concordia Longitudinal Risk Project were screened for aggression and social withdrawal using a french translation of the Pupil Evaluation Inventory (PEI). The PEI is a peer nomination instrument (Pekarik, Prinz, Lievert, Weintraub & Neale, 1976) which has been used in several other research projects. The PEI contains 35 items which load on three different factors. Examples of the items include a) aggression items such as "those who are mean and cruel to other children"; b) withdrawal items such as "those who are too shy to make friends"; and c) likeability items such as "those who help others". In the identification of behaviour problems in children, peer nominations have been found to be more reliable than teacher or parent evaluations (Lyons et al, 1991). Peer nominated groups have found to represent children at risk for a variety of psychosocial problems (Milich, Landau & Whitten, 1984).

The PEI was administered to 4,109 children in 152 classrooms. Children were asked to select four boys and four girls who were best described by each item of the peer inventory. The total number of nominations for the aggression and withdrawal dimensions was calculated. A square root transformation was then performed on the total nominated scores for the two dimensions in order to reduce skew. The transformed aggression and withdrawal scores were then converted to Z scores for each sex and within each



class. This procedure allows that each child be scored according to relevant norms for his or her own sex and age. Approximately equal samples of girls and boys was obtained.

Children were assigned to the aggressive group ( $N = 198$ ) if they obtained z-scores on the aggression factor equal to or exceeding the 95th percentile cutoff ( $Z = 1.65$ ), and z-scores on the withdrawal factor equal to or below the 75th percentile ( $Z = 0.68$ ). Similarly, children were assigned to the withdrawn group ( $N = 220$ ) if they had z-scores equal to or above the 95th percentile on the withdrawal factor, and z-scores below the 75th percentile on the aggression factor. Children were assigned to the aggressive-withdrawn group ( $N = 239$ ) if they obtained z-scores equal to or above the 75th percentile on both the aggression and withdrawal dimensions. Since the probability of a score above the 75th percentile on both dimensions is very low, a lower criteria were used to select this group. Those children who obtained z-scores between the 25th and 75th percentiles on both the aggression and withdrawal dimensions were assigned to a normative control group ( $N = 1,117$ ).

## Appendix B

### English Translation of the Pupil Evaluation Inventory

1. Example question.

#### Aggression Items

3. Those who can't sit still.
4. Those who try to get other people into trouble.
7. Those who act stuck-up and think they are better than everyone else.
8. Those who play the clown and get others to laugh.
9. Those who start a fight over nothing.
12. Those who tell other children what to do.
15. Those who always mess around and get into trouble.
16. Those who make fun of people.
18. Those who do strange things.
20. Those who bother people when they're trying to work.
21. Those who get mad when they don't get their way.
22. Those who don't pay attention to the teacher.
23. Those who are rude to the teacher.
26. Those who act like a baby.
27. Those who are mean and cruel to other children.
29. Those who give dirty looks.
30. Those who want to show off in front of the class.
31. Those who say they can beat everybody up.
33. Those who exaggerate and make up stories.
34. Those who complain nothing seems to make them happy.

#### Withdrawal Items

5. Those who are too shy to make friends easily.
6. Those whose feelings are too easily hurt.

- 10. Those who never seem to be having a good time.
- 11. Those who are upset when called on to answer questions in class.
- 13. Those who are usually chosen last to join in group activities.
- 17. Those who have very few friends.
- 24. Those who are unhappy or sad.
- 28. Those who often don't want to play.
- 32. Those who aren't noticed much.

Likeability Items

- 2. Those who help others.
- 14. Those who are liked by everyone.
- 19. Those who are your best friends.
- 25. Those who are especially nice.
- 35. Those who always seem to understand things.

Appendix C

Demographic Variables: Comparison of  
Risk with Comparison Groups

Table 1

Comparison of demographic variables between mothers from risk groups with mothers from comparison group (N=42): Means and F values

	Risk Mothers	Comparison Mothers	F-Value
Education	11.88	11.42	.33
Social Prestige	314.24	320.00	.02
Mothers' age at birth of first child	24.92	24.81	.01

\*  $p < .05$     \*\*  $p < .01$

Appendix D  
Informed Consent Form

**"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"**

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

**FORMULAIRE DE CONSENTEMENT**

Je, \_\_\_\_\_, m'engage volontairement avec mon enfant, \_\_\_\_\_, à participer à l'étude "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués. L'étude comprend une série de questionnaires, une évaluation du fonctionnement intellectuel de mon enfant, ainsi que trois périodes de jeux lors desquelles nous serons observés et filmés. L'étude comporte deux sessions d'une durée maximale de 3 heures chacune et une rémunération totale de \$50.00 me sera allouée aussitôt que les questionnaires seront remis. En signe de courtoisie, les résultats sommaires de l'évaluation de mon enfant me seront communiqués par téléphone. De plus, les chercheurs seront prêts à effectuer une ou deux visites additionnelles, au besoin, pour terminer l'évaluation, discuter de résultats problématiques, ou m'offrir un service de référence.

Je comprends que toutes les informations que nous fournissons, qu'elles soient écrites ou filmées, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: \_\_\_\_\_

Nom: \_\_\_\_\_

Date: \_\_\_\_\_

Assistant(e) de recherche: \_\_\_\_\_



Appendix E  
Detailed Instructions to Mothers

Maintenant, on aimerait vous voir jouer ensemble. Comme tu sais, on va enregistrer ca sur video. Donc, pour etre sur que vous restiez tous(tes) les deux sur le tapis qu'on a mis par terre. Moi, je vais quitter la piece et je vais revenir verifier la camera une ou deux fois pour etre sur qu'elle fonctionne bien. Alors, la premiere 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'etre le plus naturels possible. Vous pouvez prendre les jouets qu'on a mis sur le tapis si vous voulez, mais vous n'etes pas obliges. Puis, quand tu entendras l'alarme sonner, tu pourras arreter de jouer. As tu des questions? C'est tres important aussi que tu attendes mon signal avant de commencer a jouer, OK?

Appendix F  
Demographic Questionnaire (DIQ)

## L'INDIVIDU DANS SON MILIEU

### Renseignements sociodémographiques additionnels

Tous ces renseignements sont traités de façon totalement confidentielle

#### 1. Informations sur la famille de la mère de l'enfant:

- a. Nombre de frères : \_\_\_\_\_ ; de soeurs : \_\_\_\_\_ ; rang dans la famille \_\_\_\_\_  
Frères ou soeurs décédé(e)s? NON \_\_\_\_\_ OUI \_\_\_\_\_ --> préciser : \_\_\_\_\_
- b. Mère : Âge \_\_\_\_\_. Si décédée, à quel âge : \_\_\_\_\_ ; cause du décès : \_\_\_\_\_  
Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_  
Occupation principale de ces 20 dernières années : \_\_\_\_\_
- c. Père : Âge \_\_\_\_\_. Si décédé, à quel âge : \_\_\_\_\_ ; cause du décès : \_\_\_\_\_  
Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_  
Occupation principale de ces 20 dernières années : \_\_\_\_\_
- d. Les parents se sont séparés/divorcés en \_\_\_\_\_ :

#### 2. Informations sur la famille du père de l'enfant:

- a. Nombre de frères : \_\_\_\_\_ ; de soeurs : \_\_\_\_\_ ; rang dans la famille \_\_\_\_\_  
Frères ou soeurs décédé(e)s? NON \_\_\_\_\_ OUI \_\_\_\_\_ --> préciser : \_\_\_\_\_
- b. Mère : Âge \_\_\_\_\_. Si décédée, à quel âge : \_\_\_\_\_ ; cause du décès : \_\_\_\_\_  
Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_  
Occupation principale de ces 20 dernières années : \_\_\_\_\_
- c. Père : Âge \_\_\_\_\_. Si décédé, à quel âge : \_\_\_\_\_ ; cause du décès : \_\_\_\_\_  
Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_  
Occupation principale de ces 20 dernières années : \_\_\_\_\_
- d. Les parents se sont séparés/divorcés en \_\_\_\_\_ :

**3. Informations sur la famille du conjoint: si n'est pas le père**

- a. Nombre de frères : \_\_\_\_\_ ; de soeurs : \_\_\_\_\_ ; rang dans la famille \_\_\_\_\_  
Frères ou soeurs décédé(e)s? NON \_\_\_\_\_ OUI \_\_\_\_\_ --> préciser : \_\_\_\_\_
- b. Mère : Âge \_\_\_\_\_. Si décédée, à quel âge : \_\_\_\_\_ ; cause du décès : \_\_\_\_\_  
Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_  
Occupation principale de ces 20 dernières années : \_\_\_\_\_
- c. Père : Âge \_\_\_\_\_. Si décédé, à quel âge : \_\_\_\_\_ ; cause du décès : \_\_\_\_\_  
Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_  
Occupation principale de ces 20 dernières années : \_\_\_\_\_
- d. Les parents se sont séparés/divorcés en \_\_\_\_\_ :

**4. Historique personnel: mère de l'enfant.**

A été élevée principalement par :

\_\_\_\_\_ père et ma mère  
\_\_\_\_\_ père  
\_\_\_\_\_ oncle / tante

\_\_\_\_\_ mère  
\_\_\_\_\_ grands-parents  
\_\_\_\_\_ foyer d'accueil

Âge : \_\_\_\_\_ premier mariage - première fois conjointe de fait  
Âge : \_\_\_\_\_ premier enfant  
Âge : \_\_\_\_\_ séparation - divorce

**5. Historique personnel: père de l'enfant.**

A été élevé principalement par :

\_\_\_\_\_ père et ma mère  
\_\_\_\_\_ père  
\_\_\_\_\_ oncle / tante

\_\_\_\_\_ mère  
\_\_\_\_\_ grands-parents  
\_\_\_\_\_ foyer d'accueil

Âge : \_\_\_\_\_ premier mariage - première fois conjoint de fait  
Âge : \_\_\_\_\_ premier enfant  
Âge : \_\_\_\_\_ séparation - divorce

**6. Historique personnel: conjoint (si n'est pas le père)**

A été élevé principalement par :

\_\_\_\_\_ père et ma mère  
\_\_\_\_\_ père  
\_\_\_\_\_ oncle / tante

\_\_\_\_\_ mère  
\_\_\_\_\_ grands-parents  
\_\_\_\_\_ foyer d'accueil

Âge : \_\_\_\_\_ premier mariage - première fois conjoint de fait  
Âge : \_\_\_\_\_ premier enfant  
Âge : \_\_\_\_\_ séparation - divorce

4. Père de l'enfant. Si la mère vit seule ou si le conjoint n'est pas le père de l'enfant ...

- a) Nom : \_\_\_\_\_ Date de naissance: \_\_\_\_\_  
AN MO JR
- b) Niveau de scolarité \_\_\_\_\_ ; en quoi \_\_\_\_\_
- c) Occupation : \_\_\_\_\_  
Son salaire : \_\_\_\_\_ \$/ heure Nombre d'heures : \_\_\_\_\_ / semaine  
AN MO  
Travaille là depuis : date \_\_\_\_\_
- d) Cause de séparation/divorce : \_\_\_\_\_
- e) Verse-t-il une pension alimentaire? NON \_\_\_\_\_ OUI \_\_\_\_\_ --> \_\_\_\_\_ \$ / mois  
Devrait mais ne le fait pas \_\_\_\_\_
- f) Fréquence et durée des visites : \_\_\_\_\_

Appendix G  
Emotional Availability Scales  
(Biringen, Robinson & Emde, 1988)

## Maternal sensitivity

### Background

Ainsworth (Ainsworth, Blehar, Waters, & Wall, 1978) developed the original sensitivity scale for home observations and inspired our work in this area. In reviewing her scale, we felt that it assumed much more information about the quality of the mother-child relationship than would be possible during the shorter observations that most investigators use today. More behavioral descriptions are needed even for observations that are one hour, a length of time that is considered long for many developmental research endeavors today. Our scale is similar to the Ainsworth sensitivity scale in that it is highly global and emphasizes behavioral style rather than discrete behaviors. For example, if the researcher wanted to count the instances of responsiveness across episodes, he or she would obtain a markedly different view of maternal sensitivity than what we or Ainsworth would get from our instruments. Although maternal accuracy in reading infant signals and appropriate responsiveness to such signals and communications characterized the earlier view of sensitivity, our view is much more inclusive and not based predominantly on the mother's ability to be responsive. In contrast to Ainsworth, we have focused on children well beyond the first year, and therefore, view other facets of maternal sensitivity as important as the nature and quality of maternal responsiveness. In line with the spirit of having a more inclusive approach to rating sensitivity, we take into account qualities such as maternal acceptance and accessibility, scales that were separate in the Ainsworth rating system. Components of sensitivity are described below.

### Components of the construct

A characteristic that is very important to the judgment of sensitivity, at all ages, is affect. A sensitive mother is predominantly affectively positive, both in terms of facial and vocalic expressiveness, rather than bored, discontent, or vocally harsh and disruptive. The appropriateness of the mother's affect is also taken into account in this rating. In a play context, appropriate affect refers to positive and spontaneous affect. A mother showing positive affect (that is highly appropriate) does not laugh or smile every time that the child does something positive, but she is generally positive. In fact, it may be inappropriate to be positive to all positive things that the child engages in. Such behavior could seem like a performance on stage, and would not be authentic and spontaneous. The child also enjoys interactions with his or her mother. In other words, a mother cannot "look" good without the child. Thus, positive shared meaning permeates these mother-child interactions. Another characteristic of genuine and authentic affect is congruence of verbal and nonverbal channels of emotion expression. A sensitive mother shows congruence, while an insensitive mother, by showing incongruence, may be displaying pseudo-sensitivity. Affect--its genuine, authentic, and congruent qualities--is particularly important in the judgment of sensitivity.

Clarity of perceptions and appropriate maternal responsiveness are also important. If a child begins to show boredom during mother-child play, it is important for the mother to recognize such signals and adjust her own behavior accordingly. Some mothers, however, tend to be unaware of subtle



fluctuations in their children's style, and some are even unaware of blatant communications. Thus, clarity in perception and the ability and willingness to respond appropriately to such signals and communications is a vitally important aspect of sensitivity. If her perceptions are grossly distorted, the mother may not be able to soothe effectively when her child is in distress and may even label her child's as well as her own expressions and emotional states inaccurately, mimick sarcastically, and behavior in other markedly mismatched ways toward the child.

Awareness of timing during mother-child interactions is another key component of sensitivity. During the course of a day or any unit of of interaction that is being rated, there can be mother-child play, jointly involved household activities, diaper changing, etc. The progression of these activities, that is, how they unfold during observation is even more important than the content of the activities. A mother who is sensitive to timing and rhythmicity in the life of a child would be careful about introducing abrupt transitions between activities, putting down the baby before he or she was soothed, initiating play or other type of interaction "out of the blue", and interacting at constant high intensity to the point of overstimulation. Thus, awareness of natural timing rather than doing things on cue is an important feature of maternal sensitivity.

Also an important variable is flexibility, both in terms of maternal attention and behavior. The mother whose attention is flexible can do household tasks and still be aware and respond to her baby. The mother whose attention is less flexible "tunes out" when she is absorbed in other tasks or thoughts and then "tunes in" when she is ready. That is, she is not fully perceptually aware/alert and responsive at such times. Flexibility in behavior (in contrast to rigidity) suggests that the mother is willing to attempt/attain a difficult goal (e.g., getting the child to eat vegetables) in a variety of ways rather than through a set agenda. Mother-child play also involves continual flexibility on the part of the mother as she adjusts her play attempts to her child.

Variety and creativity in modes of play between mother and child are particularly revealing of sensitivity. How creative a play partner the mother is, how well she elicits a positive response from her child, and how willing she is to join in her child's activities (in a playful way as opposed to a didactic way) are important. To judge creativity in play, of course, one needs to observe mother-child engagement and play activities. Thus, if mother and child do not play very much, her ability to be creative in play cannot be judged.

Maternal acceptance of the child is also a key feature of sensitivity. An important clue to discerning whether the mother has an accepting or rejecting attitude involves the way in which she addresses the child. More sensitive mothers typically speak to the child as if he or she were a separate, respectable person who has clear needs, wishes, and goals, whereas more insensitive mothers may make disparaging statements, sometimes in the form of jokes or off-hand comments. Some treat the child as if he were a possession, such as a doll, and derive pleasure in making infantilizing or condescending observations about the child's ongoing activities, perhaps to the observer.

Much of the above-mentioned behaviors are, to a large extent, dependent on amount of interaction or accessibility between mother and child. If there is a great deal of interaction, there is opportunity for us to observe negative as well as positive qualities. There may be little interaction for some dyads, however, and this characteristic, in and of itself, is important. Some mothers may ignore their children consciously or unconsciously, whereas, at the other extreme, some mothers may initiate continual interaction that is not particularly welcomed by the child. A moderate level of accessibility on the part of the mother, with breaks that seem comfortable for both partners seem most healthy.

Special mention is needed of how conflict situations are handled in the mother-child relationship. For interactions to be sensitive, mothers need not maintain an exquisite status quo in the relationship. Recent research and thinking suggests that normal mother-infant interactions are sometimes mis-matched; how dyads move from mis-matched to synchronous states is as important as the quality of synchronous states. Thus, adaptive mis-matches and resolution of conflict situations are important during more sensitive mother-child interactions. For example, if a mother suggests an activity, such as cleaning up a room, and the child protests, the more sensitive mother does not feel unusually threatened—she is basically secure in her role. Such an interaction on occasion might involve maternal insistence about her goal or child resistance to her goal. However, such a state of affairs usually moves to a more "well-resolved" phase in which they co-determine goals. In contrast, a similar scenario (which obviously is quite common for mothers and children) can provoke a more insensitive mother to heights of anger and frustration with little consideration of the child's goals. Thus, more sensitive mothers are comfortable with negotiation experiences, whereas insensitive mothers find it more difficult to relinquish control and /or give credence to the goals of others.

A mother can be highly sensitive or highly insensitive, regardless of her particular style of interaction. For example, the highly sensitive mother may be low-keyed, gentle, and soft-spoken. Alternatively, she may be animated and vivacious. Although observers may subjectively resonate with one or another of these distinct styles, or with other possible sensitive styles of mothering, we see no inherent reason for greater or lesser sensitivity based on stylistic differences.

Additionally, clinicians are likely to ponder about the relation between ratings and the therapeutic workability of a particular dyad. We view scores above 5 as not requiring therapeutic interventions; such individuals, however, may choose to enlist the support of mental health professionals during stressful life events or life transitions. They may also be mental health professionals and seek therapy as part of their learning and training process. Less competent dyads can be judged in terms of therapeutic workability, with the 3 to 5 range suggesting better therapeutic potential for change than lower scores.

Finally, we view maternal sensitivity as the appropriate degree of the above-described characteristics. For example, a mother who is too tense, anxious, or wary about doing all the right things does not qualify for the optimal score on this scale.

10. Hyper-sensitive. This refers to a style of interaction that is overly contingent, overly mindful of matching the child's affects and behaviors, overly praising, and may appear anxious. While warmth and kindness may be striking features of this interaction, the anxiety level of the mother does not promote an atmosphere of relaxed and comfortable interaction with the child. There may also be the quality of being overly sensitive concerning the self, e.g., interpreting the child's ignoring response or autonomous activity as a threat to the interaction. The more optimally sensitive mother tends to be more comfortable concerning such issues.

9. Highly sensitive. Emotional communication between mother and infant is for the most part positive, appropriate, and creative. The highly sensitive mother displays much genuine, authentic, and congruent interest, pleasure, and amusement with the infant (as opposed to performing these behaviors), as demonstrated by warm smiles and giggles, interested eye contact, and comforting and playful physical contact. Her facial expressions and tone of voice are pleasant and there are no sudden or marked shifts in emotional tone. In fact, both the mother and child show clear enjoyment and delight with each other. She reads the child's signals accurately, even subtle ones that may not be clear to an outsider, and reacts appropriately. She has a well-developed sense of timing and rhythmicity during interactions with transitions between activities appearing smooth rather than abrupt and enforced by her. Her behavior appears flexible and adaptable, according to the demands of particular situations. When they are physically separated, they are likely to maintain emotional connectedness at a distance, at the very least by mother occasionally calling the child's name or looking in on him or her. Thus, verbal and visual communication between mother and child are ongoing but not constant or overwhelming. Statements to and regarding her child are affirmative and accepting, rather than sarcastic, critical or highly prohibitive. The amount of interaction is fairly high. Play interactions are creative and joyful for both mother and child. She further responds with short latency to distress signals, attempting to soothe and to explore reasons for such communications. Mother's discipline is context-appropriate without upsetting the relationship, and conflict situations do not lead to long breakdowns in the relationship; they too are handled smoothly and effectively. Overall, the observer sees a very "special" quality in these interactions, and delights in the dancelike quality of this interaction. This is the most optimal rating.

7. Generally sensitive. This mother is very similar to a 9, except that there is a less spectacular quality to these mother-child exchanges. This rating refers to a "good enough" mother. Typically, interactions get rated down to 7 for some of the following reasons: e.g., mother did not interact in a creative manner, although she was affectively connected to the infant and interactions were harmonious and enjoyable; mother's affect and behavioral style were extremely well suited to this infant, creating a generally lively and engaging climate, but at brief moments, she displayed subtle preoccupation with her own thoughts, as if processing another agenda. However, the differences between a 9 and a 7 are small. If two of the qualities described above are not as optimal as is the case for a 9 (e.g., affect and the negotiation of conflict) or one quality is appreciably lower than most 7's (e.g., an overall blandness of mood, though clearly not depressed affect) then mother should be rated a 6).

5. Inconsistently sensitive. The mother is sensitive in some ways, but the observer finds it difficult to give this relationship a clean bill of health. Maternal variability in behavior may be one tell-tale sign. For example, she may fluctuate from being creative and joyful during play times to being hostile during prohibition situations. This characteristic is particularly significant, given that mothers usually want to look their best for a videotaped session. Thus, some mothers may "leak" inconsistencies of behavior; it may simply be too stressful for some to maintain well-modulated positivity for long. Such variability may be observed on different days or at different times in the same session. Her style of responsiveness may be another tell-tale sign. She may be responsive, but it might be more eventual rather than immediate. Further, her statements to and regarding her child may range from loving, tender, and accepting to sarcastic and rejecting. Such unpredictability in maternal behavior also might make her difficult in dealing with some conflict or negotiation situations. When watching a tape, a rating of 5 is typically given when the observer notes some signs of sensitivity (e.g., positive statements, smiling, and interest) but also notes some clear problems in these areas (e.g., positive statements said in a slightly bored tone, smiling that does not seem authentic and genuine, or interest that is occasional or feigned). In sum, she shows some signs of sensitivity, but is not clearly so.

3. Somewhat insensitive. Insensitivity is typically displayed in one of two general ways, one being an active/harsh style (overly active and overbearing) and the other being a passive/ depressed/ affectively flat (noninteractive and silent) style. Both styles suggest unresponsiveness to infant communications and lack many of the features of sensitive interactions described earlier. The active/harsh/volatile style involves facial expressions of disgust and anger and harsh/ abrasive/ condescending tones of voice. The passive/depressed/affectively flat style involves facial expressions that are depressed, disinterested, and a vocal tempo that is slow, lethargic or simply unenthusiastic. Also often seen is a business-like, matter-of-fact style that combines features of both abrasiveness and passivity. The observer may note situations where there are sudden shifts in mood without gestural or verbal indicators. In other words, the subtle gestural system is not well-used, resulting in affect regulation that is not well-modulated. Such shifts are likely to be more extreme or upsetting to the child or for the observer to watch than is the case for a 5. Visual, physical, and emotional contact may be at least semi-avoidant, cool, and unresponsive. Overall, these inflexible styles of interaction suggest that mother cannot take into account the child's changing signals to maintain interest and attention and to modulate distress, boredom, and disinterest. Despite the fact that this mother lacks many crucial features of a sensitive behavioral style, she is nonetheless a competent parent in some ways. For example, a very bland affect may be balanced by a desire to engage in playful interactions. Although such interactions may lack a clear fun-like, synchronous quality, they indicate that this mother has some notions about what is important for child-rearing. The observer feels somewhat uncomfortable or sad when watching this interaction, but still sees some positive experiences provided by such a mother. Thus, the therapeutic workability of such a mother is higher than that of a 1. (It is important to note that in this system, we do not address the "enmeshed" versus "disengaged" aspects of interaction. Both styles of interaction are nonoptimal, and we cannot state that one is more dysfunctional than the other). If the mother has

only a couple of clearly non-optimal qualities, such as bland affect and an unenthusiastic tone of voice, she should receive a slightly higher rating, e.g., 3.5, 4.0, or 4.5, as scores up to 4.5 are still considered insensitive.

1. Highly insensitive. This mother displays few areas of strength in interaction with her child. This rating, as well as a 2, are uncommonly used ratings in normal or unselected samples and denote extreme insensitivity to the child's communications and little apparent knowledge of crucial child-rearing techniques. In at-risk populations, however, such lower ratings may be more commonly used. The highly insensitive mother is low on almost all qualities discussed in the introduction. Affective negativity (in the form of either active harshness or passive disinterest/depression) is more extreme as are many of the other qualities. Basically, a 1 is a more extreme version of the sort of insensitivity described for a 3. For example, child signals for attention or reaction may need to be very blatant; only traumatic signals may elicit maternal attention. In contrast to a 3 who may provide some semblance of positive engagement, when this mother is responsive, her child may be unable to derive much comfort, security, or enjoyment; some may even reject the mother by turning away or crying even harder than before. The mother and child are like "ships in the night": They do not take each other into account when initiating, prolonging, or turning away from interactions. In fact, there may be little interaction for some of these dyads. A highly insensitive mother might appear to forget that her child is around for extended periods of time when the child is not obviously demanding her attention, perhaps compromising the child's safety. In addition, as compared to a 3, the mother rated a 1 may have the willful intention to hurt or be more emotionally and/or physically abusive, while the mother rated 3 may show more "empathic failures" as described by Kohut and errors of omission. In sum, this mother seems to have an even more inflexible and dysfunctional style. This relationship is very painful for an observer to observe. If the observer has an impression of at least minimal positive experience for this child, mother should receive a higher rating, 1.5 or 2, or 2.5.

Reminder: This scale is slightly different from other scales in that a categorical and dimensional approach are combined. One first makes a decision about the mother's sensitivity or insensitivity (i.e.,  $< 5$  or  $> 5$ ) and then judges the degree of sensitivity or insensitivity afterward. If this categorical decision cannot be made, then a rating of 5 is assigned.

### Maternal structuring/intrusiveness

It is in this scale, and not in the maternal sensitivity scale, that we assess the degree to which the mother appropriately structures the child's play, taking care to follow the child's lead, and sets limits for appropriate child behavior and/or misbehavior. In game-playing situations these qualities may be observed in mother's establishing rules and requesting/demanding compliance with rules or her investment in winning games. The highest point on the scale refers to the style of an overprotective mother who not only controls and sets limits, but is smothering in this role. The next highest point (a 6) refers to a mother who too frequently suggests, directs, teaches, and scaffolds at the expense of child autonomy and lead. Yet, this interaction still is quite appropriate and almost optimal; the mother seems to assume the role of the didactic elementary school teacher. The next highest point on the scale refers to a mother who provides a supportive frame (that is, provides emotional scaffolding) in the context of allowing the child maximal autonomy in leading the interaction and play. This is the optimal rating. Ratings below a 5 refer to lesser degrees of structuring/intrusiveness. A 1 refers to a passive mother who does not provide sufficient structuring for the child. As observers, we might not have the opportunity to observe limit-setting in play contexts. But, for investigators using prohibition situations or naturalistic contexts, this aspect of mother-child interaction is likely to be an aspect of structuring/intrusiveness.

7. Overly high. This mother, rather than enabling the child to play, leaves no space for the child to "return the serve"; it is highly over-stimulating. She simply controls and does too much for and to the child (perhaps including physical handling). Also, her bids tend not to be successful in structuring the interaction. This overprotective quality of the mother (and enmeshed quality of the dyad) involves too much structuring, in the form of doing (rather than asking questions, making suggestions) for the child what s/he at an age-appropriate level should be doing for himself/herself. Given this overcontrolling and overprotective stance, mother might enter the child's play without being "invited", thus creating a sense of intrusiveness or interruption of ongoing play. This overprotective quality might be seen as infantilizing rather than merely directive, and involves the mother's inability to tolerate autonomy in the child.

6. High. Mother too frequently sets the pace of this interaction, asking questions, directing the course of play, and making suggestions, in an over-stimulating manner. The mother uses her own initiative, changing themes frequently, rather than elaborating on the child's interests. Thus, the general atmosphere is one of too frequent leading rather than following. Her bids are not always successful in structuring interaction. Part of such a style might involve interruptions of child play, i.e, the quality of entering play without being welcome. While an adequate degree of physical manipulation of objects and breaking down of relevant steps is seen here, the interaction does not have enough of a spacious quality. Limit-setting for child behavior is also too frequent and rigid, rather than co-determined. The mother has the quality of a didactic school teacher, with an agenda about child performance in this context.

5. Optimal. Mother shows an appropriate degree of structuring/intrusiveness. While she is an active member of the interaction and play, providing adequate information, breaking down the steps to complete the exercise, and physically helping in the manipulation of pieces, she does not overpower this interaction at all. Her bids are successful in structuring interaction. She clearly lets the child lead, as she provides a supportive frame. In games, she may ensure that the child wins or may diminish the importance of her winning. Mother also is not intrusive, entering the child's play smoothly and in a way that invites further exchange. This style offers the child a great deal of space to explore and lead, yet provides a frame on which he can further build. The interaction has a spacious quality. In terms of behaviors such as limit-setting and discipline, she shows firmness without harshness. That is, her discipline is context-appropriate without upsetting the relationship. During prohibition situations, for example, she might use diversions and indirect statements before moving onto direct prohibitions. Her general style concerning prohibitions involves mood-setting, gentle reminders, and preventative measures such as child-proofing of an area, rather than harsh limitations of the child's exploratory activities.

3. Inconsistent. This mother shows the qualities of a 5 or even 6 for a part of the session, but then backs off. The backing off may leave the child without support and sufficient scaffolding. Or, the session may progress such that the mother may seem insufficiently invested in the task at certain but not at other points. The mother who sets appropriate limits on child behavior but "caves in" under child pressure or acting up would be inconsistent in this respect. Thus, the overall quality of this exchange is one of inconsistent support, availability, attentiveness, and scaffolding. Or, there may be inconsistency in her ability to structure, her ability to set appropriate limits for the child, or her ability to enter the child's play in a smooth and non-interruptive manner. For example, her bids or attempts to scaffold may be unvarying and repetitive and/or unsuccessful even though they may be frequent.

1. None. Mother appears passive, perhaps indulgent. This mother sets no limits on child behavior and does not provide an adequate scaffold. She may engage in parallel play, manipulating pieces and seemingly involved in her own play alongside the child's play. Or, the child may be the member of the dyad structuring the interaction. There may be a the quality that mother and child are like peers. Further, limit-setting is likely to be absent, even when sorely called for.

### Maternal overt and covert hostility

This scale assesses the degree of hostility, ranging from overt to covert forms. The most highly intrusive mother is overtly, facially, and vocally hostile toward the child; the nature of the interaction is threatening and/or frightening. As we move down on the scale, there are more covert or intermittent forms of hostility. The lowest point refers to no hostile behavior toward the child; this form could involve appropriate interaction as well as highly passive/depressed forms of behavior.

5. Markedly and overtly hostile. Mother is overtly harsh, abrasive, and demeaning—facially and/or vocally. She may even show signs of physical punishment or physical harshness toward the child, such as pounding on the table,. Her behavior is threatening and/or frightening. In addition, covert forms of hostility might be observed, such as cold stares.

4. Intermittently but overtly hostile. The mother is not consistently harsh and abrasive. Abrupt or intermittent hostile behavior might be observed, however. Such interactions typically take the form of uninvolvement with the child for a good portion of the session, followed by a startling statement or act. Such hostile statements or acts are particularly concerning, given that there may be low maternal accessibility/availability for interaction. Abrasive teasing or name-calling may be observed. In addition, covert forms of hostility might be observed, such as cold stares.

3. Markedly but covertly hostile. This mother shows very covert forms of impatience, resentment, and anger with the child. Cold stares or sarcasm toward the child predominate as expressions of discontent and hostility. Teasing may be seen and may have a slight edge to it. No overt forms of hostility are observed.

2. Slightly hostile. This mother shows a diffuse level of discontent, discomfort, or boredom that may not be directed toward the child. Some impatience with the child may be observed, as in a long-suffering attitude, in the form of "huffing and puffing" or rolling her eyes. Mother may tease the child, where there is negative content but much humor or warmth accompanying it. The above-described forms of covert and overt hostility are not seen.

1. Not hostile. There are no expressions of overt or covert hostility toward the child, as can be discerned by the observer.



## Child responsiveness to mother

The child's responsiveness to mother is reflected in two aspects of the child's behavior: (1) Eagerness or willingness to engage with mother following her suggestion or bid for exchange; and (2) Display of clear signs of pleasure in interaction. Thus, the coder waits for a maternal bid for interaction and then observes the child's response—its existence and its affective quality. If the child ignores the bid by playing autonomously or looking away, the child was not being responsive. If the child responds to the mother by looking up, talking to her but in a bland, unenthusiastic tone, he or she is only somewhat responsive. If the child responds to the mother by looking up, talking to her in an enthusiastic, engaged tone, then the child is being highly responsive. Affectively negative responses (e.g., whining, complaining, insulting, crying, etc.) to maternal bids are not considered responsive. That is, a negative cycle of connectedness between mother and child is not considered responsive in this system, and connotes a dysfunctional form of maintaining contact. Child behaviors such as smiling, laughing, or narration are considered responsive only if there is evidence that they are in some measure directed toward the mother. Such behaviors could potentially be directed only toward the inanimate world and are not necessarily responsive. This scale is the closest of the two child's scales to being the counterpart of the maternal sensitivity scale.

9. Overly responsive. The child is highly responsive to mother's bids and suggestions, seeming always ready to engage with her. In addition, the child enjoys these interactions. However, there is a sense of diminished autonomy on the child's part since the child is always responsive to mother. This pattern may be seen more often when mother has reversed roles with the child, and the child may take on the caretaker role, even at an early age.

7. Highly responsive. This child responds often to mother's bids, but without any sense of urgency or necessity. He or she generally shows pleasure and eagerness in attending to mother's comments, suggestions, questions, and demonstrations. Despite a general affective availability to the mother's bids for attention or interaction, this child may occasionally ignore her bid, e.g., when engrossed in play or when s/he would like to follow her own course. Thus, expressions of age-appropriate autonomous strivings or individuation should not be considered as expressions of unresponsiveness or rejection of the mother. This is the most optimal rating.

5. Moderately responsive This child shows pleasure or eagerness in response to mother less frequently than a 7. Although there are moments of clear enjoyment and responsiveness when the observer feels like "that was a good episode", this child seems either to need more encouragement to engage with mother or appears less affectively engaged than a 7. A child who shows slightly less responsiveness than the "ideal" depicted above should be given a 6 or 6.5.

3. Somewhat unresponsive. This child shows significantly less pleasure and engagement with mother than a 5. In fact, a rating hovering around 3 should be given whenever there are serious concerns about the child's responsiveness toward the mother. Blandness or negativity are characteristic

of this child, although there may be a rare "lighting up" to a maternal bid. The child who is off on his or her own and must be called into play repeatedly by mother (i.e., requires significant coaxing) would receive this score. However, a child would also receive this score if mother makes few demands on the child to interact and the child is on his or her own during much of this episode. Dyads which use negative affect (e.g., child whining, complaining, tantruming to any type of maternal initiation) for maintaining connection and responsiveness with one another would be coded no higher than a 3.

1. Unresponsive. This child never shows pleasure when engaged with mother and rarely responds to a maternal initiative. This child's reluctance to engage with mother involves clear avoidance behaviors, even obliviousness, including insistent visual, postural, and verbal unresponsiveness. Maternal questions, suggestions, and requests may appear not to be processed by this child. This child may respond with strong protests that appear inappropriate, the nature and extent of which are greater than for a 3. However, a child would also receive this score if mother makes few demands on the child to interact and the child is on his own during much of this episode, the nature and extent of which are greater than for a 3.

## Child involvement with mother

This scale assesses the degree to which the child attends to and engages mother in play. The child who is highly involving of mother will make her the audience to his or her play and/or engage her as a player or support person in the activity. Such a child would involve mother by asking questions, narrating a storyline in front of her, or showing and demonstrating materials to her, all of which include her in the task at hand. The moderately involving child is more task- than mother-oriented. The balance between exploration and connection is tipped toward exploration, although there is still considerable inclusion of mother in the child's activities. The less involving children (somewhat involving and uninvolved) show avoidant or semi-avoidant behaviors, signalled by postural cues and by the paucity of any sort of social initiative. Theoretically, higher maternal intrusiveness may be associated with lower levels of child involvement of mother. That is, intrusive maternal behaviors may limit occasions for child initiative. The key element for this scale is the balance between the child's autonomy in play and the need to draw mother into play. The coder mainly looks for: child initiations intended to draw mother into interaction or play. The nature of child affect is less crucial here than in the responsiveness scale, although it still is taken into account. This scale is the child's counterpart of the maternal structuring/intrusiveness scale.

9. Over-involving. This child appears to have as his goal maintaining contact with mother. This child frequently requests mother's involvement, insisting that he cannot play by himself. There may be a sense of urgency and negative-attention seeking. Toys are consistently brought to mother for examination before autonomous exploration occurs. This child may also take responsibility for maintaining interactions with mother. This child may seek close physical contact repeatedly, conveying a sense of neediness. Another type of style involves negative behaviors that involve mother (e.g., "acting out": negative attention seeking, aggressing, whining, complaining about not being able to do the task). Or, the child's involving behaviors may be coupled with anxiety or urgency. In order to assign this score, it is important to evaluate whether the child is the initiator of this pattern of behavior. If not, lower scores must be considered.

7. Highly involving. This child shows a balanced pattern between autonomous play and involvement of mother. That is, involving behaviors are strongly integrated into the flow of play. Varied methods are used to engage mother as an audience or to request assistance, e.g., verbal narration to mother, pauses in play involving visual, physical, and/or verbal connection with mother, asking questions or calling for suggestions from mother. The child involves the mother in a comfortable, affectively positive, and nonurgent manner. This is the most optimal rating.

5. Moderately involving. This child shows more interest in the task at hand than on involving behaviors. While he or she seems quite autonomous, competent, there is periodic request of the mother's attention and interest, e.g., when the task becomes especially difficult or the child is tired. The balance here is clearly more towards autonomous play and mother may appear more like a tool the child uses when needed than as a desired audience to the

child's play. More indirect methods of engaging mother may be seen. If the child shows slightly less than the optimal involving behaviors, s/he should receive a 6 or 6.5.

3. Somewhat uninvolving. This child rarely draws mother into his ongoing play, although there may be isolated or indirect involving behaviors. This child may appear less competent than a child who receives a 5, in part because he or she does not have mother-as-tool to help out. Through avoiding behaviors (e.g., back turned to mother) the child signals not needing to involve her. When frustration builds, the child leaves the task rather than ask for her help.

1. Uninvolving. This child does not orient toward mother or initiate interaction with her at all during the episode. Mother may attempt to engage the child and may receive some response, but the child makes no attempt to elaborate these exchanges and does not initiate new ones himself or herself. There may also be no interest expressed in the dyad toward each other.

Appendix H  
Operational Definitions of Mother-Infant Touch

## Operational Definitions of Mother-Infant Touch

### **Proximity/Separation**

Proximity between the mother and infant will be coded when they are in close proximal contact and/or touching. Close proximal contact is coded using the definition of an "orbit" (Brown, Pipp, Martz & Waring, 1993). An orbit is defined as a radius equal to the length of the arm. Length of the arm has been chosen because it defines the potential to touch (Brown et al., 1993). Proximal contact will be coded when the mother is in the child's orbit or the child is in the mother's orbit, or both are in each other's orbit. The measure of proximity/separation has been defined in order to assess: a) the use of physical space between the mother and the child b) the potential of the mother and/or child to touch the other c) the extent to which the dyad remain close enough to feel each other's presence. In order for proximal contact to be coded it does not necessarily mean that the mother and child have to be "en face". They can be in different body positions, i.e. back to back, but be sitting close enough to each other that there remains a sense of connectedness between the dyad. Separation will be coded when mother and child are out of reach of each other. If either mother or infant have to lean over, more than one half length of arm in order to touch the other, the behaviour will be coded as separation.

**Active Affectionate Touch:**

Frequency of active affectionate touch will be coded when either mother or infant engages in behaviours such as the following: e.g., putting arm around, hugging, cuddling, kissing, cheek-to-cheek contact, patting, stroking, tickling. Affectionate play activities which occur between a mother and her infant (e.g., child combs mother's hair during pretend play, mother tickles child with a spoon) will also be included in this category.

**Passive Affectionate Touch:**

Frequency of passive affectionate touch will be coded when the mother or infant engage in one or more of the following behaviours:

- infant being held on lap, mother-infant are in physical contact e.g., leaning against one another, leaving a hand or foot in contact, or when mother and infant are holding hands, or mother has arm around her infant.

This category describes physical contact that is affectionate but passive in nature. It will appear that mother and infant want to be in physical contact with each other rather than touch is necessary in order achieve a goal. When mother and child are engaging in an active affectionate behaviour which later becomes passive, the passive affectionate behaviour should occur for at least 2 seconds before it is coded as such.

**Touch through play interactions:**

Frequency of touches that occur between mother and infant while playing with toys will be coded according to the following categories:

- touch behaviours such as hand-to-hand and hand-to arm/forearm contact that may occur while mother and infant are playing with toys
- touches that may occur between mother and infant as mother directs infant towards toy, when mother or infant leans forward to reach for a toy.

These behaviours will be seen as arising from the social interaction that occurs when a mother and infant play together, and will not have the same affectionate quality as other behaviours coded above.

**Restraint - Hard/Gentle**

Physical restraint which is forceful, abrupt or has an angry or punitive quality will be coded as hard physical restraint. Restraint which is gentle and designed to set appropriate limits will be coded as gentle physical restraint.

Note: - Behaviours that are not included in the above categories and that will not be coded are: brief touches or brushes that occur in the course of activities such as walking around.

- Only behaviours that are clearly seen from the videorecordings will be coded.



- If an affectionate behaviour occurs which does not seem to fall into any of the above categories, it should be noted and discussed with another coder at a later stage.

- It is possible for all of the above touches to co-occur in the same interval.

#### Coding of Touch

The presence of all categories of touch will be coded according to a time sampling measure. Videorecordings of the free play will be divided into 60, fifteen second segments for the purpose of coding. Coders will observe the interaction for 15 seconds and then record whether or not any of the target behaviours occurred during this interval. Each of the behaviours receive only one point per interval.

## Appendix I

Hierarchical Regressions Predicting Maternal Sensitivity and  
Maternal Scaffolding from Maternal Childhood Levels of  
Aggression and Social Withdrawal

Table 1

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Maternal Sensitivity (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.00	.05
Mothers' Education	.04	.04	.23		
<u>Step 2</u>				.03	1.09
Child Age	.17	.16	1 .04		
<u>Step 3</u>				.00	.04
Mothers' Childhood Aggression	-.02	-.02	-.12		
Mothers' Childhood Withdrawal	-.05	-.04	-.27		
<u>Step 4</u>				.08	3.37
Mothers' Childhood Aggression/ Withdrawal	-1.04	-.29	-1.84		
$\underline{R} = .33$ $\underline{R}^2_{adj} = .00$ $F = .92$					

\*  $p < .05$       \*\*  $p < .01$

Table 2

Mothers' Childhood Levels of Aggression and/or Social  
Withdrawal and Maternal Scaffolding (N=42)

Variables	Beta	sr <sup>2</sup>	t	R <sup>2</sup> ch	Fch
<u>Step 1</u>				.00	.17
Mothers' Education	.06	.06	.41		
<u>Step 2</u>				.08	3.45
Child Age	.29	.28	1.86		
<u>Step 3</u>				.02	.52
Mothers' Childhood Aggression	.15	.15	.94		
Mothers' Childhood Withdrawal	-.02	-.02	-.11		
<u>Step 4</u>				.01	.33
Mothers' Childhood Aggression/ Withdrawal	-.32	-.09	-.58		
$\underline{R} = .34 \quad \underline{R}^2_{adj} = .00 \quad F = .97$					

\*  $p < .05$     \*\*  $p < .01$