

UNIVERSITÉ DU QUÉBEC À MONTRÉAL

THE INTERGENERATIONAL TRANSMISSION OF ATTACHMENT AND CHILD
EXTERNALIZING BEHAVIOR PROBLEMS IN A SAMPLE OF ADOLESCENT
MOTHERS AND THEIR PRE-SCHOOL/EARLY-SCHOOL AGED CHILDREN

THESIS

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AS A PARTIAL REQUIREMENT

FOR THE DOCTORATE IN PSYCHOLOGY

BY

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UNIVERSITÉ DU QUÉBEC À MONTRÉAL

LA TRANSMISSION INTERGÉNÉRATIONNELLE DE L'ATTACHEMENT ET LES
TROUBLES DE COMPORTEMENT EXTÉRIORISÉS CHEZ LES ENFANTS DANS
UN ÉCHANTILLON DE MÈRES ADOLESCENTES ET DE LEUR ENFANT D'ÂGE

PRÉSCOLAIRE/DÉBUT SCOLAIRE

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LIST OF SYMBOLS

<i>B</i>	Unstandardized beta
β	Standardized beta
df	Degrees of freedom
F	F statistic
M	Mean
n	Frequency
n.s.	Not significant
p	Probability
r	Pearson correlation coefficient
S.D.	Standard deviation
SE <i>B</i>	Unstandardized standard error
R^2	Determination coefficient (proportion of variance explained)
ΔR^2	Change in determination coefficient (change in proportion of variance explained)
t	t statistic
χ^2	Chi-square value

Résumé

Au cours des années, de nombreuses études auprès de mères adolescentes et leurs enfants ont révélé des taux de prévalence plus élevés de représentations d'attachement non autonome chez ces dernières et d'attachement insécurisé chez leurs enfants en comparaison à ce que l'on retrouve dans des échantillons non cliniques. Plusieurs études ont également démontré que les représentations d'attachement de la mère se transmettent en partie à l'enfant par la sensibilité parentale. Toutefois, à ce jour, une proportion importante de la variance entre l'attachement du parent et celui de l'enfant demeure inexpiquée, ce qui suggère que d'autres éléments des interactions mère-enfant et des variables psychosociales de la mère devraient être étudiés. Dans le cas d'une population adolescente, les caractéristiques maternelles antisociales devraient être examinées en raison du risque écologique élevé les entourant. Des liens ont effectivement été démontrés entre la maternité à l'adolescence et les antécédents de troubles de la conduite chez ces jeunes filles, ainsi qu'entre les caractéristiques maternelles antisociales, les représentations d'attachement insécurisé des mères et les pratiques parentales négatives, lesquelles sont liées à l'insécurité chez l'enfant selon différentes études. Il devient alors très pertinent d'étudier l'apport des traits d'insensibilité/de manque d'affectivité (caractéristiques antisociales) des mères dans la transmission de l'attachement auprès d'une population de mères adolescentes et de leur enfant. De plus, il y a très peu de recherches qui visent à étudier le processus de transmission intergénérationnelle au-delà de la petite enfance, en particulier pour cette population. Par conséquent, d'autres recherches menées auprès de mères adolescentes et de leurs enfants à la période préscolaire/début de l'âge scolaire seraient nécessaires.

De plus, la recherche a démontré que les enfants d'âge préscolaire/début de l'âge scolaire de mères adolescentes sont plus à risque de présenter des troubles de comportement, particulièrement de nature agressive. Les résultats de quelques études révèlent qu'il existe une association entre les représentations d'attachement non résolu des mères adolescentes et les troubles de comportement de leurs enfants d'où l'importance de mieux comprendre cette association. Aussi, la recherche a démontré que parmi les catégories d'attachement insécurisé, la désorganisation chez les nourrissons et les enfants d'âge préscolaire ou scolaire est davantage associée aux problèmes extériorisés. Cependant, la majorité des études ont montré un lien entre l'attachement des nourrissons ou des enfants en bas âge et l'adaptation des enfants à l'âge préscolaire ou scolaire.

Les objectifs de cette étude portant sur un échantillon de 42 mères adolescentes et leur enfant âgé de 4 à 7 ans, visent à examiner : 1) le lien entre les représentations des mères liées à l'insécurité (ex. un niveau faible de «agency of self», une dimension du « Projectif d'Attachement Adulte» : George, West, & Pettem, 1997) et les catégories d'attachement des enfants, évaluées en utilisant le « Système de Classification d'Attachement à l'âge Préscolaire» (Cassidy & Marvin avec le MacArthur Working Group on Attachment, 1992); 2) les mécanismes possiblement impliqués dans la transmission de l'attachement, notamment les interactions mère-enfant évaluées en utilisant un système de codification d'observation élaboré par Moss, Humber et Roberge (1996) et les traits d'insensibilité/manque d'affectivité évalué en utilisant le « Antisocial Process Screening Device » (Frick & Hare, 2001); 3) les rôles de l'attachement mère et enfant dans la prédiction des troubles de comportement extériorisés (évalués en utilisant

le «Child Behavior Checklist » (Achenbach & Edelbrock, 1983); 4) un modèle de médiation dans lequel l'attachement de l'enfant agit en tant que médiateur dans la relation entre l'attachement des mères et les troubles de comportement extériorisés de leurs enfants; et enfin 5) un modèle de modération examinant les liens entre l'attachement des enfants et des mères dans la prédiction des troubles extériorisés.

Les résultats ont fait ressortir un lien significatif entre l'attachement des mères et celui des enfants. Toutefois, le rôle médiateur des interactions n'a pu être étudié puisqu'il a été impossible d'établir de lien entre l'attachement des mères et des enfants et les interactions mère-enfant. Néanmoins, les résultats ont démontré que les mères ayant un niveau plus faible de « agency of self » présentaient plus de traits d'insensibilité/de manque d'affectivité que les mères ayant un niveau plus élevé de « agency of self ». Aussi, les enfants ayant un attachement insécurisé avaient des mères qui présentaient plus de traits d'insensibilité/de manque d'affectivité que les enfants possédant un attachement sécurisé. Nos résultats appuient le modèle de médiation qui étudie le rôle des traits d'insensibilité/de manque d'affectivité des mères dans la relation entre l'attachement mère et enfant.

Les résultats ont aussi démontré que les enfants possédant un attachement désorganisé présentaient plus de troubles de comportement extériorisés que les enfants possédant un attachement organisé. Toutefois, les mères ayant des représentations d'attachement non résolu n'avaient pas plus de probabilité d'avoir des enfants présentant plus de troubles de comportement, que celles ayant des représentations d'attachement résolu. Donc, des analyses de médiation visant à examiner le rôle de l'attachement chez les enfants dans la relation entre l'attachement chez les mères et les troubles de comportement des enfants ne purent être effectuées. Enfin, il a été possible de démontrer le rôle modérateur de l'attachement des mères dans la relation entre l'attachement des enfants et les troubles de comportements extériorisés.

Ces résultats ont d'importantes implications tant du point de vue de la recherche que de la clinique. Ils soulignent l'importance d'examiner des variables autres que la sensibilité, notamment des variables psychosociales maternelles, lorsque l'on étudie la transmission intergénérationnelle de l'attachement. Ils mettent également en évidence l'importance d'explorer l'attachement tant chez les mères que chez les enfants dans la prédiction de troubles de comportement extériorisés. Les résultats de cette recherche appuient les travaux des études antérieures qui démontrent la transmission de l'attachement de même que les recherches qui soutiennent que l'attachement désorganisé est un facteur de risque important pour les troubles de comportement. Enfin, la présence de hauts taux de représentations d'attachement non-autonome et non résolu chez les mères adolescentes et d'attachement insécurisé et désorganisé chez leurs enfants, la transmission de l'attachement, le rôle significatif médiateur des caractéristiques antisociales maternelles dans la transmission, ainsi que les liens entre l'attachement désorganisé et la présence de troubles de comportement extériorisés sont des faits alarmants. Ces résultats justifient une exploration supplémentaire d'un échantillon de mères adolescentes et de leur enfant afin de créer et mettre en place des programmes de prévention pour cette population. Finalement, les résultats appuient la validation du Projectif d'Attachement Adulte, du construit « agency of self » du Projectif d'Attachement Adulte et du Système de Classification d'Attachement à l'âge Préscolaire.

Mots clés : Attachement, transmission, troubles de comportement, mères adolescentes

ABSTRACT

Research has demonstrated higher prevalence rates of maternal and child insecure attachment classifications in adolescent-mother child samples, relative to non-clinical samples. Substantial research has also established a correspondence between mothers' mental representations of their own attachment relationships and the quality of their child's attachments to them, as well as the contribution of maternal sensitivity in this transmission. Nonetheless, the extant research has revealed considerable unexplained proportion of variance in the transmission of attachment, suggesting that other elements of mother-child interactions and maternal psychosocial variables, such as maternal antisocial traits, should be investigated in adolescent mother-child dyads because of the high-risk ecology surrounding them. Indeed, associations have been shown between adolescent motherhood and a history of conduct problems in girls, as well as between maternal antisocial traits and both maternal insecure states of mind and negative parenting practices, which have been demonstrated to be linked to child insecurity. The latter illustrates the pertinence of examining the contribution of maternal callous-unemotional traits in the transmission of attachment in an adolescent mother-child sample. Moreover, owing to the fact that research examining the process of intergenerational transmission beyond the infancy period is scarce, the exploration of the preschool/early school-age period in adolescent mother-child samples constitutes an important avenue of research.

Research has also shown that there is a greater likelihood for children of early school-age of adolescent mothers to show problem behaviors, particularly of an aggressive nature. Although scant, research investigating associations between maternal representations of attachment and child externalizing behavior problems has demonstrated a relation between the unresolved attachment classification and child behavior problems, thereby suggesting the importance of examining the unresolved attachment classification in the prediction of child behavior problems, particularly of an externalizing nature. Furthermore, research has shown that among the insecure attachment classifications, infant and preschool or school-age disorganization is most closely associated with externalizing problems. However, the majority of studies have demonstrated associations between infant or toddler attachment and preschool or school-age adaptation.

Accordingly, the main objectives of this study were the examination, in a sample of 42 adolescent mothers and their 4-7 year old children, of : 1) the correspondence between maternal representations linked to insecurity (ie. low agency of self on the Adult Attachment Projective: George, West, & Pettem, 1997) and child attachment classifications designated using the Preschool Attachment Classification System (Cassidy & Marvin with the MacArthur Working Group on Attachment, 1992); 2) potential mechanisms involved in attachment transmission, namely mother-child interactions rated using an observational coding system developed by Moss, Humber, & Roberge (1996) and callous-unemotional traits assessed using the Antisocial Process Screening Device (Frick & Hare, 2001); 3) the roles of both mother and child attachment in the prediction of externalizing behavior problems (measured using the Child Behavior Checklist (Achenbach & Edelbrock, 1983); 4) a mediation model in which child attachment acts as a mediator in the relation between mother attachment and externalizing behavior problems; and finally 5) a moderation model investigating

interactions between child and mother attachment in the prediction of externalizing behavior problems.

Results showed a significant correspondence between maternal representations of attachment and child attachment. Given that maternal and child attachment were not found to be associated with mother-child interactions, the mediating role of interactions in the relation between maternal agency of self and child attachment could not be examined. Nonetheless, results showed that mothers with lower levels of agency of self had significantly higher levels of callous-unemotional traits than did mothers showing higher levels of agency of self and that children with an insecure attachment had mothers with significantly higher levels of callous-unemotional traits than did children with a secure attachment. A mediation model examining the role of maternal callous-unemotional traits in the relation between maternal and child attachment was supported.

Furthermore, results indicated that children classified as disorganized had higher levels of externalizing behavior problems than children categorized as organized. However, mothers with an unresolved attachment classification were not more likely than mothers with resolved models of attachment to have children with higher levels of behavior problems, hence mediation analyses examining the role of child attachment in the relation between maternal attachment and behavior problems could not be executed. Finally, the moderating role of maternal attachment in the relation between child attachment and externalizing behavior problems was supported.

These findings have important research and clinical implications. They underscore the importance of examining variables other than sensitivity, namely maternal psychosocial variables, when investigating the transmission gap. Also, they highlight the value of exploring attachment status in both mothers and children in the prediction of externalizing problems. Moreover, they support previous studies showing attachment transmission and demonstrating disorganized attachment models as being risk factors for behavior problems. Furthermore, the high prevalence rates of non-autonomous and insecure, and unresolved and disorganized classifications, the apparent attachment transmission, the significant mediating role of maternal antisocial traits in the relation between maternal and child attachment, and the observed relations between disorganized attachment models and child externalizing problems, are alarming. These findings warrant further exploration in a sample of adolescent mother-child dyads and provide avenues for the design and implementation of preventive programs for such a sample. Finally, these results provide validity for the Adult Attachment Projective, the "agency of self" construct of the AAP, and the Preschool Attachment Classification System.

Key words : Attachment, transmission, behavior problems, adolescent mothers

INTRODUCTION

High teenage pregnancy rates are of great societal concern as substantial research demonstrates strong associations between teenage parenthood and both unfavorable outcomes for mothers, and a diversity of psychosocial and developmental problems in their children (e.g., Brooks-Gunn & Chase-Lansdale, 1995; Coley & Chase-Lansdale, 1998). Studies have shown an over-representation of both maternal and child insecure classifications in adolescent-mother-child samples, compared with the prevalence rate of insecure attachment classifications found in non-clinical samples (Miljkovitch, Pierrehumbert, Bretherton, & Halfon, 2004; Tarabulsky, Bernier, Provost, Maranda, Larose, Moss, Larose, & Tessier, 2005; van IJzendoorn & Bakermans-Kranenburg, 1996; van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999; Ward & Carlson, 1995). Furthermore, these studies examining adolescent mother-child samples have demonstrated somewhat similar distributions to those examining non-clinical samples, with respect to unresolved attachment classifications but somewhat higher distributions than those examining non-clinical samples, with respect to disorganized attachment classifications.

In addition, several studies have demonstrated a correspondence between mothers' mental representations of their own attachment relationships and the quality of their child's attachments to them, in normative/low-risk and adolescent mother-child samples, including infants, toddlers, preschoolers, and early school-aged children (e.g., Pederson, Gleason, Moran, & Bento, 1998; Tarabulsky et al., 2005; van IJzendoorn, 1995). Several researchers believe and have shown that the relation between maternal

representations and child attachment is mediated by mother-child interactions, particularly maternal sensitivity (e.g., Pederson & al, 1998; Thompson, 2001; van IJzendoorn, 1995). These findings are consistent with attachment theory which posits that parental mental representations directly influence the patterning and quality of interactions with their offspring, which in turn, determine, in large part, the quality of child attachment developed (Cassidy, 1994; Main, Kaplan, and Cassidy, 1985). They are also in line with attachment theory which has considered maternal sensitive responsiveness as driving the intergenerational transmission of attachment.

Nonetheless, research has revealed a considerable unexplained proportion of variance in the intergenerational transmission of attachment, therefore other elements of mother-child interactions other than sensitivity/responsiveness (e.g., synchrony, reciprocity, mutuality), as well as maternal psychosocial variables, such as maternal antisocial traits, should also be considered when accounting for the intergenerational transmission of attachment. Indeed, in Bronfenbrenner (1979)'s ecological model, the psychological attributes of the mother represent an important element in the development of child security, via their influence on the daily interactional exchanges between parent and child.

Adolescent motherhood has been found to be related to a history of conduct problems in girls (e.g., Jaffee, 2002; Wakschlag, Gordon, Lahey, Loeber, Green, & Leventhal, 2000) and maternal antisocial traits have been shown to be associated with maternal insecure states of mind (Allen, Hauser, & Borman-Spurrell, 1996; Rosenstein & Horowitz, 1996) and negative parenting practices (e.g., Caspi & Moffitt, 1995), which have been demonstrated to be linked to child insecurity (DeWolff and van IJzendoorn,

1997; Lyons-Ruth, Bronfman, & Parsons, 1999b). Thus, research suggests that it is of great import to examine the contribution of maternal callous-unemotional traits in the transmission of attachment in an adolescent mother-child sample. In addition, little is known about the process of intergenerational transmission beyond the infancy period, particularly in adolescent-mother-child samples, therefore exploring the preschool-early school-age period in this sample is of great research interest.

Moreover, research has demonstrated that there is a greater likelihood for children of adolescent mothers to show problem behaviors (Spieker, Larson, Lewis, White, & Gilchrist, 1997), particularly of an aggressive nature (e.g., Nagin & Tremblay, 2001; Tremblay, Nagin, Seguin, Zoccolillo, Zelazo, Boivin, Pérusse, & Japel, 2004). Although very few studies have examined associations between maternal representations of attachment and child externalizing behavior problems, the extant studies have found links between maternal representations and child externalizing behavior (Crowell & Feldman, 1988; DeKlyen, 1996; van IJzendoorn, Kranenburg, Zwart-Woudstra, Van Busschbach, & Lambermont, 1991). They have shown the unresolved attachment classification to be strongly associated with child behavior problems and to be more resilient to improvement and change, hence the value of investigating the unresolved attachment classification in the prediction of child behavior problems, particularly externalizing behavior problems.

Substantiating these findings are Main and Hesse's theory that has been empirically supported (e.g., Schuengel, Bakermans-Kranenburg, van IJzendoorn, & Blom, 1999; van IJzendoorn et al., 1999) that advances that unresolved maternal states of mind are related to child disorganization, via frightened/frightening behavior. Higher maternal stress levels have also been found to be related to higher levels of child

externalizing behavior problems (e.g., Deater-Deckard, Pinkerton, & Scarr, 1996; Johnston & Pelham, 1990).

In addition, in line with Bowlby's theory (1977) proposing that an insecure relationship with a caregiver renders one vulnerable to developmental problems, studies have shown that, attachment insecurity is related to higher levels of behavior problems (e.g., Hubbs-Tait, Osofsky, Hann, & Culp, 1994; Moss, Parent, Gosselin, Rousseau, & St-Laurent, 1996). Among the insecure attachment classifications, infant and preschool or school-age disorganization has been shown to be most closely associated with adaptation problems (e.g., Greenberg, Speltz, DeKlyen, & Endriga, 1991; Lyons-Ruth, Alpern, & Repacholi, 1993) particularly of an externalized nature (Lyons-Ruth, Easterbrooks, and Cibelli, 1997). Nevertheless, most studies have demonstrated associations between infant or toddler attachment and preschool or school-age adaptation (e.g., Lyons-Ruth et al., 1993; Suess, Grossman, & Sroufe, 1992).

Accordingly, the main objectives of this research program are to examine: 1) the correspondence between maternal agency of self and child secure/insecure attachment classifications; 2) potential mechanisms involved in attachment transmission, namely mother-child interactions and callous-unemotional traits; 3) the roles of both organized versus disorganized attachment in preschool/early school-aged children and of maternal resolved/unresolved status in the prediction of behavior problems; 4) a mediation model in which child attachment acts as a mediator in the relation between mother attachment and externalizing behavior problems; and finally 5) a moderation model investigating the interaction between child and mother attachment in the prediction of externalizing behavior problems.

All in all, this study will contribute to a more comprehensive understanding of potential mechanisms accounting for the intergenerational transmission of attachment patterns, as well as of factors involved in the development of externalizing behavior problems, in a sample of adolescent mother-preschool/early-school aged children. Such knowledge is critical to the design of effective interventions with samples of adolescent mothers and their children.

The first chapter will be comprised of the theoretical and empirical frameworks from which we generated our hypotheses and research questions. The second chapter will include the methodological aspects of our study. The third chapter will cover the results obtained, which will be discussed elaborately in the fourth chapter. At the very end, the contributions of our study, as well as the limits inherent in our study and potential future directions for research, will be addressed.

CHAPTER I

LITERATURE REVIEW

1.1 Teenage Pregnancy and Maternal and Child Outcomes

The national prevalence of teenage pregnancies is quite alarming. In Canada, there were 41,588 teenage pregnancies in 1998, representing 4.17% of the female teenage population. More specifically, in Quebec, there were 9,619 teenage pregnancies, representing approximately 25% of total teenage pregnancies in Canada (Statistics Canada). Similarly, in the United States, the prevalence of teenage pregnancies was 4.85% in 2000 (Ventura, Matthews, & Hamilton, 2002).

These high prevalence rates have evoked increased awareness of the problem of teenage pregnancy, and have aroused public concern and research activity. Research to date shows strong relations between teenage parenthood and both adverse effects for mothers and a variety of psychosocial and developmental problems in their offspring (e.g., Brooks-Gunn & Chase-Lansdale, 1995; Coley & Chase-Lansdale, 1998; Furstenberg, Brooks-Gunn, & Chase-Lansdale, 1989). These problems include insecure attachment (Broussard, 1995), sizable intellectual deficits and emotional disturbances during the preschool years (Furstenberg et al., 1989; Miller, Miceli, Whitman, & Borkowski, 1996), ineffective coping behaviors (Stoiber & Anderson, 1996), poor academic achievement, poor peer relations, and behavior problems in childhood (Furstenberg et al., 1989; Miller et al., 1996; Osofsky, Eberhart-Wright, Ware, & Hann,

1992). Moreover, children of adolescent mothers are more likely than children of later child bearers to experience health and cognitive difficulties (Hayes, 1987).

Children of adolescent mothers are more likely to be born prematurely and 50% are more likely to be low-birth weight babies. Low birth weight increases the probability of a range of adverse conditions such as infant death, blindness, deafness, chronic respiratory problems, mental retardation, mental illness, and cerebral palsy. It also doubles the chance that a child will later be diagnosed as having dyslexia, hyperactivity, or another disability. Cognitively and academically, children of adolescent mothers have been shown to be inferior to those born to older mothers. They are more likely to repeat a grade and to perform poorly in school (Hayes, 1987). Finally, children of adolescent mothers have been found to be at greater risk for maladjustment and social impairment, including feelings of inferiority, fearfulness, and poor emotional regulation. These children report higher levels of behavior disorders (e.g., aggressiveness and impulsiveness), school behavior problems (suspension), substance abuse, and sexual behavior than children born to older mothers (Hayes, 1987; Luster & Mittelstaedt, 1993).

Studies have shown that these developmental outcomes are linked to both ecological factors and parenting patterns. Research suggests that adolescent mothers and their offspring are at risk predominantly because of social, educational, and economic factors, and related undesirable parental attitudes toward childbearing and childrearing (Scott, Field, & Robertson, 1981). In general, teen mothers complete fewer years of school, and are less likely to earn a high-school diploma or to go on for post-secondary education than women who bear children later (Hayes, 1987). Seven out of ten adolescent mothers do not complete high school. During the first 13 years of parenthood,

adolescent mothers earn an average of \$5, 600 annually, an income which is significantly below the poverty level (Maynard, 1996). Studies demonstrate that adolescent mothers are more likely to experience unemployment and poverty, and to be financially dependent on government welfare programs (Hayes, 1987). Furthermore, adolescent mothers spend nearly five times more of their young adult years as single parents in comparison with women who have their first child at age 20 or 21. Moreover, of those adolescent mothers who do marry, the majority experience higher rates of marital discord and divorce (Hayes, 1987). Research indicates that teen mothers are also at risk psychologically for higher levels of stress, depression, and lower levels of self-esteem, than their older counterparts (Jorgensen, 1993). In addition, research demonstrates that adolescent motherhood is associated with a history of conduct problems in girls (Bardone, Moffitt, Caspi, & Dickson, 1996; Kessler, Berglund, Foster, Saunders, Stang, & Walters, 1997; Jaffee, 2002; Miller-Johnson, Winn, Coie, Maumary-Gremaud, Hyman, Terry, & Lochman, 1999; Woodward & Fergusson, 1999; Wakschlag et al., 2000).

Adolescent mothers may be less competent owing to deficits in their emotional development, parenting experience, and parenting skills (Furstenberg et al., 1989). Relative to older mothers, adolescent/younger mothers have been shown to have less knowledge about developmental milestones of young children (e.g. Brooks-Gunn & Furstenberg, 1986; Karraker & Evans, 1996), perceive their infants as more difficult, experience greater parenting stress, and respond to their babies with less sensitivity and affection (Miller et al., 1996; Sommer, Whitman, Borkowski, Schellenbach, Maxwell, & Keogh, 1993). The Early Childhood Initiative Foundation has reported that poor parenting skills may result in harsh and rejecting discipline which has been linked to

child anger, low self-esteem, and social withdrawal. Indeed, children of adolescent mothers are far more likely to be physically abused, abandoned, and neglected (Maynard, 1996).

The Robin Hood Foundation recently estimated the annual cost to society of adolescent childbearing to be between \$13 and \$19 billion (Hughes & Sutton, 1996). Given the diversity and adversity of the consequences associated with teen pregnancy, it is critical to better understand factors associated with the development of behavior problems in the offspring of teen mothers. This study examines underlying processes and mechanisms related to adverse developmental outcomes among the children of teen mothers. It is hoped that this knowledge can be used to promote effective interventions with adolescent mother-child dyads. Although research demonstrates the contributions of ecological and parenting patterns to the prediction of detrimental outcomes in children of adolescent mothers, there is a need for more specific models examining risk factors that are related to particular child developmental outcomes. Attachment theory, proposed by British psychoanalyst John Bowlby (1973), may provide a suitable model for studying these issues. Indeed, according to Ward and Carlson (1995, p.69), "attachment theory is well suited to the study of adolescent mothers and their children because it defines a range of individual differences (Parkes, Stevenson-Hinde, & Marris, 1991, p. 9) in behavioral organization".

1.2. Theoretical Basis of Attachment Theory

John Bowlby, together with Mary Ainsworth, developed attachment theory to explain phenomena in personality development and psychopathology that were not adequately explained by other psychoanalytic theories. Bowlby (1969) and Ainsworth

(1973) define attachment as being an affective bond that is characterized by a tendency to seek and maintain proximity to a specific individual, particularly when under stress. Attachment behaviors are partially activated when the child experiences distress. The mere fact of knowing that the attachment figure is available and attentive provides the child with a sense of security, which in turn encourages the child to continue and value the attachment relationship (Bowlby, 1989). This is known as the 'secure base' phenomenon. The affective bond representing attachment develops between an infant and her primary caregiver, who is usually the mother, between 6 and 12 months of age (Bowlby, 1989).

In discussing the function of the attachment relationship, Bowlby (1977) emphasizes the balance between two fundamental motivational systems — proximity-seeking and exploration. When a child feels secure, the exploratory system is activated and the child is more likely to actively explore the environment with or without the attachment figure. However, when distressed, the child will seek proximity to the attachment figure and exploration plays a secondary role in the child's motivational system. When the parent is available and responds to the child's needs, the child's sense of security and eagerness to explore the environment are enhanced. According to Bowlby (1977), having a secure base is crucial for optimal child functioning and mental health; without a secure base, the child is at risk for developing developmental problems.

1.3. Attachment in the Preschool Years

Bowlby (1973) proposed that, at preschool age, mother-child interactions take the form of a goal-corrected partnership. At this time, according to attachment theory, secure children should be able to maintain a goal-corrected partnership with the caregiver

involving open emotional expression, negotiation, and reciprocal control of behavior (Bowlby, 18982; Cichetti & Schneider-Rosen, 1984). Language development, as well as an increased ability to take the others' perspective, which mark the transition to the preschool period, enable the child to communicate his/her intentions and plans, to understand those of his caregiver, and to participate in negotiations aimed at collaboratively attaining a common goal (Marvin, 1977; Marvin & Britner, 1999). At this stage, insecurity in the parent-child attachment relationship is manifested by difficulties in the communication of emotions, motivations, and plans (Moss et al., 1996). Secure preschoolers who have received consistent, sensitive, and responsive caregiving should be more capable of maintaining a goal-corrected partnership with the caregiver than those who have experienced rejection or inconsistent parenting. Furthermore, several researchers speculate that insecure preschoolers lacking a secure base may lack communication skills (Cicchetti & Schneider-Rosen, 1984; Marvin, 1977). Several researchers have conducted studies, in both the home and laboratory settings, supporting the theoretical associations between maintenance of a goal-corrected partnership and attachment security, and between a lack of goal-corrected partnership and insecurity (Cyr & Moss, 2001; Moss, St-Laurent, & Parent, 1999; Moss, Rousseau, Parent, St-Laurent, & Saintonge, 1998; Stevenson-Hinde, 1991).

1.4. Classifying Attachment in Preschool Children

Cassidy and Marvin (1992) have developed the Preschool Attachment Classification System (PACS) for coding attachment behaviors in preschool children. The PACS is based on Ainsworth's infancy system and Main and Cassidy's (1988) system for 6 year-olds. Ainsworth's system allows for the classification of the infant's

attachment relationship into one of three main groups: a “secure” group (B) and two “insecure” groups, “avoidant” (A) and “resistant” or “ambivalent” (C). However, Main and Cassidy’s system allows for the classification of attachment into one of five groups: a “secure” group (B) and four “insecure” groups, “avoidant”(A), “ambivalent” (C), “controlling” (D), and unclassifiable (U). Similarly, the PACS classification system provides instructions for classifying the preschooler’s attachment relationship into one of five main groups: a “secure” group (B) and four “insecure” groups, “avoidant”, “ambivalent/dependent”, “disorganized/controlling” (punitive, caregiving), and “insecure-other” (IO). Classification is based on observations of child's physical proximity to mother, affective expression, and verbal exchanges, during two reunion periods (mother and child reunite after separations). Unlike the infancy system, when security is assessed, more emphasis is placed on conversational patterns than on physical contact; conversational patterns assume increasing importance as a function of child age. Discourse patterns are evaluated in terms of intimacy, comfort, fluidity, and child interest in mothers’ thoughts and feelings (see section 2.3.8 for details about each classification).

1.5. Classification of Adult Representations of Attachment Relationships

In 1984, George, Kaplan, and Main developed the Adult Attachment Interview (AAI) to evaluate maternal representations or internal working models of attachment relationships as expressed in discourse about early relationships and reflections on childhood experiences. The AAI is an hour-long semi-structured interview comprised of questions probing respondents’ general descriptions of attachment relationships and recollections of specific memories that support these general descriptions. During the AAI, interviewees are asked about experiences concerning injuries and illnesses,

separations, rejections, and harsh physical treatment, and are asked to assess the effects of these early experiences on their current personality and parenting. The scoring of the AAI focuses on the coherency of discourse, rather than on the global representation of early experience.

There are two general groups: autonomous (F) and non-autonomous (D, E, U). In general, autonomous (Group F) adults balance the recognition of the importance of attachments with the ability to objectively evaluate their experience and Groups D, E, and U lack such a balance (Ward & Carlson, 1995). Moreover, regardless of the positive or negative nature of early experiences, the discourse of autonomous (Group F) adults is coherent. These adults exhibit a willingness and ability to cooperate with the interviewer, to recall attachment-related memories and feelings, and to speak of such experiences with consistency and clarity.

As discussed above, there are three subgroups of non-autonomous adults. Dismissing (D) adults are characterized by cognitive organization of attachment-relevant information based on denial of the occurrence, importance, or effects of attachment relationships (West & Sheldon-Keller, 1994); they are cut off from attachments. Preoccupied (E) adults are passive and unobjective about memories of early experiences. They cannot free themselves from a preoccupying enmeshment with past attachment relationships. This enmeshment can be accompanied by "intensely angry affect" which overwhelms the individual inappropriately when trying to discuss the attachment figure or attachment-related events. Alternatively, enmeshment may be expressed as a quiet, rather distracted ongoing involvement with attachment events or attachment figures (West & Sheldon-Keller, 1994). Finally, unresolved (U) adults are fearful and/or

irrational about early loss or trauma and may feel responsible for abuse by a parent or for the death of an intimate relative. They manifest a diversity of cognitive disturbances when trying to discuss an attachment-relevant loss and have seemingly failed to take in this loss and move beyond it. Furthermore, these individuals are also given an accompanying classification of autonomous, dismissing, or preoccupied (West & Sheldon-Keller, 1994).

Several studies have verified the reliability, discriminant validity, and the predictive validity of the AAI (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Bakermans-Kranenburg & van IJzendoorn, 1993; Sagi, van IJzendoorn, Scharf, Koren-Karie, Joels, & Mayseless, 1994; van IJzendoorn, 1995; Waters, Posada, Crowell, & Keng-ling, 1993). Recently, the Adult Attachment Projective (AAP), a semi-projective measure based on the AAI, has been developed by George, West, and Pettem (1997). The adult is presented with eight pictures (neutral, warm-up picture, followed by seven attachment scenes) and then must invent a story about what is happening in the picture, what led up to the scene, what the characters are thinking and feeling, and what might happen next. The AAP was developed to predict the four main attachment groups designated by the AAI (secure, dismissing, preoccupied, unresolved). Three dimensions of the adult's response to each attachment picture is assessed: Discourse (personal experience and coherency), Content (agency of self, connectedness, and synchrony), and Defensive Processing (deactivation, cognitive disconnection, and segregated systems) (see section 2.3.4. for additional information concerning classification system).

According to George, West, & Pettem (1999), the AAP Agency of Self scale is closely linked to the notion of internalized secure base and overall security. Recently,

West and George (2002, p. 280-281) suggested that "the recent attachment concept of 'agency of self' may be used to supply a point of identity between cognitive sets such as helplessness and representational patterns of insecure attachment". Hence the dimension 'agency of self' will be examined in analyses comparing secure and insecure groups.

AAP inter-judge reliability, based on a subsample of mothers of Failure to Thrive Infants and their low-risk controls participating in a research project in Toronto and a subsample from the Calgary Depression Study, for secure versus insecure classifications was found to be .93 ($\kappa=.73$, $p<0.00$) (George and West, 2001). Furthermore, a strong AAP-AAI convergence, based on the two above-mentioned subsamples and a subsample in an AAP validity study conducted by George, West, and Pettem including participants recruited from both community and clinical populations, for secure versus insecure classifications has been demonstrated (.92; $\kappa=.75$, $p=.000$) (George and West, 2001).

1.6. Distributions of Mother Non-autonomous/Insecure and Unresolved Attachment

Classifications in Non-clinical and Adolescent Mother-Child Samples

The prevalence rate of autonomous attachment classifications has been found to be higher in non-clinical samples than in adolescent mother-child samples, whereas the prevalence rate of unresolved classifications in non-clinical samples has been shown to be quite similar to that obtained with adolescent-mother-child samples. In van IJzendoorn and Bakermans-Kranenburg (1996)'s meta-analysis based on 33 studies comprised of over 2,000 AAI classifications in a combined sample of $n = 487$ non-clinical mothers, 45% of non-clinical mothers were classified as non-autonomous/insecure and 19% were coded as unresolved with respect to loss or trauma (percentage in U.S. samples: 23%; $n = 193$; did not differ significantly from samples

from other countries: 17%; n = 294). More recently, Raval, Goldberg, Atkinson, Benoit, Myhal, Poulton, and Zwiers (2001) found, in their study examining mother-infant dyads, that 56% were coded non-autonomous/insecure and 17% were classified unresolved. Similarly, recently, Miljkovitch and colleagues (2004) found, in their study examining mother-preschooler dyads, that 52% were rated insecure/non-autonomous and 16% were classified unresolved.

In a study conducted by Tarabulsky and colleagues (2005) examining a sample of adolescent mothers aged 19 years or younger and their infants, 75% of mothers were coded as having non-autonomous/insecure states of mind, and 11% were coded as being unresolved. Moreover, in another study examining an adolescent mother-infant sample conducted by Ward and Carlson (1995), 68% of mothers were classified non-autonomous/insecure and 26% were coded unresolved. In addition, Levine & Tuber (1991) found, in a sample of adolescent mothers and infants, that 79% of mothers were rated non-autonomous/insecure and 24% unresolved.

In summary, studies examining distributions of attachment classifications in adolescent-mother-child samples have found an over-representation of non-autonomous (68 to 79%) classifications, compared with non-clinical samples (45 to 56%). In general, these studies have demonstrated somewhat similar distributions (11 to 26%) of the unresolved classification, as those examining non-clinical samples (16 to 19%).

1.7. Distributions of Child Insecure and Disorganized Attachment Classifications in Non-clinical and Adolescent-Mother-Child Samples

The prevalence rate of insecure child attachment classifications has been found to be higher in adolescent mother-child samples than in non-clinical samples, and the

prevalence rate of disorganized classifications in adolescent-mother child samples has been shown to be somewhat higher than that obtained in non-clinical samples. In van IJzendoorn, Goldberg, Kroonenberg, and Frenkel (1992)'s study of non-clinical mother-infant dyads, 45% of infants were coded insecure and 15% disorganized. Similarly, prevalence rates of insecure and disorganized attachment classifications of 38% and 15%, in infants, respectively, were found in normative, middle class, and non-clinical samples in North America, by van IJzendoorn and colleagues (1999) in their meta-analysis ($n = 2,104$).

Based on four adolescent mother samples (Broussard, 1995; Hubbs-Tait, Hughes, Culp, & Osofsky, Hann, Eberhart-Wright, & Ware, 1996; Spieker & Bensley, 1994; Ward & Carlson, 1995), prevalence rates of insecure and disorganized attachment classifications, of 60% and 23%, respectively, were found by van IJzendoorn and colleagues (1999) in their meta-analysis. Similar proportions were found in two other studies examining samples of adolescent mothers, one including infants and the other preschoolers (not included in van IJzendoorn et al.'s meta-analysis, 1999: about 60% of infants were rated insecure and 22% disorganized (Levine & Tuber, 1991; Keller, Spieker, & Gilchrist, 2005).

In summary, studies examining distributions of attachment classifications in adolescent-mother-child samples have found an over-representation of insecure (60%) classifications, compared with the attachment distributions found in non-clinical samples, where the prevalence of secure attachment classifications is more prevalent than that of insecure classifications (38 to 45%). Moreover, studies investigating adolescent mother-child samples have demonstrated somewhat higher distributions (22-23%) than those

examining non-clinical samples (15%), with respect to disorganized attachment classifications.

1.8. Maternal Psychosocial Characteristics, Maternal Attachment Representations, and Child Attachment

1.8.1. Maternal Stress Level, Maternal Attachment, and Child Attachment

According to Belsky, Youngblade, Rovine, and Volling (1991), early contextual factors (e.g. amount of stress, social support, quality of couple relationship) in the family of origin influence early caregiving quality, which, in turn, affects child attachment and behavioral development. In support of this, studies have shown that maternal psychosocial variables, namely life stress, quality of marital relationship, and social isolation influence the quality of mother-child interactions (e.g., Cox, Owen, & Lewis, 1989; Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Goldberg & Easterbrooks, 1984; Jacobson & Frye, 1991; Lyons-Ruth, Connell, & Grunebaum, 1990; Zarling, Hirsch, & Landry, 1988), which, in turn, have been shown to predict child attachment security. For instance, Bigras and Lafrenière (1994) found that mothers reporting more social isolation, a more coercive marital relationship, and higher levels of stress, were more distant, colder, and less attentive in their interactions with their preschoolers, particularly with boys.

More specific to the parental stress construct, Belsky and colleagues' (1991) model supports the association between high levels of stress and poor parenting, and proposes that poor parenting generates insecure working models and patterns of attachment in young children. In line with Belsky's model, studies demonstrate that parents experiencing high levels of stress are less available, less affectionate, and more

irritable with their child when they lack social support from their partner (Belsky & Isabella, 1988; Howes & Markman, 1989). Johnston and Pelham (1990) showed that increased life stress predicted increased maternal commands and decreased social interaction with the child. Furthermore, studies have found higher levels of familial stress to be associated with more insensitive, harsh, rejecting, inconsistent, and/or unpredictable parenting behavior (Burgess & Draper, 1989; McLoyd, 1990), Bronfenbrenner & Crouter, 1982).

Moreover, consistent with Belsky's thinking, research has demonstrated a link between parenting stress and a higher incidence of child insecurity (e.g. Manassis, Bradley, Goldberg, Hood, Swinson, 1994; Teti, Gelfand, Messinger, Isabella, 1995). In fact, in a meta-analysis conducted by Atkinson, Paglia, Coolbear, Niccols, Parker, & Guger, 2000), maternal stress was shown to be significantly associated with lower security ratings ($r = .19$; based on 13 studies, five of which used the PSI as the stress measure: Hellstrom, 1994, Manassis et al., 1994, Michels, 1992, Pederson, Moran, Sitko, Campbell, Ghesquiere, & Acton, 1990, and Teti et al., 1995, 14 samples, and 768 dyads). In a study not included in Atkinson and colleagues' meta-analysis (2000), examining a high-stress sample of mothers of children attending a preschool program for high-risk families, lower maternal stress (assessed using the Parenting Stress Index) predicted higher scores on the Attachment Q-Set (Hadadian & Merbler, 1996).

Studies examining the link between maternal agency of self and maternal stress level have not yet been conducted. However, according to West and George (2002), an absence of agency of self is analogous to the cognitive concept of 'helplessness'. Studies have in fact found an association between stress and a sense of helplessness in mothers

(Coulson, 1995 & Magana, 1997, as cited in Cassidy & Shaver, 1999). Therefore, other studies examining the link between maternal attachment representations and child attachment should control for maternal stress.

In summary, theory and research indirectly suggest that parental stress is related to maternal agency of self and that stress contributes to poor parenting behaviors and to child attachment insecurity.

1.8.2. Maternal Attachment and Drug Consumption

According to attachment theory (1977), having a secure base should lead to optimal psychosocial functioning, while having an insecure relationship should leave one vulnerable to poor adjustment. It has been proposed that poverty, illiteracy, and school dropout are risk factors for unprotected sex and substance use among adolescents and that teenage women are particularly at risk for sexual exploitation and lack of power in making decisions about using substances (Kissman, 1998). In support of the theory, research has identified disruptions in the normative developmental process of social bonding as potentially leading to substance use in adolescents and young adults (Elgar, Knight, Worrall, & Sherman, 2003), in part through their effect on the adoption of antisocial values and deviant peer networks (Brook, Cohen, & Jaeger, 1998). In a recent study conducted with a sample of pregnant and parenting adolescents participating in a larger ongoing longitudinal study ($n = 232$), differences in attachment security were found to be associated with substance use (Golder, Gillmore, Spieker, & Morrison, 2005). Adolescent mothers/mothers-to-be with higher levels of attachment insecurity were more likely to engage in risky behaviors (including substance abuse) than more securely attached mothers/mothers-to-be. There are no studies examining relations

between maternal agency of self and substance use, although attachment theory and research suggest that such an investigation would be worthwhile since insecurity has been shown to be related to substance use.

Therefore, theory and research underscore the importance of controlling for maternal psychosocial variables, such as stress and drug consumption, when examining the correspondence between maternal attachment representations and child attachment.

1.9 Intergenerational Transmission of Attachment and Processes Involved in Transmission

1.9.1 Mother and Child Attachment Correspondence

Studies to date have not yet examined the correspondence between mothers' attachment representations (agency of self: security/insecurity) and her preschooler's attachment classification (secure/insecure). Nonetheless, studies have demonstrated a correspondence between mothers' mental representations of attachment assessed through the Adult Attachment Interview (George et al., 1984) and the quality of their infants' attachments to them evaluated through the Strange Situation (Ainsworth et al., 1978) (e.g., Ainsworth & Eichberg, 1991; Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Grossman, Pollack, & Golding, 1988; Main et al., 1985; Raval et al., 2001). In fact, van IJzendoorn (1995) conducted a meta-analysis, based on nine studies ($N = 548$) with four-way classifications for the AAI (dismissing, autonomous, preoccupied, and unresolved) and the Strange Situation (avoidant, secure, ambivalent, and disorganized/disoriented), in which the overall four-category correspondence was 63% ($\text{Kappa} = .42$) and the correspondence for the secure-insecure split was 74% ($\text{Kappa} = .49$).

Studies have demonstrated a correspondence in adolescent-mother-infant samples between mothers' mental representations of attachment assessed using the Adult Attachment Interview and their infants' attachments to them evaluated using the Strange Situation. Ward and Carlson (1995) found a four-way and two-way (F/non-F to B/non-B) correspondence between mothers' mental representations of their attachment relationships, and their offsprings' patterns of attachment, of respectively, 68% ($\kappa = .53$) and 78% ($\kappa = .54$). Similarly, Levine and Tuber (1991) showed that mother and child attachment were highly related ($p < .001$; general agreement of 83% between autonomous/nonautonomous adolescent attachment and secure/insecure infant attachment). Tarabulsky and colleagues (2005) also demonstrated a significant correspondence between maternal autonomy assessed using the AAI and infant security measured using the Attachment Behavior Q-Set (AQS; Waters, 1995). They found that autonomous mothers had infants who obtained higher scores on the AQS than either infants of dismissing or of preoccupied mothers.

Pederson and colleagues (1998) demonstrated, in a study examining a sample of non-clinical mothers and infants, a two-way correspondence level of AAI and Strange Situation classifications of 80% ($\kappa = .60$). Another study conducted with a normative sample of mothers and their preschool-aged children established a high mother-child attachment correspondence (maternal and child attachment were assessed using respectively the AAP and the Strange Situation; Bélineau, Cyr, & Moss, 2002). In another normative sample of mothers and their 3-year-old children, children of autonomous mothers had significantly higher security scores than did children of dismissing and preoccupied mothers (maternal and child attachment were measured,

using respectively, the AAI and Attachment Story Completion Task (ASCT; Bretherton, Ridgeway, & Cassidy, 1990) (Miljkovitch et al., 2004). Moreover, in a low-risk sample of mothers and their children, a four-way and two-way correspondence between mother and infant attachment (assessed using respectively the AAI and Strange Situation) were found, as was a two-way correspondence between mother and 6-year-old child attachment (measured using respectively the AAI and the Story Completion Procedure in Doll Play; SCPDP; Bretherton et al., 1990) (Gloer-Tippelt, Gomille, Koenig, & Vetter, 2002).

In summary, several studies have demonstrated transmission of attachment from mother to child in diverse samples, namely normative/low-risk and adolescent mother-child samples, comprised of children who vary in age: infants, toddlers (3-year-olds), preschool, and early school-aged children (6-year-olds). Transmission has been shown using different measures of child attachment, indicating that this is a fairly robust effect. Since mothers' internal models or mental representations are directly inaccessible to the child, it is presumed, by several researchers, that the relation between maternal representations and child attachment is mediated by mother-child interactions (e.g., Pederson & al, 1998; Pederson & Moran, 1996; Thompson, 2001).

1.9.2. Role of Mother-Child Interactions in the Intergenerational Transmission of Attachment

A critical tenet of attachment theory is that parental mental representations of their own attachment relationships have a direct impact on the patterning and quality of interactions with their offspring, which in turn, determine, in large part, the quality of child attachment to the caregiver (Cassidy, 1994; Main et al., 1985). In support of this

theoretical idea, several investigators have found an association between parental representations of attachment and mother-child interactions/maternal parenting behaviors, particularly maternal sensitivity/responsiveness (e.g., Atkinson, Raval, Benoit, Poulton, Gleason, Goldberg, Pederson, Moran, Myhal, Zwiers, & Leung, 2005; Fonagy & al., 1991; Grossman et al., 1988; Pederson et al., 1998; Oyen, Landy, & Hilburn-Cobb, 2000; Raval et al., 2001). Van IJzendoorn's meta-analysis (1995), based on 10 samples ($N = 389$), comprised of mother-child dyads, showed a combined effect size for the relation between parents' attachment representations and parental responsiveness of .72 ($r = .34$, Fisher's $Z = 0.35$). Approximately 12% of the variance in parental responsiveness was accounted for by parental attachment.

Furthermore, researchers have clearly demonstrated the significant role of sensitive responsiveness to a child's attachment signals in the development of a child's attachment relationship. Associations have been found between sensitive and responsive parenting and the development of security in the child, and between insensitive or unresponsive parenting and the development of insecurity in the child (e.g., Ainsworth & al., 1978; Atkinson et al., 2005; Isabella, 1993; Isabella & Belsky, 1991; Pederson et al., 1998; Raval et al., 2001; van IJzendoorn, Juffer, & Duyvesteyn, 1995). De Wolff & van IJzendoorn (1997) conducted a meta-analysis, based on 21 studies using the Strange Situation procedure in non-clinical samples as well as observational sensitivity measures preceding or concurrent with the attachment assessment. They found a combined effect size for the relation between maternal sensitivity and the development of attachment security of $r(1,097) = .20$ ($N = 1,099$). Similarly, Atkinson and colleagues (2000)

conducted a meta-analysis of maternal sensitivity and infant/toddler attachment security, comprised of 41 studies and 2243 dyads, which yielded a mean effect size of $r = .27$.

Associations between mother-child interactions and both maternal and child attachment have also been demonstrated in samples of adolescent mothers and their children. Similar to the above-mentioned findings, Ward and Carlson (1995) found that adolescent mothers' mental representations of their attachment relationships predicted maternal sensitivity. However, unlike previous findings, maternal sensitivity was not found to be related to infant attachment classification. Nonetheless, Tarabulsky and colleagues (2005) found, in a sample of adolescent mother-infant dyads, that maternal state of mind was associated with maternal sensitivity and that maternal sensitivity was related to infant attachment security.

As suggested by Ward and Carlson (1995), the failure to find a link in their study between maternal sensitivity and infant attachment may stem from the nature of the sample. Indeed, Atkinson and colleagues (2005) proposed that the high proportion of maternal unresolved (higher than the proportion found in Tarabulsky et al., 2005) and infant disorganized attachment found in Ward and Carlson's study (1995) may explain the insignificant link found between maternal sensitivity and infant attachment classification. Theory (e.g. Main and Hesse, 1990) and research (e.g., Lyons-Ruth et al., 1999b; van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999; Madigan, Moran, & Pederson, 2006) suggest that atypical parental behavior, particularly frightening behavior, is the chief mechanism driving the transmission of maternal unresolved status to disorganized child attachment. For instance, van IJzendoorn, Schuengel, and Bakermans-Kranenburg (1999) failed to show a strong association between parental sensitivity and

infant disorganization and Madigan, Moran, & Pederson (2006) found that fearful/disoriented maternal behavior acted as a mediator in the relation between unresolved states of mind and disorganized attachment.

Furthermore, the fact that different measures of infant attachment were used in both studies may account for the discrepancies obtained with respect to the relation between maternal sensitivity and infant disorganization. Ward and Carlson (1995) used Ainsworth's Strange Situation (Ainsworth et al., 1978), whereas van IJzendoorn and colleagues (1997) used the Attachment Behavior Q-Set (AQS; Waters, 1995).

According to Schaffer (1999, p. 421), "sensitive, responsive caregiving should lead the child to conclude that people are dependable (positive working model of others), whereas insensitive, neglectful, or abusive caregiving may lead to insecurity and a lack of trust (negative working model of others)." Moreover, Bowlby (1973) proposes that infants also develop a working model of the self which derives from their reactions and the caregiver's responses to them (infant's ability to elicit attention and comfort when they need it). Therefore, infants whose caregivers respond promptly and appropriately to their calls for attention will likely develop a positive working model of self believing that they are worthy of affection and are lovable. Infants whose caregiver fails to respond or responds inappropriately to their signals and needs are apt to develop a negative working model of self believing they are unworthy of attention and are not lovable. The child's internal working model of self and others presumably influences the quality of the child's primary attachments and expectations they have about future relationships, thereby accounting for the transmission of attachment from parent to child.

In summary, these findings suggest that the cognitive representations of self, others, and relationships that infants construct from their interactions with their caregivers, are frequently transmitted from generation to generation. Indeed, Bowlby (1988) proposed that "once formed early in life, working models may stabilize, becoming an aspect of personality that continues to influence the character of one's close emotional ties throughout life" (Schaffer, 1999, p. 423).

1.9.3. Role of Maternal Sensitivity in Attachment Transmission

Attachment theory has long considered maternal sensitive responsiveness as being the mechanism driving the intergenerational transmission of attachment. In support of the theory, Main (Main et al., 1985) proposed that mental integration concerning attachment is the hallmark of security in adulthood, and may explain differences in maternal sensitivity, in turn predicting the quality of infant attachment. Secure autonomous adults integrate attachment-related memories with current emotions. Therefore, they are likely to be free to use their attention to interpret and respond to infant behavior in a sensitive way. Since their minds are not occupied with unresolved worries concerning their childhood experience, they are free to respond to their child's attachment signals (Fonagy et al., 1991). In contrast, the internal models of non-autonomous adults lack integration between current feelings and past attachment experiences (Ward & Carlson, 1995). When adults lack integration, attention is restricted. These restrictions on attachment are manifested in incoherent discourse about early relationships and in insensitive maternal behavior (Ward & Carlson, 1995).

In a meta-analysis, Van IJzendoorn (1995) demonstrated the role of maternal sensitivity (one dimension of mother-child interactions) in the intergenerational

transmission of attachment. However, he noted that only 23% of the relation between parental state of mind and infant attachment security can be explained by maternal sensitivity/responsiveness. According to van IJzendoorn (1995), several reasons may explain this transmission gap: 1) correlated measurement errors, 2) genetic influences, and 3) interactive transmission mechanisms yet to be discovered. Moreover, as recently suggested by Tarabulsy and colleagues (2005), other variables related to maternal psychosocial state or family ecology may account for part of the variance in intergenerational transmission.

Tarabulsy and colleagues (2005) showed that, when ecological variables were statistically controlled for, sensitivity was a significant mediator and state of mind no longer contributed to infant security (conditions for successful mediation by maternal sensitivity were respected only when other ecological variables were considered). Also, sensitivity mediated the association between maternal education and infant attachment. The latter suggests that attachment transmission is a complex process that requires careful investigation of mother-child interactions and ecological variables.

Atkinson and colleagues (2005, p.43-44) expressed several concerns about the mediation model used in van IJzendoorn's meta-analysis (1995), namely that "the equation assumes but does not test mediation, data in the equation weaken the probability of mediation, (and that the) primary data in the meta-analysis are either not fully informative or inconsistent with the mediation model". They examined the mediation model using two mother-infant samples and failed to validate it.

In their study examining the mediating role of maternal sensitivity in the relation between maternal and child attachment, Pederson and colleagues (1998) addressed the

limitations inherent in van IJzendoorn's meta-analysis. They argued that only three of the included studies in the meta-analysis (Grossman et al., 1988; van IJzendoorn et al., 1991; Ward & Carlson, 1995) contained all three variables in the mediation model, and that each included a complication or anomaly (e.g., small sample size, data inconsistencies). In their study, Pederson and colleagues included all three variables and used observational measures that have been shown to render a valid and reliable assessment of maternal sensitivity. However, similar to the results obtained by van IJzendoorn (1995), Pederson and colleagues (1998) found maternal sensitivity to account for only 24% of the association between representational autonomy and attachment security.

Raval and colleagues (2001) replicated the mediation model proposed by van IJzendoorn (1995). In their study, they measured all three variables included in the mediation model, improved or altered definitions of sensitivity, and considered infant dyadic contributions. Nonetheless, they obtained results that are comparable to those obtained by van IJzendoorn. They found that when attachment was scored as secure or insecure, 35% of the relation between maternal and infant attachment was mediated by responsiveness, and that when a four-way classification scheme was used, 25% of the association was mediated by responsiveness.

In summary, according to attachment theory, parents interact with their children in accordance with their own states of mind (expectations and understanding of the parent-child relationship and their perceptions of child behavior). According to Bowlby (1969), children gradually form mental representations of themselves and of others through their experiences and interactions with their primary figure of attachment. According to Bowlby (1973), the repeated occurrence of patterns of interaction and affective response

over time results in children building expectations about future interactions with caregivers, which, in turn, guide their interpretations and behaviors in new situations. When these unconscious expectations become organized, they are referred to as internal working models of attachment relationships. These models become incorporated as stable interpersonal tendencies which guide later development as well as later parental behavior, thus explaining the intergenerational transmission of attachment representations (Bowlby, 1973). Indeed, several studies have established the role of parent-child interactions in transmitting attachment patterns from parent to child (Pederson & Moran, 1996; Fonagy & al., 1991; Ward & Carlson, 1995). Also, based on empirical evidence, Tarabulsky and colleagues (2005) suggest the importance of considering ecological variables when examining the attachment transmission gap.

In summary, owing to the fact that considerable variance remains unexplained in the intergenerational transmission of attachment, other components of mother-child interactions, and ecological variables should be considered when accounting for the intergenerational transmission of attachment. It has been proposed that constructs such as affective attunement, socialization of emotions, interactional synchrony, and cognitive scaffolding are possible mediating mechanisms in the relation between maternal and child attachment (Pederson et al., 1998; Raval et al., 2001; van IJzendoorn, 1995). Moss and colleagues (1996) developed a coding system that assesses the synchrony and reciprocity of socio-affective exchanges in the mother-child partnership. It assesses several dimensions of dyadic interactions: coordination, communication, role, emotional expression, sensitivity/appropriate responses, tension/relaxation, mood, and pleasure. This coding system will be used in our study.

1.9.4. Mediating Role of Maternal Callous-Unemotional Traits in Attachment Transmission

Bronfenbrenner (1979) proposed an ecological model that enriches the premises of attachment theory. Within attachment theory, caregiver sensitivity is viewed as the main factor determining whether an infant develops a secure or insecure relationship with their caregiver. However, within the ecological model, the psychological attributes of the mother constitute a significant factor in the development of the security of the infant-mother relationship. Maternal psychological attributes, as well as her relations with her partner, and the extent to which she has contact with other individuals who provide her with support, are theorized to influence the mother's well-being and hence the quality of care provided by the caregiver (Belsky, 1984, 1990). Hence, the ecological model emphasizes the contextual factors and processes likely to influence daily interactional exchanges between parent and child (Bronfenbrenner, 1979) and in turn, attachment security.

In line with Brofenbrenner (1979)'s model, one may expect maternal antisocial traits to significantly influence mother-child dyadic interactional exchanges, and in turn, security. Although mother-child interactions have been found to be a mechanism by which attachment is transmitted from mother to child in a normative sample (see above for references), in a sample of high-risk adolescent mothers and children, a measure that is more specific to antisocial traits in the mother, may also be helpful in understanding the transmission of attachment.

In fact, according to Moffitt, Caspi, Rutter, and Silva (2001), the majority of adolescent parents' offsprings have at least one antisocial parent, and many have two.

More specifically, research has found adolescent motherhood to be associated with a history of conduct problems in girls (e.g., Bardone et al., 1996; Jaffee, 2002; Kessler et al., 1997; Miller-Johnson et al., 1999; Wakschlag et al., 2000; Woodward & Fergusson, 1999).

Previous research has demonstrated an association between unresolved and dismissing states of mind (insecure states of mind) and antisocial personality disorder (Allen et al., 1996; Rosenstein & Horowitz, 1996). Researchers have not yet examined the specific association between maternal antisocial traits, and more specifically maternal callous-unemotional traits, and child attachment. Nonetheless, prior studies suggest that parental antisocial history is a significant risk factor for negative parenting behaviors (Caspi & Moffitt, 1995; Dishion, French, & Patterson, 1995; Quinton, Pickles, Maughan, & Rutter, 1993), which, in turn, are related to child attachment insecurity (Lyons-Ruth, Repacholi, McLeod, & Silva, 1991).

Studies examining the relation between adolescent maternal psychopathology and quality of mother-infant interactions have shown a relationship between maternal antisocial history and maternal unresponsiveness (Cassidy, Zoccolillo, & Hughes, 1996; Hans, Bernstein, & Henson, 1999; Serbin, Peters, McAffer, & Schwartzman, 1991) and infant passivity (Cassidy et al., 1996). In addition, research has demonstrated a relation between coercive parenting and parental antisocial behavior (e.g., Johnson, Cohen, Kasen, Smailes, & Brook, 2001; Patterson, DeGarmo, & Knutson, 2000; Verlaan & Schwartzman, 2002). Lack of parental warmth has also been linked with increased hostile-intrusive behavior toward the infant (Lyons-Ruth, Zoll, Connell, & Grunebaum,

1989). Lack of warmth is characteristic of the callous-unemotional dimension of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001).

Hans, Bernstein, & Henson (1999) propose that the characteristics of antisocial and Cluster B personality disorders which include inappropriate expressions of anger or violence, preoccupation with self, lack of empathy, instability in personal relationships, and a broad range of impulsive emotional reactions, may impede responsive parenting. In support of this proposal are results of a study they conducted with a sample of drug-dependent women indicating an association between maternal psychopathology, particularly maternal personality disorder, and parenting behaviors. In this study, after controlling for maternal substance abuse, an association was demonstrated between symptoms of the Cluster B personality disorders, including antisocial, borderline, narcissistic, and histrionic personality disorders, and higher levels of insensitive, unresponsive, and hostile parenting behavior. Lyons-Ruth and colleagues (1991, 1999a, 1999b) have found that hostile and intrusive caregiving is related to the development of disorganized attachment, and DeWolff and van IJzendoorn (1997), in a meta-analysis, found maternal sensitivity to be a significant variable in the prediction of child security.

In general, studies have found that mothers with better psychological health provide their infants with higher-quality care (Belsky, 1984; Gelfand & Teti, 1990), and have infants that are more securely attached to them (Belsky & Isabella, 1988; Benn, 1986; Ricks, 1985). Studies have also found consistent associations between the quality of mother-child interactions and child attachment security (e.g., Cyr & Moss, 2001; Dubois-Comtois & Moss, 2004; Moss, Cyr, & Dubois-Comtois, 2004; Pederson & Moran, 1996), particularly with respect to the disorganized attachment classification

(Carlson, 1998; van IJzendoorn et al., 1999). Hence, a measure assessing antisocial traits in the mother, the Antisocial Process Screening Device (Frick & Hare, 2001; APSD), will be used in our study in order to examine the mediating role of such traits in the relation between maternal agency of self and child security/insecurity.

The Callous-Unemotional (CU) scale (one of three scales) of the APSD, assessing callous and unemotional (e.g., lack of guilt and empathy) traits, will be used in our study as it has been shown to be the most stable dimension of the APSD across multiple samples (Frick, Bodin, & Barry, 2000). Research examining a community sample of youth with conduct problems (Frick, Kimonis, Dandreux, & Farell, 2003; Frick, Stickle, Dandreux, Farrell, & Kimonis, 2005), as well as clinic-referred (Christian, Frick, Hill, Tyler, & Frazer, 1997) and forensic (Caputo, Frick, & Brodsky, 1999; Kruh, Frick, & Clements, 2005) samples, has revealed a more severe and chronic pattern of antisocial behavior in children manifesting both conduct problems and CU traits. More specifically, Frick and colleagues (2003) found, in a sample of non-referred children with conduct problems, at one year follow-up, a predictive relation between CU traits and greater levels of aggression and particularly greater levels of instrumental and premeditated aggression. Frick and colleagues (2005) examined the predictive value of CU traits over about four years (three follow-up assessments) and found similar results. At each assessment, children (included in the same non-referred sample as that used in the above-mentioned Frick et al's study, 2003) with CU traits and conduct problems, were found to show the highest rates of conduct problems, self-reported delinquency, and parent-reported police contacts. Our study is the first to specifically examine the relations between the callous-unemotional dimension of the Antisocial Process Screening

Device (Frick & Hare, 2001; APSD), and both maternal states of mind and child attachment security/insecurity.

In summary, although studies have established the role of parent-child interactions (particularly sensitivity/responsiveness) in transmitting attachment patterns from parent to child (Pederson & Moran, 1996; Fonagy et al., 1991; van IJzendoorn, 1995, Tarabulsky et al, 2005), research has not yet examined the role of maternal antisocial traits, and more specifically, maternal callous-unemotional traits, in the transmission of attachment security/insecurity. However, research has found adolescent motherhood to be associated with a history of conduct problems in girls, and maternal antisocial traits to be related to maternal insecure states of mind and negative parenting practices, which adversely impact mother-child interactions, and in turn, lead to the development of insecurity in the child. Hence, it is important to examine the role of maternal callous-unemotional traits in the transmission of attachment from mother to child in an adolescent mother-child sample.

2.0. Mechanisms Involved in the Development of Child Maladaptive Behaviors:

Maternal Stress, and Maternal and Child Organization/Disorganization

2.0.1. Relation between Maternal Stress Level and Child Externalizing Behavior

Problems

Research indicates that adolescent mothers are psychologically at risk for higher levels of stress than their older counterparts (Jorgensen, 1993). They have been found to experience greater parenting stress as measured using the Parenting Stress Index (Miller et al., 1996; Sommer et al., 1993). The perception of one's parental role as stressful has been demonstrated to be related to deficits in parenting practices (e.g., Crnic et al., 1983;

Crnic, Greenberg, & Slough, 1986), presumably, at least in part due to the effect of stress on one's emotions (e.g., Belsky & Vondra, 1989; Conger, McCarty, Yang, Lahey, & Kropp, 1984; Crnic et al., 1983; McLoyd, 1990). Research has substantiated this hypothesized relation between stress and negative emotion (e.g., Eckenrode, 1984; Riley & Eckenrode, 1986; Stone & Neale, 1984).

Lack of maternal responsiveness to infant cues, lower levels of positive maternal affect, insecure child attachment, and child noncompliance have been shown to be related to higher levels of perceived parenting stress (Crnic et al., 1986; Dix, 1991). Maternal stress level, as measured using the Parenting Stress Index, has been found to be associated with more controlling, and less stimulating and positive behaviors exhibited by mothers towards their children, relative to mothers reporting a lower stress level (Miller et al., 1996; Uno, Florsheim, & Uchino, 1998). As mentioned earlier, such negative parenting behaviors are related to adverse mother-child interactions, and in turn to attachment, particularly disorganized attachment, which has been found to be associated with externalizing behavior problems in children. Indeed, studies have demonstrated an association between maternal stress and maternal-reported child behavior problems (Deater-Deckard et al., 1996; Johnston & Pelham, 1990; Webster-Stratton, 1988).

2.0.2. Maternal Attachment and Development of Child Externalizing Behavior Problems

Greenberg, Speltz, and DeKlyen (1993) advanced a risk model in which they proposed that attachment is one factor related to others, namely child biological factors, family ecology, parental management, and socialization practices. In this model, greater emphasis was placed on the quality of the parent-child relationship in comparison with

previous risk models for disruptive behavior. Of interest, for the purposes of our study, is their inclusion of maternal representations as an indirect predictor of child disruptive behaviors.

As discussed earlier, parental representations of attachment have been found to be associated with maternal sensitivity/responsiveness. According to Bowlby (1980), internal representations of attachment relationships influence one's perceptual biases, expectations of others' responsiveness, and models of parent and child roles. It has been proposed that insecure maternal attachment representations may lead to reduced personal resources (poor social skills, inadequate emotion regulation) and lack of social support (due to impaired capacity to relate). These problems may potentially result in deficits in parenting practices through diminishing maternal attentiveness and support towards her child. Such deficits may also lead to inconsistency in limit setting, which may be conducive to a lower tolerance threshold for difficult behavior, or a distortion in parents' perceptions of the child (DeKlyen, 1996; Greenberg et al., 1993; Patterson, 1986). In addition, it has been suggested by Greenberg and colleagues (1993) that a child may learn and model his/her parent's hostile attribution bias (when presented with ambiguous situations) and may manifest disruptive behaviors as a means of regulating the interactions he/she has with his/her parent (e.g. who lacks sensitivity or is frightening to the child). Lastly, insecure maternal representations may present mothers with difficulties promoting child autonomy.

Studies examining relations between the four classifications of maternal representations of attachment and child externalizing behavior problems are quite scarce. Nonetheless, the extant studies have established associations between maternal

representations and child externalizing behavior problems. Crowell and Feldman (1988) examined the relation between secure and insecure (detached or preoccupied) maternal internal models of attachment (assessed using the AAI) and child behavior problems in a clinical and nonclinical sample of 64 mothers and their preschool-aged children. They found a significant interaction between maternal representations and placement in the child problem group. Whereas 77% of mothers classified as secure were in the nonclinical group, sixty-five percent of mothers classified as insecure were in the clinical group. Eighty-five percent of mothers in the clinical group had insecure models of attachment (detached or preoccupied). A relation was also demonstrated between maternal internal models, and maternal responsiveness and sensitivity towards the child.

Similarly, van IJzendoorn and colleagues (1991) observed links between secure/autonomous, dismissing, and preoccupied attachment (measured with the AAI), and children's social competence, ego-resilience and ego-control using a sample of 56 mothers and fathers and their preschool-aged children. Results showed that children of autonomous mothers were more ego-resilient and controlled their emotions better than children of insecure mothers.

Cowan, Cohn, Cowan, and Pearson (1996) examined associations between AAI scale scores, and teacher-reported child externalizing and internalizing behavior problems in a nonclinical sample including 27 couples and their firstborn preschool-aged child. Fathers' attachment histories predicted a statistically significant proportion of the variance (69%) in children's externalizing behaviors, whereas mothers' attachment histories accounted for a marginally significant proportion of the variance (39%) in their child's externalizing behaviors in the classroom.

DeKlyen (1996) was the first to include the unresolved classification in predicting associations between maternal attachment representations and child externalizing behavior in a sample comprised of families of 25 clinically-referred and 25 nonclinical preschool boys. Results demonstrated associations between mothers' internal representations of attachment and child clinical status when classification groups were dichotomized (secure versus insecure), and when the four classifications were examined. Differences between the clinical and comparison groups were found in the proportion of secure (24% of clinic mothers, compared with 72% of the comparison mothers) and insecure-unresolved mothers (44% of clinic mothers, compared with 12% of comparison mothers). However, when child attachment was accounted for, maternal attachment did not significantly add to the prediction of clinic status.

Routh, Hill, Steele, Elliott, and Dewey (1995) examined relations between maternal attachment status, psychosocial stressors, and problem behavior for a sample of 37 mothers and their conduct-disordered children, after parents had received parent training. Psychosocial factors, namely maternal psychopathology, socioeconomic deprivation, social support, and size of family, were combined to create a composite psychosocial risk index, which was found to contribute, independently of attachment status (assessed using the AAI), to the prediction of follow-up child behavior scores. Results showed significant improvement in children's behavioral scores for the resolved mothers, but not for mothers in the unresolved attachment group (comprising 43.2% of the sample).

In summary, studies indicate that maternal representations of attachment are related to the development of child behavior problems. In the few studies that have used

a four-way maternal attachment classification, the unresolved attachment classification has been found to be strongly related to development and maintenance of child problem behavior. These findings underscore the importance of including the unresolved attachment classification in future studies concerned with the prediction of child behavior problems, particularly externalizing behavior problems. Moreover, DeKlyen (1996)'s findings underscore the importance of examining both child and mother attachment when attempting to predict behavior problems.

These findings, concerning the unresolved maternal classification, serve to indirectly substantiate the idea (Bowlby, 1969/1982; Main & Hesse, 1990) that, as a consequence of the lack of integration of fearful affect related to loss or abuse experiences, characteristic of the Unresolved adult state of mind, the parent exhibits frightened or frightening behavior in the presence of his/her child. Moreover, when a child is exposed to a frightened or frightening attachment figure, his/her attachment and fear systems are simultaneously activated as the parent becomes at once a source of fear for the child and the primary source of comfort. Thus, presenting the child with opposing tendencies that cannot be resolved, namely to simultaneously approach and avoid the caregiver, may lead to a breakdown of attentional and behavioral coping strategies and, in turn, result in contradictory, unintegrated, and anomalous behaviors manifested by the child towards the caregiver. These behaviors, that are characteristic of attachment disorganization (Hesse & Main, 2000; Main & Hesse, 1990; Main and Solomon, 1990), have been found to be associated with child externalizing behavior problems (e.g., Greenberg, 1999; Lyons-Ruth et al., 1997; Moss et al., 1999, van IJzendoorn et al., 1999; see below for details).

Empirical evidence for Main and Hesse's (1990) theory has been provided by several researchers. Studies have demonstrated relations between maternal frightening behavior and both unresolved states of mind (Abrams, Rifkin, & Hesse, in press; Jacobvitz, Leon, & Hazan, in press; Schuengel et al., 1999; Abrams et al., in press) and child disorganization (Abrams et al., in press; Schuengel et al., 1999; True, Pisani, & Oumar, 2001). An association has also been shown between Unresolved states of mind and disorganization in a meta-analysis conducted by van IJzendoorn (1995), based on nine attachment studies, in which 53% of parents with unresolved states of mind had infants classified as disorganized.

Recently, in a sample of 82 adolescent mother-infant dyads, Madigan and colleagues (2006) found fearful/disoriented maternal behavior to be associated with disorganized attachment, and disrupted patterns of interaction to be related to unresolved states of mind. Moreover, they found that disruptive behavior acted as a mediator in the relation between unresolved states of mind and disorganized attachment. The Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE), which captures many of the same frightened and frightening actions included in Main and Hesse's (1992) original instrument, as well as actions that reflect the mother's inability to repair her disrupted interactions and her tendency to display extreme forms of insensitive behaviors, was used in this study.

2.0.3. Child Attachment and Development of Child Externalizing Behavior Problems

Spieker and colleagues (1997) recently showed that children of early school-age (6 years old) of adolescent mothers are at high-risk for problem behavior. More than half of their sample ($N = 185$) exceeded the borderline clinical cutoff ($T = 60$) on either the

CBCL or TRF Total Problem score. Nagin and Tremblay (2001) and Tremblay and colleagues (2004) have demonstrated, in their longitudinal studies, that teenage motherhood is an important risk factor for trajectories of high aggression in children (Nagin and Tremblay: between ages 6 and 15 years and Tremblay and colleagues: between 7 and 42 months of age). Moreover, a link has been found between young maternal age at the birth, of their first child, and serious offspring antisocial behavior (Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001; Wakschlag et al., 2000). In a sample of 101 adolescent mothers and children, insecure attachments assessed in infancy were associated with higher child externalizing problems in preschool through third grade (Munson, McMahon, & Spieker, 2001). These results highlight the importance of exploring the mechanisms involved in the development of child externalizing behavior problems in a sample of adolescent mother-child dyads.

According to Bowlby, an insecure relationship with a caregiver renders one vulnerable to psychopathology through the persistence of perceptual, motivational, and behavioral patterns. In Bowlby's (1977) thinking, having a secure base is crucial for a child to function optimally and to be mentally healthy; inversely, lack of a secure base, renders the child vulnerable to developmental problems. Research indicates that secure attachments assessed in infancy are related to greater social competence and fewer behavior problems than insecure attachments, and that insecure attachments are associated with higher rates of aggressive or anxious, withdrawn behavior (e.g., Erickson, Sroufe, & Egeland, 1985; LaFreniere & Sroufe, 1985; Suess et al., 1992; see Greenberg, 1999 for a review of the literature). Research examining concurrent relations between preschool and school-age attachment and behavior problems have found similar results

(e.g., Easterbrooks, Davidson, & Chazan, 1993; Greenberg et al., 1991; Moss et al., 1996, 2004; Speltz, Greenberg, & DeKlyen, 1990).

In a sample of 44 adolescent mother-preschool-aged child dyads, a modified version of Ainsworth's Strange Situation (Ainsworth et al., 1978) was used to assess infant attachment, and the Child Behavior Checklist (CBCL, Achenbach & Edelbrock, 1981, 1983) was used to assess children's behavior problems. A three-way classification system was used (secure, resistant, and avoidant, Ainsworth et al., 1978). A secondary classification, examining disorganized attachment, was also assigned to all of the children. Results showed that infant attachment was related to behavior problems at preschool-age. More precisely, insecure or disorganized children were more likely to show internalizing or externalizing problems than children classified as secure or organized (Hubbs-Tait et al., 1994).

One important mechanism which may explain the link between attachment and behavior problems is emotion regulation. Indeed, several studies have demonstrated associations between attachment and emotion regulation (Cassidy & Berlin, 1994; Cassidy & Kobak, 1988; Lyons-Ruth et al., 1997). Through parent-child interactions, caregivers provide children with "emotional schemes" that socialize children's emotional experience and expression (Cassidy, 1994; Thompson, 1994). Caregivers of secure children are more responsive to a large variety of child emotional signals and needs, and better tolerate open emotional expression in their children (Cyr & Moss, 2001; Moss et al., 1998). When the caregiver is responsive to and supportive of the child's emotions of anger, fear, and distress, these emotions are alleviated, thereby preventing negative

emotions from becoming overwhelming and dysregulating. As they develop, these children will increasingly and more flexibly independently regulate their emotions.

Caregivers of insecurely-attached children are more likely to selectively respond to emotional needs and signals. Caregivers of avoidantly- attached children are less tolerant of emotional distress and neediness, and caregivers of ambivalent children are less responsive to emotional needs and signals unless exaggerated (Main & Weston, 1981). In turn, these children develop less flexibility in emotion regulation, with either underregulation or overregulation, becoming more stable over time (Sroufe, Fox, & Pancake, 1983). In the most extreme case, a relationship where the caregiver exhibits frightened or frightening behavior characterizes the disturbing experience of disorganized children. Such a relationship undermines the child's efforts to regulate his/her emotional signals and needs coherently and flexibly (Vondra, Shaw, Swearingen, Cohen, & Owens, 2001).

Indeed, studies have shown that, among insecure attachment classifications, the infant and preschool or school-age disorganized attachment category is most closely related to problems in adaptation (e.g., Greenberg et al., 1991; Lyons-Ruth et al., 1993; Main & Solomon, 1990), particularly of an oppositional and hostile-aggressive nature (e.g., Greenberg et al., 1991; Lyons-Ruth et al., 1993; Moss et al., 2004; Speltz et al., 1990). For instance, in a study, 71% of hostile preschoolers were classified as disorganized in infancy (Lyons-Ruth et al., 1997) and among children at age 7 reported by teachers as being highly externalizing, 83% were disorganized in infancy and below the national mean in mental development scores, compared with 13% of nonexternalizing children (Shaw, Owens, Vondra, & Keenan, 1996). Corroborating these findings is the

demonstrated association between disorganized attachment and poor regulation and control of negative emotions (Greenberg, 1999).

Moss and colleagues' (1996) study demonstrated that the disorganized group is at a greater risk than the organized group for psychopathology. Disorganized children were found to be five times more likely than secure to develop teacher-reported behavior problems in the classroom setting, and to be most at risk for externalizing and internalizing problems. Also, recent studies have found a relation between disorganized attachment and the development of peer aggression or externalizing behaviors (hostile behavior) and problematic stress management (van IJzendoorn et al., 1999), as well as of coercive styles of peer interaction (Lyons-Ruth et al., 1993). Disorganized children have also been shown to obtain higher ratings on dissociative behavior and internalizing problems in middle childhood, and on both internalizing behavior and overall psychopathology in adolescence (van IJzendoorn et al., 1999; Carlson, 1998). In addition, in the meta-analysis conducted by van IJzendoorn and colleagues (1999), based on 12 studies including 734 participants, child disorganized attachment was found to be related to aggression (combined effect size of $r = .29$).

According to Bowlby (1980), segregated systems, a defensive exclusion mechanism which serves to segregate attachment-related experience from access to consciousness, results in behavioral and mental disorganization and is associated with mental health risk. George & colleagues (1999) have discussed the association between disorganization and segregated systems. Extreme forms of defensive exclusion accentuate the extent to which attachment organization is undermined, and lead to dysregulation. Along with dysregulated attachment comes emotional flooding and

constriction and, the potential for mental illness. Psychopathology develops when the individual is overwhelmed by feelings of helplessness, vulnerability, and fear of abandonment as a consequence of dysregulation in the attachment system. Hence, it is evident that emotional and behavioral regulation is critical as it acts as a resilient factor against psychopathology (George et al., 1999). Therefore, the healthy use of secure-base figures is likely a crucial protective factor against the development of psychopathology throughout life (Carlson & Sroufe, 1995; Fonagy, Target, Steele, & Gerber, 1995; Main, 1996).

With respect to the other insecure attachment classifications, theoretically speaking, a history of caregiver unresponsiveness is thought to lead to the formation of an avoidant attachment. The child learns to avoid activating the attachment system as activating the attachment system also activates the fear of rejection. Since the child's needs are not satisfied, the child becomes frustrated and "displaces" his/her frustration onto other activities. The child's internal working model is founded on the belief that others are consistently uncaring. Therefore, in consequence, the child may interact with others in a hostile and dismissing manner associated with externalizing behavior problems (Cassidy & Kobak, 1988; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989).

A history of inconsistent response to distress is thought to lead to the formation of a dependent attachment. The fact that the child becomes so preoccupied with acquiring and maintaining caregiver attention hinders the exploration of the environment. Consequently, as a preschooler, the child becomes emotionally dependent on the caregiver and thereby cannot enter the larger social world confidently. As a result, the

child becomes socially withdrawn and is at risk for developing internalizing behavior problems (Erikson et al., 1985).

As shown above, the bulk of the literature demonstrates a strong association between disorganized attachment and the development of behavior problems. However, since many earlier studies (before 1985) did not include the disorganized classification, the relations between both avoidant and ambivalent insecure attachment classifications, and respective problematic behavioral outcomes, remain ambiguous and thus, inconclusive. Earlier studies which did not include the disorganized classification demonstrated a link between avoidant attachment and development of externalizing behavior problems (e.g., Erickson et al., 1985; Fagot & Kavanagh, 1990; LaFreniere & Sroufe, 1985; Troy & Sroufe, 1987). In contrast, more recent studies including the disorganized classification, particularly those conducted with post-infancy samples, are less likely to demonstrate a relation between avoidant attachment and externalizing behaviors (Greenberg & Speltz, 1988; Lyons-Ruth et al., 1993; Moss et al. 1996). Instead, they show an association between avoidant attachment and internalizing behaviors, such as anxiety and social withdrawal, and overdependency on teachers (Goldberg, Gotowiec, & Simmons, 1995; Lyons-Ruth et al., 1997; Moss et al., 1998).

Similarly, findings concerning the relation between ambivalent attachment and behavior problems are inconsistent. Some report a link between the ambivalent classification and internalizing problems (for boys: Lewis, Feiring, McGuffog, & Jaskir, 1984 and Renken et al., 1989), including dependent (less autonomous) relational styles and social withdrawal (e.g., Oppenheim, Sagi, & Lamb, 1988; Sroufe et al., 1983), while others report a link between the ambivalent classification and externalizing behavior

problems (Cohn, 1990; Fagot & Pears, 1996; Moss et al., 1998). Thus, although associations between insecure/disorganized attachment classifications and respective later behavioral outcomes are clear, links between the ambivalent and avoidant classifications, and respective behavioral outcomes remain ambiguous.

In summary, studies have increasingly emphasized the importance of child disorganized attachment as a predictor of child externalizing behavior problems (e.g., Carlson, 1998; Lyons-Ruth, 1996; Lyons-Ruth et al., 1997; van IJzendoorn et al., 1999). However, the majority of studies have examined links between infant or toddler Strange Situation classifications and preschool or school-age adaptation (e.g., Erickson et al., 1985; Lyons-Ruth et al., 1993; LaFreniere & Sroufe, 1985; Suess et al., 1992). Recently, measures allowing for the assessment of attachment quality in children aged 3 to 7 (Cassidy & Marvin, 1992; Main & Cassidy, 1988) have been developed, thus enabling researchers to explore concurrent relations between child attachment and adaptation.

Therefore, for our second set of analyses dealing with the prediction of child adaptation at preschool/early school-age, the role of organized versus disorganized attachment in preschool/early school-aged children will be examined in the prediction of behavior problems. Moreover, given the extant literature, the contribution of maternal unresolved attachment status will also be examined as a predictor of child behavior problems. Indeed, Atkinson (1997) encouraged researchers to study the roles of both child and maternal attachment in the prediction of psychopathology. In addition, given DeKlyen's (1996) results showing that, when child attachment was accounted for, maternal attachment did not significantly add to the prediction of clinical status in children, a mediation model in which child attachment acts as a mediator in the relation

between mother attachment and externalizing behavior problems will be tested in our study. Finally, a moderation model examining the interaction between child and mother attachment in the prediction of externalizing behavior problems will be examined.

2.1. Research Questions and Hypotheses

There are two main objectives of this study. The first is to further our understanding of the intergenerational transmission of attachment and the processes involved in this transmission. The second principal objective is to uncover mechanisms involved in the development of maladaptive behaviors in preschool/early school-aged children of adolescent mothers. The ultimate goal is to use the knowledge acquired from the findings of this study to design and implement effective interventions with adolescent mother-child dyads. Below, we present each objective and related research questions.

2.1.1. Intergenerational Transmission of Attachment and Processes Involved in Transmission

The first main research objective essentially concerns the transmission of attachment as well as the processes involved. In order to realize this objective, we will first examine the distribution of attachment patterns in a sample of adolescent mothers and their preschool/early school-aged children, using respectively, the Adult Attachment Projective (Agency of Self dimension and Resolved versus Unresolved classifications) and the Preschool Attachment Classification system (Secure versus Insecure and Organized versus Disorganized classifications). In line with studies showing associations between adolescent motherhood and psychosocial and developmental difficulties in both mothers and their offspring, and studies examining distributions of attachment in samples of adolescent mothers and children, we expect to find an over-representation of insecure

and non-autonomous classifications in respectively, children and mothers, and more specifically, of disorganized classifications in children, compared with the distributions found in lower-risk samples.

Secondly, in order to test for possible covariates in analyses of the intergenerational transmission of attachment, we will examine the associations between agency of self, and both maternal stress and the absence/presence of maternal substance (nicotine, marijuana, hard drug, and alcohol) use. In line with studies demonstrating an indirect relation between maternal stress and agency of self (Coulson, 1995 & Magana, 1997, as cited in Cassidy & Shaver, 1999), and between substance abuse and insecurity in adolescent populations (Elgar et al., 2003; Golder et al., 2005), we expect mothers with low levels of agency to report higher levels of perceived maternal stress level and substance use.

Our first question related to testing the intergenerational transmission hypothesis involves examining the correspondence between maternal and child attachment classifications (secure/insecure). In line with several studies demonstrating a high correspondence between adolescent mother and infant attachment (Tarabulsky et al., 2005; Ward & Carlson, 1995), we expect to find a significant correspondence between maternal attachment representations (agency of self: security/insecurity) and preschoolers' attachment classifications (secure/insecure). More specifically, we hypothesize that secure children will be more likely than insecure children to have mothers who show higher levels of security, as assessed with the agency of self scale of the AAP, whereas insecure children will be more likely than secure children to have mothers who show insecurity.

Our second question involves comparison of mother-child interaction patterns as a function of respectively maternal and child attachment classifications. In keeping with studies demonstrating associations between parent-child interactions and parent and child attachment classifications (eg. Moss et al., 2004; van IJzendoorn, 1995), we hypothesize that interaction patterns of mothers of secure children will be more open, synchronous, and reciprocal than those of insecure children and mothers. Similarly, we expect that interaction patterns of mothers with high agency of self will be more open, synchronous, and reciprocal than those of mothers with low agency of self.

Our third analysis question involves investigating the mediating role of mother-child interactions in the relation between maternal and child attachment. We expect that mother-child interactions will represent an important mechanism explaining the intergenerational transmission of attachment from mother to child.

Our fourth question concerns examining the relations between antisocial traits (callous-unemotional traits) and both maternal agency of self and child attachment security/insecurity, and our fifth question pertains to the examination of the mediating role of maternal callous-unemotional traits in the relation between maternal and child attachment. More specifically, consistent with studies showing an association between unresolved and dismissing states of mind (insecure states of mind) and antisocial personality disorder, mothers with lower levels of agency of self (representative of insecurity) are expected to show higher levels of callous-unemotional antisocial traits than mothers showing higher levels of agency of self (representative of security). Moreover, in line with studies suggesting that parental antisocial history is a significant risk factor for engaging in negative parenting behaviors (eg. Caspi & Moffitt, 1995),

which have, in turn, been found to be related to child attachment insecurity (Lyons-Ruth et al., 1991), we expect maternal callous-unemotional traits to be related to child insecurity. Lastly, in line with attachment theory, and studies establishing the role of parent-child interactions in the transmission of attachment patterns from parent to child (e.g., Pederson & Moran, 1996; Tarabulsky et al, 2005; van IJzendoorn, 1995), we expect that maternal callous-unemotional traits will mediate the relation between maternal and child security.

2.1.2. Mechanisms Involved in the Development of Child Maladaptive Behaviors

The second main research objective entails the investigation of mechanisms involved in the development of maladaptive behaviors in children of adolescent mothers. In order to identify possible covariates for subsequent analyses, we will first examine the relation between maternal stress and externalizing behavior problems. Consistent with research (Deater-Deckard et al., 1996; Johnston & Pelham, 1990; Webster-Stratton, 1988), we expect mothers experiencing higher levels of stress to have children with higher levels of externalizing behavior problems.

Our first question related to investigating mechanisms involved in the development of maladaptive behaviors in children of adolescent mothers, concerns the associations between respectively maternal and child organization/disorganization, and child externalizing behavior problems. In line with studies showing links between child disorganization and externalizing behavior problems (e.g., Carlson, 1998; Greenberg, Speltz, DeKlyen, & Endriga, 1991; Hubbs-Tait et al., 1994), we expect that children classified as disorganized will have higher levels of externalizing behavior problems than children classified as organized. In addition, in keeping with theoretical and empirical

work linking maternal unresolved attachment to the development of child externalizing behavior problems (e.g., Beliveau, 2004, DeKlyen, 1996), we expect that mothers with an unresolved attachment classification will have children with higher levels of externalizing behavior problems than resolved mothers.

Our second question concerns the possible role of child attachment as a mediator in the relation between mother attachment and externalizing behavior problems. In line with DeKlyen's (1996) results showing that, when child attachment was accounted for, maternal attachment did not significantly add to the prediction of clinical status in children, a mediation model in which child attachment acts as a mediator in the relation between mother attachment and externalizing behavior problems is expected to be supported.

Our third question relates to the possible moderating role of maternal and child attachment in predicting child externalizing behavior problems. In line with studies that have found associations between maternal unresolved states of mind, child disorganization, and the development of behavior problems, we expect that disorganized children of mothers with unresolved attachment models will have the highest behavior problem levels, compared with dyads with divergent attachment classifications. We also hypothesize that organized children of mothers with resolved attachment models will have fewer problems than organized children of unresolved mothers.

CHAPTER II

METHODOLOGY

2.1 Participants

Study participants were 42 French or English-speaking adolescent mother-child dyads. The majority of the dyads (33) were part of an ongoing longitudinal project examining the development of children of young mothers, conducted conjointly by the Montreal Children's Hospital and l'Institut de Recherche sur le Développement Social (will be referred to as the IRDS sample below). The remaining dyads (9), recruited through the Montreal Children's Hospital database (will be referred to as the MCH sample below), included mothers followed at the Adolescent Mother-Infant Clinic, which is affiliated with the Montreal Children's Hospital. Criteria for participation were as follows: mother's age >18, child's age >3 and <8, fluency in either the French or English language (both mother and child), and no diagnosis of severe mental retardation or of a psychotic disorder. Of the participants for which data pertaining to mothers' ethnicity was available (35; 83%), eighty percent (28) of the sample were Caucasian, and the remainder were Hispanic (3; 8.6%), Haitian (3; 8.6%), or African American (1; 2.8%).

A total of 132 potential participants were originally identified by staff affiliated with their recruiting institutions as eligible for the study, but only 45 mother-child dyads participated. However, only 64 mothers agreed to be contacted by researchers: 9 refused to participate in the study, 10 agreed to participate but did not present themselves at the scheduled research appointment, 5 were missing data for measures used in our first set of

analyses, and 3 were missing data for measures used in our second set of analyses. The remaining potential candidates (68) could not be contacted due to outdated information contained in the available registries. Hence, the non-participating and participating mothers could not be compared.

In terms of participants' socio-demographic characteristics, all mothers included in our sample had their first child before the age of 18. However, at the time of our data collection, the median ages of these mothers, and their children, were respectively, 23 and 4 years old. Sixty-nine percent of child participants were girls. A dichotomized variable was created for child age, taking into account the variable distributions, in order to have a sufficient N in each cell to conduct the necessary preliminary analyses. The two groups were : 1) children aged between 48 and 60 months (79% of the sample); and 2) those between 61 and 84 months (21% of the sample). Similarly, dichotomized variables were created to represent maternal background variables, as follows: Family income: 1) no government assistance and 2) government assistance; Maternal level of education: 1) < high school and 2) high school, college or university; civil status; Marital status: 1) single, separated, or divorced and 2) married or common-law union; and Number of children born to mother: 1) one child and 2) 2 or more children. Fifty-one percent of mothers did not receive any welfare payment, whereas the rest received some level of welfare assistance. Twenty-nine percent of mothers had not graduated from high school and the remainder had some college or university-level education. Fifty-six percent of mothers were single, separated, or divorced, and the rest were married or had a common-law union. Finally, 45% of mothers had one child, whereas the remainder had 2 or more

children. The results obtained using 40 dyads were comparable to those using 42 dyads (data presented above).

2.2 Procedure

The initial contact with all participating mothers was made by telephone. Following a brief description of the basic objectives of the study, mothers were asked to participate in the project. All mothers were given a consent form to sign, approved by the Montreal Children's Ethics Committee, at the very beginning of the visit, and were given the opportunity to ask questions about the study (see Appendix A).

Mothers who were part of the IRDS sample had participated in a laboratory visit at l'Institut de Recherche sur le Développement Social 1-2 years prior to the home visit we conducted. During the laboratory visit, mothers and children completed the Separation-Reunion Procedure lasting 20 minutes, completed questionnaires, and completed a structured and cognitive task which entailed working together as a dyad to find solutions to presented problems (e.g. finding mystery numbers, counting). These interactions were videotaped. Owing to the fact that maternal attachment measures and other maternal psychosocial measures that were of interest to us were not administered as part of the original IRDS project, these mothers and children were visited at home by two members of our research staff. During this visit, lasting about one hour, maternal questionnaires and the Adult Attachment Projective were administered. No child measures were administered during the home visit. Mothers were given \$15 in financial compensation.

Mothers recruited through the MCH database participated in an approximately 2-3 hour laboratory visit at Université du Québec à Montréal's Attachment Research

Laboratory. Mothers and children completed the same Separation-Reunion Procedure as the one used with the IRDS sample, after which mothers completed the Adult Attachment Projective and questionnaires while the children completed other tasks (not used in our study) in separate rooms. All of the dyads were then reunited and participated in the same structured, cognitive task described above. These interactions were videotaped. Following this, the mother and child entered separate rooms, where the mother completed the questionnaires and the child completed tasks (for about 60 minutes). Mothers received \$35 financial compensation for their time. When necessary, mothers were driven to and from the laboratory.

Despite the variations in the overall procedure, the same procedures were followed in the administration of the individual measures of interest in this study (Strange Situation, Adult Attachment Projective Procedure, interactive task, maternal questionnaires) for both samples. In addition, all measures were coded according to identical procedures (described below). Therefore, we combined data from both samples in order to have a sufficient number of participants.

2.3 Measures

2.3.1 Socio-demographic Information

Mothers completed a questionnaire pertaining to background information (see Appendix 2). It covers several domains, namely personal information (e.g., age of mother, source of income, educational level, civil status, number of children born to mother), marital status (e.g., involvement with a partner, characteristics of partner), history of personal and family mental illness, substance use, criminality, and use of health services. Administration time for this questionnaire was approximately 15 minutes.

2.3.2 Parental Stress Inventory (PSI)

Maternal stress associated with parenting was measured using Abidin's (1992) Parental Stress Inventory. This 101-item maternal self-report questionnaire focuses on sources of perceived stress related to the parental role; it evaluates the level of subjective stress experienced by the mother. This measure yields an overall stress score, as well as subscale scores in the maternal and child domains. The Maternal domain taps seven dimensions: depression, feelings of competence, attachment to child (i.e. investment in the parenting role), couple relations, social isolation, health, and sense of role restriction. The Child domain taps maternal perceptions of six child characteristics: adaptability, demandingness, mood, hyperactivity, acceptability (conformity with parental expectations), and reinforcing (to parent).

The PSI has been widely used, and acceptable concurrent, construct, discriminant, and factorial validity and reliability have been reported (Abidin, 1992; Abidin, Jenkins, & McCauhey, 1992). In addition, research with French populations has shown that the PSI demonstrates a high level of test-retest reliability as well as factorial and construct validity (Bigras, Lafrenière, & Dumas, 1996). Only the Total Stress score will be used in this study. Administration time for the PSI is approximately 20 minutes.

2.3.3 Child Behavior Checklist (CBCL)

The Child Behavior Checklist (CBCL) (Achenbach & Edelbrock, 1983), completed by the mother, was used to evaluate child behavior problems. It is composed of 113 items documenting various categories of symptoms, including Somatic Problems, Withdrawal, Depression/Anxiety, Thought Disorder, Social Problems, Attention Problems, Delinquent Behavior, Aggressive Behavior, and Other Problems. These

categories can be grouped into 2 higher-order groups: Internalizing Problems (including Withdrawn, Somatic Complaints, and Anxious/Depressed subscales) and Externalizing Problems (including Delinquent and Aggressive subscales).

The CBCL has been extensively validated with numerous samples, both clinical and non-clinical. For instance, test-retest reliability of 0.84 to 0.97, and validity of the instrument, have been demonstrated (Achenbach & Edelbrock, 1983). Only the externalizing problem score was examined in this study. This questionnaire is completed in approximately 15 minutes.

2.3.4 Adult Attachment Projective (AAP)

The Adult Attachment Projective (George, West, & Pettem, 1997), a construct-validated measure of adult internal models and representations of attachment relationships, based on the analysis of narratives, was administered to the mothers in our sample. The AAP consists of seven attachment-related drawings which depict events that, according to attachment theory, activate the attachment system (see Appendix C). The following drawings, showing illness, death, abuse, and portraying adult-adult dyads, adult-child dyads, adults alone, and children alone were used: 1) Child at Window — a child looks out a window; 2) Departure — an adult man and woman stand facing each other with suitcases positioned nearby; 3) Bench — a youth sits alone on a bench; 4) Bed — a child and woman sit facing each other at opposite ends of the child's bed; 5) Ambulance — a woman and a child watch someone being put on an ambulance stretcher; 6) Cemetery — a man stands by a gravesite headstone, and 7) Child in Corner — a child stands askance in a corner with hand and arm extended outward. One drawing of a neutral scene is used as a warm-up. Participants are asked, on the basis of what they see

in the drawings, to invent a story, and are told that the story must include a beginning, middle, and an end, as well as how the character(s) in the story is(are) feeling or what he/she(they) is(are) thinking about. Administration of the AAP takes approximately 35 minutes.

The AAP, with its emphasis on mental representations and defensive processing as expressed in the construction of attachment-based narratives, avoids the limits inherent in the administration and analysis of interview measures. Each narrative is coded on eight scales grouped under three dimensions: 1) Discourse, 2) Content, and 3) Defensive Processing. The Discourse dimension assesses : a) Personal Experience (whether or not the respondent's story is personalized) and b) Coherency (degree of organization and integration in the story as a whole). Content codes include: a) Agency of self (degree to which story character is portrayed as integrated and capable of action), b) Connectedness (expression of desire to interact with others), and c) Synchrony (degree to which characters' interactions are reciprocal and mutually engaging). The Defensive Processing dimension includes: a) Deactivation (evidence of deactivation and demobilization), b) Cognitive Disconnection (evidence of uncertainty, ambivalence, and preoccupation), and c) Segregated Systems (evidence of being overwhelmed by attachment trauma).

On the basis of these codes, individuals are classified into one of four major adult classification groups that parallel those designated using the Adult Attachment Interview (George, Kaplan, & Main, 1996): Secure, Dismissing, Preoccupied, and Unresolved. When coding, if there is at least one unresolved segregated systems marker, the individual is classified as unresolved, and if all segregated systems markers have been resolved, reference is made to the pattern of codes used to distinguish secure from

insecure individuals, namely coherency, agency of self, connectedness, and synchrony. If the individual is not considered secure, in order to assign an individual a dismissing or preoccupied code, the specific patterns of defensive exclusion are examined (please refer to Appendices D, E, and F) (George and West, 2001).

In our study, the following dichotomized variables were created: none to low agency of self versus moderate to high agency of self (please refer to section 3.1 for details), and resolved (including autonomous, dismissing, and preoccupied classifications) versus unresolved.

With respect to the agency of self dimension, according to George and West (2001), distinguishing *security* in the AAP is the manifestation of the capacity to use attachment by resorting to internal or external resources (internalized secure base, or haven of safety) and attachment figures, to resolve distress (evoked by the picture scenes of the AAP), and to re-establish attachment equilibrium. Characterizing the AAP stories of *dismissing* individuals is the avoidance or ignorance of direct expressions of attachment (no evidence of internal or external resources) and the taking of action themselves. Distinguishing the stories of *preoccupied* individuals are the absence of the expression of the use of attachment to resolve distress, and of the taking of any action at all, thus leaving the characters in the story alone and frequently passive and immobilized. Finally, characterizing the AAP stories of *unresolved* individuals are the absence of the manifestation of the capacity to act, internalized secure base, or haven of safety.

Strong inter-judge reliability and convergent agreement between the AAP and the AAI classifications have been found (George & West, 2001). AAP inter-judge reliabilities for secure versus insecure classifications and for the four major attachment

classifications, have been found to be, respectively, 93% ($\kappa = .73$, $p < 0.00$) and 86% ($\kappa = .79$, $p < 0.00$). Convergences between the AAP and the AAI for the two (secure versus insecure) and four major attachment groups have been shown to be respectively, 92% ($\kappa = .75$, $p = .000$) and 85% ($\kappa = .84$, $p = .000$).

Fifteen AAP protocols from our sample were randomly selected and evaluated by independent coders, certified by Carol George. Inter-judge reliability for the four major attachment groups was .73 ($k = .54$, $p < .001$). Discussions between the coders and Carol George allowed for the resolution of discrepancies in the codes assigned to the protocols.

2.3.5 Antisocial Process Screening Device (APSD)

In order to assess dimensions of antisocial behavior in the mother, a modified version of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), a 20-item behavior rating scale intended to be a measure of psychopathy in youth, was completed by the mothers in our study. Each item on the APSD is scored on a 3-point scale, either 0 (not at all true), 1 (sometimes true), or 2 (definitely true). In order to account for differences in contexts in which the child develops, three versions of the APSD were created, namely a self-report version, a version to be completed by the mother, and another to be completed by a teacher or similar figure. All three versions have demonstrated good psychometric qualities (see Frick, Bodin, & Barry, 2000). Only a self-report version was used in this study.

Given that we were interested in behaviors shown during youth, the items were slightly modified for our study by creating a retrospective self-report version (see Appendix G). In this modified version, mothers responded to the items on the basis of their perception of themselves or of their behavior during childhood or adolescence. This

modification can be justified by the fact that mothers who did not participate in our study may represent a group of mothers who are less mobile and stable, more difficult to contact, and more antisocial, than those who did participate, hence potentially resulting in a selection bias. In addition, our decision to use a modified version of the APSD is justified by evidence showing an association between motherhood and a decrease in the likelihood of delinquent behavior (Hope, Wilder, & Watt, 2003). Hence, the exhibition of antisocial behaviors should be more observable before motherhood. In sum, the latter serves to justify our decision to use a modified version in order to allow for a maximization of the variability in the antisocial profiles obtained in our study.

Good psychometric qualities of the original versions of the APSD have been shown (see Frick et al., 2000). Factor analyses of the APSD have yielded two and three factor solutions. However, in this study, the three factor approach producing three subscales representing impulsive conduct problems (ICP), narcissism (N), and callous-unemotional (CU) traits (Frick et al., 2000) was used. Factor analytic support for these subscales has been provided using clinical and non-clinical samples of similar ages (Frick et al., 2000; Frick, Kimonis, Dandreaux, & Farrell, 2003). More specifically, the 6-item CU subscale, which includes items such as "feels bad or guilty," "concerned about the feelings of others," and "does not show emotions," was used in our study, as it has been shown to be the most stable dimension of the APSD across multiple samples (Frick et al., 2000), and it had an internal consistency of .76 in the full screening sample. Moreover, parent and teacher ratings on the APSD CU scale have been found to be correlated ($r = .38, p < .001$) (Frick et al., 2000).

2.3.6 Mother-child Interaction

The quality of mother-child interactions during the structured task was coded using an observational coding system developed by Moss and colleagues (1996; see Appendix H). An overall rating and eight 7-point subscales were used to capture the following global aspects of parent-child behaviors, with higher scores considered more optimal: Coordination (from interaction that flows smoothly toward mutually defined goals to little or unproductive interaction); Communication (from clear verbal and nonverbal exchanges to inconsistent, incongruent patterns); Partner Roles (from appropriate parent-child role assumption to pattern of role reversal); Emotional Expression (from balanced and shared expression of both positive and negative affective states to restricted or exaggerated expression); Responsivity / Sensitivity (from attunement between mother and child to intrusive or ignoring response style); Tension / Relaxation (from calm, comfortable interaction to tense, anxious climate); Mood (from generally positive to negative); Enjoyment (from sustained warmth and pleasure to displeasure), and Overall; Overall (from high quality, [(i.e., responsive, harmonious) to poor quality (i.e., indifferent or conflictual)].

Inter-rater reliability as well as concurrent and predictive validity with behavior problems have been established with a French-Canadian population (Moss et al., 1996). More specifically, the above-mentioned scales have been found to distinguish the mother-child interactive patterns of 3- to 7-year-old children with different attachment classifications. They have also demonstrated concurrent and longitudinal relations with behavior problem ratings and school performance (Cyr & Moss, 2001; Moss et al., 1998,

2004; Moss & St-Laurent, 2001). Only the overall score for the mother-child interactions was considered in the analyses executed in our study.

Coders of mother-child interactions were unaware of participants' scores on other measures included in the study. Inter-rater reliability, calculated on 80% of the sample, was .98 for the overall rating.

2.3.7 Strange Situation Procedures

The strange situation procedure used was adapted for use with the range of children in the sample (4 to 7 years of age). For all children, the procedure included: (a) separation between mother and child, (b) reunion, (c) second separation, and (d) second reunion. The procedure used with 4 year-old children entailed two 5-minute separations, one during which the child was left with a stranger, and the other during which the child was left alone. Slightly longer reunions (6 minutes) were used with 5-7 year old children. During both separations the older children were left alone. Following the separations, mothers were told to rejoin the child but received no specific instructions concerning the reunions.

The separation-reunion sequence took place in a room in which age-appropriate toys were scattered. The child's attachment classification was based on behavior observed during both reunion periods. Although two different procedures were used in order to render the procedures age-appropriate and hence more valid, the same classification system was used. Therefore, the different procedures yield the same categories of attachment patterns.

2.3.8. Preschool Attachment Coding System (PACS)

Our sample spanned both the preschool and early school-age period, hence coders classified reunion behavior using criteria from the MacArthur Preschool Attachment Coding System (PACS; Cassidy & Marvin with the MacArthur Working Group on Attachment, 1992), which incorporates criteria from both the previously developed infancy system and the Main and Cassidy (1988) system for 6 year-olds (see section 1.4. for details)

The secure (B) pattern is categorized by relaxed, mutually enjoyable parent-child interaction and by child ease in initiating communication or contact with the parent. The secure child uses the caregiver as a secure base which facilitates exploration of the environment. The insecure-avoidant (A) pattern is characterized by the child's physical and affective avoidance of the parent. The child may ignore parental verbal initiatives, parent-child discussions are often short, and there is little elaboration by one partner of topics initiated by the other. In the insecure-dependent (C) attachment pattern which corresponds to the anxious-ambivalent infant category, the child alternatively shows resistance and conflictual behavior patterns or excessive immaturity evidenced by passive behaviors like following the parent around the room or trying to be held by him. Interactions between the parent and child often seem to interfere with child exploration.

Insecure-disorganized (D) preschoolers, seem unable to use the caregiver as a secure base for exploration and fail to show a coherent strategy for dealing with reunion often displaying sequences of behavior that seemingly lack a goal or evidence a collapse of strategy (i.e. disordered, incomplete or undirected sequencing of movements, some confusion or apprehension, anomalous behaviors) (Main, 1995). Children classified

insecure-controlling (D) attempt to control parent's behavior often in a caregiving or punitive manner. Caregiving behavior is manifest when the child is focused on helpfully guiding, orienting or cheering up the parent. On the other hand, a punitive child uses hostile, directive behavior with the caregiver, which may include verbal threats or harsh commands. Certain children manifest both caregiving and punitive elements or a general controlling style characterized by a pattern of role reversal with the child directing the parent's activities and conversational exchanges.

Children are classified insecure-other if they seem unable to use the caregiver as a secure base for exploration but do not clearly show the A, C, or D pattern of attachment; children classified insecure other may display other anomalous behavior or a combination of other insecure patterns.

The validity of the Cassidy and Marvin attachment classification system has been extensively demonstrated. Studies reveal differences between secure, avoidant, ambivalent, and disorganized attachment patterns during the preschool and school-age periods in terms of diverse measures, namely of child self-esteem (Cassidy, 1988), child mental representations linked to attachment (Shouldice & Stevenson-Hinde, 1992), and maternal attitudes, emotional states, and behaviors (Main et al., 1985). Lastly, researchers have demonstrated links between security/insecurity of attachment at preschool age and child behavior problems, parenting, mother-child interactions, child perceptions of maternal relationship, maltreatment, maternal self-reports of stress and depression (Cicchetti & Barnett, 1991; Cohn, 1990; Easterbrooks et al., 1993; Moss et al., 1998; Moss et al., 1999; Stevenson-Hinde, 1990), communication, cognitive engagement, and mastery motivation (Moss & St-Laurent, 2001). In our study, in order to have a

sufficient N in each cell to conduct the necessary analyses, the following dichotomized variables were created: secure and insecure (including the avoidant, ambivalent, and disorganized classifications), and organized (including the secure, avoidant, and ambivalent classifications) and disorganized.

The two coders, certified by Robert S. Marvin, were unaware of participants' scores on other measures included in the study. Inter-rater reliability, for the major classifications, calculated on more than 30% of the sample was .100.

2.4 Data Analyses

Given the nature of the hypotheses described earlier, a correlational design testing for mediating and moderating effects was deemed to be most appropriate. First, analyses were performed in order to identify possible confounding variables. More specifically, outcome variables for the mothers and children included in our sample were examined as a function of sex, age, and socio-demographic/contextual variables. When appropriate, these variables were controlled in subsequent analyses.

Second, mediating effects were examined by executing regression equations involving the predictor, the potential mediator, and the outcome variable. According to Baron and Kenny (1986), the following conditions must be met in order to establish mediation: 1) the independent variable (predictor) must be associated with the mediator; 2) the independent variable must be associated with the outcome variable; 3) the mediator must be associated with the outcome variable; and 4) the effects of the predictor on the outcome variable must be significantly reduced once the mediator is entered into the equation. Analyses were therefore carried out in a sequential manner, in which a regression coefficient for the relation between the predictor and the outcome variable was

first obtained, and then compared with the same coefficient, once the mediator was entered into the equation. The potential mediating roles of mother-child interactions and maternal callous-unemotional traits in the relation between mother and child attachment were examined in our study.

The analyses were designed to include few predictors (including interaction term) in order to allow for maximum statistical power. Finally, moderating effects were tested using the procedure described by Baron and Kenny (1986). When testing for a moderating effect, an interaction term is created between the predictor and the potential moderator which, if significant, indicates an interactive rather than only an additive link with the outcome variable. The interaction effects between maternal and child attachment in the prediction of child behavior problems were examined in this study.

Missing data, whenever present, was treated according to the extent of its occurrence relative to the sample size. If it occurred in more than 25 % of the sample for a given variable, the variable was not considered in the analyses. If a value was missing for less than 25 % of the sample, the mean value for the sample was substituted for the missing value. This solution appeared preferable to simply discarding the case, as our sample size was small and the loss of subjects would likely affect the results (Tabachnik & Fidell, 1996).

CHAPTER III

RESULTS

3.1. Intergenerational Transmission of Attachment and Processes Involved in Transmission

Our first set of questions involved examining the association between maternal and child attachment classifications, and the potential mediating roles of mother-child interactions and maternal antisocial traits in any demonstrated association. Forty participants were included in these analyses, since two subjects in the original sample lacked data to allow us to score the agency of self dimension. In order to create two maternal groups which corresponded to the two child groups (secure, and insecure: avoidant, ambivalent, and disorganized) in the preschool classification system, we first examined the distribution of scores on the AAP Agency of Self scale, which, according to George and colleagues (1999), is closely linked to the notion of internalized secure base and overall security. Given that four pictures are evaluated on the dimension of Agency of Self, a sum of all four scores was computed to yield a total score for each participant. Following an examination of the distributions of the Agency of Self dimension as a function of child attachment, we created two groups: 1) insecure (< 2 on the Agency of self scale) and 2) secure (>1 on this scale).

3.1.1. Preliminary Analyses

3.1.1.1. Distribution of Attachment

Consistent with our expectations, the breakdown of maternal agency of self was as follows: insecure, 30 (75%) mothers and secure, 10 (25%) mothers, for a total of 40 mothers. The distribution for the 40 preschool-aged participants according to separation-reunion classification and gender, was: 47.5% (4 boys, 15 girls) Secure (B) and 52.5% (8 boys, 13 girls) Insecure (dependent: 2, controlling-caregiver: 13, controlling-general: 3, disorganized: 2, and insecure-other: 1). Similar to other researchers, in this study, we combined the disorganized and controlling groups on the assumption that the controlling pattern is a developmental transformation of disorganized attachment behavior.

3.1.1.2 Associations between Maternal Agency of Self and Socio-demographic/ Contextual Variables

In order to test for possible covariates, we examined correlations between agency of self scores and maternal socio-demographic/contextual variables, namely maternal education, civil status, source of income, and number of children born to mother. Results of chi-square analyses examining the relation between maternal attachment (agency of self), and socio-demographic/contextual variables, indicated no significant associations between maternal agency of self and source of family income: χ^2 (1, N = 39) = .685, n.s., maternal level of education: χ^2 (1, N = 40) = 2.048, n.s., marital status: χ^2 (1, N = 39) = 2.457, n.s., or number of children born to mother: χ^2 (1, N = 40) = .835, n.s.). Moreover, contrary to our expectations, an analysis of variance examining the relation between maternal agency of self and maternal stress level, indicated no significant association: F (1,37) = .198, n.s., and 2 (maternal security, insecurity) X 2 (absence, presence of drug

consumption: nicotine, marijuana, and hard drugs) contingency analyses did not show a significant association between maternal security/insecurity and the absence/presence of nicotine: $\chi^2(1, N = 40) = .89$, n.s., marijuana: $\chi^2(1, N = 40) = 1.60$, n.s., or hard drugs: Fisher's Exact Test: .56, n.s., consumption. Also, an analysis of variance examining the relation between maternal agency of self (security, insecurity) and alcohol consumption, indicated no significant association: $F(1,38) = .04$, n.s. Moreover, no association was found between maternal age and maternal attachment classification; $F(1, 38) = 1.33$, n.s.

3.1.1.2. Relations between Child Attachment (Secure versus Insecure) and Socio Demographic/Contextual Variables

A similar series of analyses were conducted to examine associations between child attachment and possible covariates. Results of analyses of variance and of chi-square analyses examining the relation between child attachment (secure versus insecure), and socio-demographic/contextual variables, indicated no significant associations between child attachment and source of family income: $\chi^2(1, N = 39) = .63$, n.s., maternal level of education: $\chi^2(1, N = 40) = .76$, n.s., marital status: $\chi^2(1, N = 39) = .82$, n.s., number of children born to mother: $\chi^2(1, N = 40) = 1.57$, n.s., maternal stress level: $F(1,37) = .72$, n.s., maternal drug consumption; nicotine: $\chi^2(1, N = 40) = .01$, n.s., alcohol: $F(1,38) = 2.18$, n.s., marijuana: $\chi^2(1, N = 40) = .03$, n.s., hard drugs: Fisher's Exact Test, n.s., child gender: $\chi^2(1, N = 40) = 1.38$, n.s., or child age: $\chi^2(1, N = 39) = .04$, n.s. Therefore, in subsequent analyses, none of these variables were included as covariates.

3.1.2 Correspondence Between Maternal and Child Attachment

To examine our first research question, namely the correspondence between maternal and child attachment, a 2 (maternal security, insecurity) X 2 (child security/insecurity) contingency analysis was executed (see Table 3.1). As expected, results showed a significant moderate correspondence between child and maternal attachment security/insecurity; Fisher's Exact Test: $p < .05$; Kappa = .33, $p < .05$. Forty-two point one percent (8/19) and 90.5% (19/21), respectively, of child secure and insecure classifications could be correctly predicted by knowing mother's classification. Hence, the results show that secure children are more likely than insecure children to have mothers who show higher levels of security as assessed with the agency of self scale of the AAP whereas insecure children are more likely to have mothers who show insecurity.

Table 3.1

*Correspondence between Maternal Agency of Self and Child Attachment
(Secure Versus Insecure)*

Maternal Agency of Self	Child attachment classification		Totals
	Insecure	Secure	
0 (Insecure)	19	11	30
1 (Secure)	2	8	10
Totals	21	19	40

3.1.3 Relations between Mother-Child Interactions, and Both Maternal and Child Attachment

Our second research question entailed examining associations between: 1) maternal agency of self and mother-child interactions, and 2) child attachment and mother-child interactions. Contrary to our hypotheses, an analysis of variance with maternal agency of self (secure vs. insecure) as the independent variable, and mother-child interactions as the dependent variable was not significant; $F(1,38) = .30$, n.s., and an analysis of variance with mother-child interactions as the dependent variable and child attachment security/insecurity as the independent variable was not significant; $F(1,38) = .18$, n.s.

3.1.4 Mother-Child Interactions as a Mediator between Maternal and Child Attachment Security

Our third research question involved examining the possible mediating role of mother-child interactions in the relation between maternal agency of self and child attachment security/insecurity. Given that the preliminary conditions required for mediational analyses were not met, the mediating role of mother-child interactions in the relation between maternal agency of self and child attachment security/insecurity could not be examined.

3.1.5 Relations between Maternal Callous-Unemotional Traits, and Both Maternal Agency of Self and Child Attachment

Our fourth question pertained to the relations between maternal antisocial traits (callous-unemotional traits), and both maternal agency of self (secure vs. insecure) and child attachment security/insecurity. An analysis of variance with maternal attachment

security/insecurity as the independent variable, and maternal callous-unemotional traits as the dependent variable was conducted. As anticipated, results showed a significant relation between maternal attachment security/insecurity and maternal callous-unemotional traits, $F(1,38) = 12.34$, $p < .01$ (see Table 3.2). Mothers with lower levels of agency of self had significantly higher levels of callous-unemotional traits than did mothers showing higher levels of agency of self.

Table 3.2

Means and (Standard Deviations) for Callous-Unemotional Traits in Relation to Maternal Agency of Self

	Maternal Agency of Self		
	0 (Insecure)	1 (Secure)	Total
	(n = 30)	(n = 10)	(n = 40)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Callous-Unemotional Traits	3.80 (1.54)	2.00 (.82)	3.35 (1.59)

An analysis of variance with maternal callous-unemotional traits as the dependent variable and child attachment security/insecurity as the independent variable was executed in order to examine the association between maternal callous-unemotional traits and child attachment security/insecurity. As expected, the results revealed a significant association between maternal callous-unemotional traits and child attachment security/insecurity; $F(1,38) = 8.83$, $p < .01$ (see Table 3.3). Children with an insecure attachment had mothers with significantly higher levels of callous-unemotional traits than did children with a secure attachment.

Table 3.3

*Means and (Standard Deviations) for Callous-Unemotional Traits
in Relation to Child Attachment*

	Child attachment classification		
	Secure	Insecure	Total
	(n = 19)	(n = 21)	(n = 40)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Callous-Unemotional Traits	2.63 (1.57)	4.00 (1.34)	3.35 (1.59)

3.1.6 Maternal Callous-Unemotional Traits as a Mediator between Maternal and Child Attachment

Our last research question related to our first main research objective examined the potential mediating role of maternal antisocial traits (callous-unemotional traits) in the relation between maternal and child attachment security/insecurity. Given that the preliminary conditions required for mediational analyses were met (see above), the mediating role of maternal callous-unemotional traits in the relation between maternal agency of self and child attachment security/insecurity was examined. A hierarchical multiple regression analysis was executed in order to test this mediation model for the prediction of child attachment security/insecurity (see Table 3.4). In the first equation, maternal agency of self was regressed against child attachment security/insecurity.

Maternal agency of self was found to contribute significantly to the prediction of child attachment security/insecurity. In the second equation, maternal agency of self was regressed against child attachment security/insecurity while controlling for maternal

callous-unemotional traits (mediator variable). When maternal callous-unemotional traits was entered in the equation, it contributed significantly ($F(1, 38) = 8.83, p < .01$) to child attachment security/insecurity variance (19%), whereas maternal agency of self no longer did, its beta weight dropping from .376 to .213, which corresponds to an 8.2% drop in common variance. Sobel's test revealed a Z score of 1.67, $p < .05$ (one-tailed because the effect will necessarily decrease if there is mediation), indicating that the mediated path was significantly different from zero. Therefore, as predicted, a mediation model for the prediction of child attachment security/insecurity was supported by the data.

Table 3.4

Summary of Hierarchical Multiple Regression Analysis for Variables Predicting Child Attachment Security/Insecurity (N = 40)

Variable	Child attachment security/insecurity		
	B	SE B	β
Preliminary Model			
Maternal Agency of Self	.43	.17	.38*
Mediation Model			
Step 1			
Callous-Unemotional Traits	-.275	.09	-.43**
Step 2			
Callous-Unemotional Traits	-.21	.11	-.33
Maternal Agency of Self	.25	.19	.21

Note. Preliminary Model : $\Delta R^2 = .14, p < .05$. Mediation Model : $R^2 = .19, p < .01$, for

Step 1; $\Delta R^2 = .03$ for Step 2 (n.s.).

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

3.2. Associations between Maternal Resolved/Unresolved Representations of Attachment and Child Organized/Disorganized Attachment, and the Development of Externalizing Behavior Problems

Our next set of questions concerned associations between maternal resolved/unresolved attachment and child organized/disorganized attachment, and the development of child externalizing behavior problems. In our study, in order to have a sufficient N in each cell to conduct the necessary analyses involving child attachment, the following dichotomized variables were created: organized (including the secure, avoidant, and ambivalent classifications) and disorganized. In order to create two maternal groups which corresponded to the two child groups, the following dichotomized variables were created: resolved (including the autonomous, dismissing, and preoccupied classifications) and unresolved. Data from forty-two subjects were available for these analyses.

3.2.1. Preliminary Analyses

3.2.1.1. Distribution of Attachment

As expected, we found an over-representation of disorganized classifications in children. The distribution of the 42 preschool-aged participants used in these analyses, according to separation-reunion classification and gender, was as follows: 52.4% (7 boys, 15 girls) Organized (avoidant: 1, secure: 19, and dependent: 2) and 47.6% (6 boys, 14 girls) Disorganized (controlling-punitive: 1, controlling-caregiver: 13, controlling-general: 3, disorganized: 2, and insecure-other: 1). A chi-square analysis showed that child gender was not related to attachment classification; $\chi^2 (1, N = 42) = .02$, n.s. Also, child age was not found to be associated with attachment classification; $\chi^2 (1, N = 42) =$

.05, n.s. The breakdown of maternal attachment classifications assessed using the Adult Attachment Projective (AAP) was as follows: 18 (42.9%) Unresolved (U) and 24 (57.1%) Resolved (autonomous: 13, preoccupied: 4, and dismissing: 7). No association was found between maternal age and maternal attachment classification; $F(1, 40) = .06$, n.s.

3.2.1.2 Relations between Socio-demographic/Contextual Variables and Mother-Reported Child Externalizing Behavior Problems

Univariate analyses examining the relations between mother-reported child externalizing behavior problems and socio-demographic/contextual variables, were conducted in order to test for covariates that needed to be included in the analyses. No associations were found between child externalizing problems and source of family income: $F(1,39) = 2.03$, n.s., maternal level of education: $F(1,40) = .04$, n.s., marital status: $F(1,39) = 3.40$, n.s., number of children born to mother: $F(1,40) = .12$, n.s., or child gender: $F(1,40) = .01$, n.s.

Univariate analyses examining the relations between drug consumption and externalizing behavior problems indicated no significant associations; nicotine : $F(1,40) = .37$, n.s., marijuana : $F(1,40) = 1.37$, n.s., and hard drugs : $F(1,40) = 1.85$, n.s. Also, correlational analyses revealed no associations between both alcohol drug consumption and maternal callous-unemotional traits, and child externalizing behavior problems; $r = .12$, n.s. and $r = -.03$, n.s., respectively. However, significant associations were found between child externalizing behavior problems and both maternal stress level: $r = .64$, $p < .001$ and child age: $F(1,40) = 10.44$, $p < .01$. The higher the level of maternal stress reported, the higher the level of mother-reported child externalizing behavior problems. Moreover, younger children (48 to 60 months) were reported as having a significantly

higher level of externalizing problems than older children (61 to 84 months). Therefore, in subsequent analyses, both maternal stress level and child age were included as covariates.

3.2.2 Associations between Maternal Resolved/Unresolved Attachment and Child Organized/Disorganized Attachment, and the Development of Child Externalizing Behavior Problems

Our second research objective was to examine associations between maternal resolved/unresolved attachment and child organized/disorganized attachment, and the development of child externalizing behavior problems. In order to examine the first research question related to this overall objective, univariate analyses of variance with child and maternal attachment (organized versus disorganized) as the independent variables, and child externalizing behavior problems as the dependent variable, and controlling for child age and maternal stress, were conducted. As expected, results indicated that children classified disorganized ($M = 15.96$, $S.D. = 8.13$) had higher levels of externalizing behavior problems than children classified organized ($M = 11.87$, $S.D. = 6.21$); $t(36) = -2.77$, $p < .01$, when maternal attachment was accounted for. However, contrary to our hypothesis, results revealed no significant differences between mothers with an unresolved attachment classification and those with a resolved classification; $t(36) = -.43$, n.s. Mothers with an unresolved attachment classification were not more likely than mothers with organized models of attachment to have children with higher levels of externalizing behavior problems.

3.2.3 Mediating Role of Child Attachment in the Relation between Maternal Attachment and Child Externalizing Behavior Problems

Our second research question concerned the mediating role of child attachment in the relation between maternal attachment and child externalizing behavior problems. In order to test for the potential mediating role of child attachment in the relation between maternal attachment and child externalizing behavior problems, the independent variable (maternal attachment) must be associated with the dependent variable (externalizing behavior problems). Given that this condition was not met, mediation analyses could not be carried out.

3.2.4 Moderating Effect of Maternal Attachment in the Relation between Child Attachment and Externalizing Behavior Problems

Our last research question concerned the possible moderating role of maternal attachment (resolved vs. unresolved) in the relation between child attachment and externalizing behavior problems. To pursue these analyses, we first created four groups that were concordant or divergent with respect to mother and child attachment (organized vs. disorganized). The following four groups of dyads were created: 1) children and mothers with an organized attachment classification (that is, mothers with an Autonomous, Detached, or Preoccupied attachment and children with a Secure, Avoidant, or Ambivalent attachment); 2) mothers with organized attachment and children with disorganized attachment; 3) mothers with disorganized (unresolved) attachment and children with organized attachment; and 4) both mothers and children with a disorganized attachment classification.

In order to test a moderation model for the prediction of child externalizing behavior problems, a hierarchical multiple regression was executed (see Table 3.5). Child age and maternal stress level were entered simultaneously in the first step as control variables. They significantly accounted for 47.1% of the variance of child externalizing behavior problems. Maternal and child attachment (Organized versus Disorganized) (independent variables) were entered simultaneously in the second step. They did not account for any additional variance in child externalizing problems above that predicted by child age and maternal stress level. However, child attachment contributed significantly to the prediction of externalizing behavior problems when we controlled for maternal attachment. In the third step, the moderator term, child attachment X mother attachment, was entered. The moderator term significantly accounted for an additional 10% of the variance in child externalizing behavior problems above that predicted by child age and maternal stress level. Hence, as anticipated, a moderation model for the prediction of child externalizing behavior problems was supported.

Table 3.5

Hierarchical Multiple Regression Testing the Roles of Maternal and Child Attachment in the Prediction of Child Externalizing Behavior Problems (with Child Age and Maternal Stress as Covariates)

Predictor variables	ΔR^2 (%)	F	df	β
Step 1	47.1	17.38**	(2, 39)	
Maternal Stress				.57**
Child Age				.24*
Step 2	6.0	2.36	(2, 37)	
Child Attachment				-.29**
Mother Attachment				-.04
Step 3	10.0	9.70**	(1, 36)	
Child attachment X				
Mother Attachment				.32**

* $p < .05$; ** $p < .01$. $R^2 = 63.1$.

In order to explain the moderation effect, the adjusted means of the four groups were examined (see Table 3.6). As predicted, estimated marginal means demonstrated that when maternal stress and child age were controlled for, and maternal attachment was taken into account, children classified "Disorganized" who had mothers who were "Disorganized" with respect to attachment, had the highest behavior problem levels,

compared with dyads with divergent attachment classifications. In addition, we found, unexpectedly, that children categorized as "Organized" who had mothers who were "Organized" with respect to attachment had higher levels of externalizing behavior problems than children categorized as "Organized" who had mothers who were "Disorganized".

Table 3.6

Estimated Marginal Means and Standard Deviations of Child Externalizing Behavior Problems according to the Convergence between Mother Attachment (Organized vs. Disorganized) and Child Attachment (Organized vs. Disorganized)

	Convergent organized <i>n</i> = 13	Mother organized and child <i>n</i> = 11	Mother disorganized and child <i>n</i> = 9	Convergent disorganized organized <i>n</i> = 9
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Child externalizing behavior problems	13.83 (6.26)	13.35 (5.34)	9.92 (5.49)	18.57 (10.16)

CHAPTER IV

DISCUSSION

The main objectives of this study were to: 1) examine the presence of intergenerational transmission of attachment from mother to child, 2) uncover mechanisms involved in attachment transmission, and 3) further our understanding of the processes involved in the development of child maladaptive behaviors, in a sample of adolescent mothers and their preschool and early school-aged children. More specifically, we examined the possible moderating role of maternal attachment (resolved vs. unresolved) in the relation between child attachment and externalizing behaviour problems.

4.1. Intergenerational Transmission of Attachment and Processes Involved in Transmission

4.1.1. Breakdown of Attachment Patterns in Adolescent Mothers

As anticipated, similar to the overrepresentation of insecure classifications found in adolescent mother-child samples (e.g., Levine & Tuber, 1991; Tarabulsky et al., 2005; van IJzendoorn and Bakermans-Kranenburg, 1996; Ward & Carlson, 1995), the distribution of AAP classifications obtained in our study demonstrates an overrepresentation of insecure classifications (AAP: Agency of self dimension: 75% insecure), compared with the attachment distributions found in non-clinical samples.

However, higher prevalence rates than those obtained in adolescent mother-child samples and non-clinical samples (e.g., van IJzendoorn and Bakermans-Kranenburg, 1996; Raval et al., 2001; Miljkovich et al., 2004), with respect to unresolved attachment

classifications, were found in our study (AAP: 42.9%). The higher prevalence of insecurity found in our study, in comparison with low-risk samples, may be explained by the fact that adolescent mothers are considered a high-risk population. In fact, Tarabulsky and colleagues (2005) have suggested that a number of factors, which prevail in high-psychosocial risk groups, namely maternal low education, low social support, and depressive symptomatology, characterize the ecology of adolescent mother-infant dyads and may contribute to infant attachment insecurity. In their study, Tarabulsky and colleagues (2005) found higher maternal education to be related to attachment security, satisfaction with paternal support to be inversely related to attachment security, and higher depressive symptomatology to be marginally related to attachment insecurity.

On a theoretical level, adolescent mothers struggle with conflicting roles, being simultaneously an adolescent and a mother, which may, in some cases, overwhelm their cognitive capacity, and undermine their ability to integrate current feelings with past attachment experiences. Since adolescent mothers are faced with the responsibilities of their parenting role, they must reorient their focus from developing responsibility for themselves (e.g. identity exploration and formation), to the responsibility for their child. These newly acquired responsibilities during adolescence limit their own exploration (Arnett, 2000), and render normal characteristics of the adolescent period, such as spontaneity and instability, potentially detrimental for the development of their children (Easterbrooks, Chaudhuri, & Gestsdottir, 2005).

According to Main and colleagues (1985), mental integration concerning attachment characterizes autonomous-secure adult working models. The internal conflicts experienced by adolescent mothers may lead to difficulties in integrating their current

feelings with past attachment experiences. In addition, the fact that adolescents, in general, are likely to lack sufficient introspection due to their emotional and psychological immaturity, may account for adolescent mothers' difficulty with the integration of current feelings with past attachment experiences.

Moreover, the prevalence of insecurity, and more specifically, of unresolved loss or trauma, may be higher in adolescent mothers, relative to low-risk samples, as having a baby at a young age may be a way of compensating for difficulties in their own childhood (Lewis, 2000). It may be an attempt to resolve issues related to difficulties with their own parenting by creating an idealized image of the parent-child relationship which, in turn, may lead to a precocious desire to have a child. In support of this idea are several studies which have demonstrated an association between a history of child maltreatment and adolescent parenthood (Gershenson, Musick, Ruch-ross, Magee, Rubino, & Rosenberg, 1989; Hassan & Paquette, 2004; Herrenkohl, Herrenkohl, Egolf, & Russo, 1998; Kellogg, Hoffman, & Taylor, 1999; Lourie, Brown, Flanagan, High, Kumar, Davis, 1998). Studies have also demonstrated associations between insecurity, and a history of abuse (DeLozier, 1980) and of early bereavement and trauma (Mitchell, 1990). In addition, Bailey (2005) showed that adolescent mothers with a history of child sexual abuse and/or high levels of general maltreatment, were more likely to show Unresolved lapses when talking about a loss, in comparison to mothers with a resolved state of mind.

The distribution of maternal attachment classifications in this study resembles that obtained in other studies examining adolescent mother samples, with respect to the percentage of Autonomous/Secure and Nonautonomous/Insecure classifications, but differs with respect to the distribution of the Unresolved/Resolved classifications. The

prevalence of Unresolved classifications in our sample is higher than that generally obtained with samples of adolescent mothers (Levine & Tuber, 1991; Tarabulsky et al., 2005; Ward & Carlson, 1995). The distributions obtained in our study, with respect to the Unresolved attachment classification, resemble more closely those found in some studies using clinical samples. For instance, in a study examining a sample of clinic-referred disruptive preschoolers and their mothers, 44% of the participants in the sample were coded Unresolved (DeKlyen's study, as cited in van IJzendoorn & Bakermans-Kranenburg, 1996). Similarly, in another clinical sample comprised of formerly psychiatrically hospitalized young adults, Allen & Hauser (as cited in van IJzendoorn & Bakermans-Kranenburg, 1996) and Allen (as cited in van IJzendoorn & Bakermans-Kranenburg, 1996) reported that 52% of the sample were coded Unresolved.

The discrepancies in the prevalence of Unresolved states of mind, between our findings and those obtained in the above-mentioned studies examining adolescent mothers, can perhaps be partly explained by the use of different evaluation procedures: our study assessed the representations of attachment relationships with the AAP whereas the other above-mentioned studies chose the AAI. Using the AAI renders coding for Unresolved status impossible if the individuals assessed have not experienced a loss or trauma or do not report the experience of a loss or trauma (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). However, the Adult Attachment Projective measure, used in our study, allows for the assessment of Unresolved states of mind regardless of whether or not the individual has experienced loss or trauma or reports having experienced a loss or trauma. The AAP classification system resembles more closely the hostile/helpless coding system developed by Lyons-Ruth, Melnick, Atwood, and Yellin (2003). Unlike

the AAI coding system in which coding for U status is dependent on elements in the interview related to the individual's state of mind concerning the experience of loss or trauma, the AAP and H/H systems both examine discourse patterns throughout the entire protocol, regardless of whether or not reference is made to the experience of loss or trauma (George & West, 2001; Lyons-Ruth et al., 2005). This may explain the higher prevalence rate of U status in our study, relative to the other cited studies examining adolescent mothers mentioned above. Nonetheless, more validation for the AAP is needed in order to verify this premise.

Moreover, given that adolescents are relatively inexperienced in the discussion and appraisal of close attachment relationships (Ward & Carlson, 1995), the Adult Attachment Interview (George et al., 1996) may not allow for an accurate assessment of adolescent mothers' states of mind with respect to attachment. With this in mind, in Ward and Carlson's study (1995), examining adolescent mother-infant dyads, emphasis was placed on state of mind ratings (Main and Goldwyn ,1984) rather than on experience ratings, when coding attachment status. Similarly, in our study, the internalized secure base rating on the AAP allowed for the assessment of states of mind with respect to attachment.

An explanation for the similarity observed between our findings and those obtained in studies examining clinical samples, with respect to the U classification, may be that mothers in our sample have more antisocial traits, relative to other adolescent mothers, and in turn, represent a higher-risk group with a greater prevalence of Unresolved states of mind. Indeed, studies have demonstrated a relation between unresolved and dismissing states of mind (insecure states of mind) and antisocial

personality disorder (Allen et al., 1996; Rosenstein & Horowitz, 1996). Moreover, our findings are in line with studies showing associations between adolescent motherhood and psychosocial and developmental difficulties in both mothers and their offspring, and with Tarabulsky and colleagues' (2005) proposition that a number of elements characteristic of the ecological context of adolescent mother-infant dyads resemble those of the context of high-psychosocial risk groups. Also, they are consistent with the distributions obtained in an at-risk sample of mother-toddler dyads (83% were classified as non-autonomous and 43% were classified as unresolved (Oyen et al., 2000).

Another possible explanation for the high prevalence rate of mothers with none to low agency of self (representative of insecurity) in our sample, is the fact that our sample was recruited on a voluntary basis. Perhaps a higher proportion of mothers who maintained an association with the research team over time had more significant mental health problems (e.g., more antisocial traits), than those who did not respond to recruitment efforts. They may have continued participating in the study in the hope of obtaining help from the research team. One of the problems with our sample was the high unexplained attrition rate.

4.1.2. Maternal Agency of Self and Socio-demographic/Contextual Variables

In order to establish that maternal agency of self is independent from other maternal psychosocial variables, we examined associations between maternal agency of self and socio-demographic variables, namely source of family income, maternal level of education, marital status, and number of children born to mother. There were no significant associations. These results corroborate Ward and Carlson's (1995) finding that maternal demographic characteristics (i.e., age, race, educational level, income, and

marital status) are not predictive of maternal psychological functioning. In addition, contrary to our expectations, relations between maternal agency of self and both maternal stress level, and the absence/presence of nicotine, marijuana, hard drug, and alcohol consumption, were not demonstrated. Studies examining the links between agency of self, and contextual variables in the family of origin, namely maternal drug consumption and stress level, have not yet been conducted. However, both drug consumption and maternal stress level have been shown to be influenced by maternal security (although indirectly with respect to agency of self) (Golder et al., 2005; Magana, 1997, as cited in Cassidy & Shaver, 1999).

Research has identified disruptions in social bonding as potentially leading to substance use in adolescents and young adults (Elgar et al., 2003), in part through their effect on the adoption of antisocial values and deviant peer networks (Brook et al., 1998). In a recent study conducted with a sample of pregnant and parenting adolescents, differences in attachment security were found to be associated with substance use (Golder et al., 2005). Moreover, young mothers have been found to be at greater risk for substance abuse than older ones (Kissman, 1998). According to attachment theory (Bowlby, 1977), having a secure working model should lead to more optimal psychosocial functioning, while having an insecure one should leave one vulnerable to poor adjustment. Nonetheless, much of the current research linking attachment and substance use is limited by the use of self-report questionnaires, which do not allow for an assessment of unconscious, defensive aspects of internal working models of attachment relationships (George & West, 1999). Hence, the assessment of unconscious, defensive aspects of internal working models of attachment, which are captured by the

Adult Attachment Projective in our study, may represent a more accurate portrayal of young mothers' representations of attachment relationships, given that young mothers are relatively inexperienced in discussing and appraising close relationships (Ward and Carlson, 1995). This may, in turn, yield more accurate results with respect to the link between maternal attachment and drug use, thus explaining discrepant results.

Given the extant research showing an indirect link between maternal stress and agency of self, it is surprising that the hypothesized relation between maternal agency of self and maternal stress level was not supported in our study. One possible explanation for our findings is that mothers lacking agency may lack introspection, or rather the ability to examine their own thoughts and feelings, in turn causing them to have a biased perception of themselves, and to respond to questionnaires pertaining to their stress level inaccurately. This insufficient capacity for introspection may constitute a developmental characteristic of young mothers. Moreover, mothers lacking agency may represent a group of mothers who are more depressed, relative to mothers with agency, because of the sense of helplessness and victimization they may experience, thereby further biasing their reports of maternal stress. In fact, according to West and George (2002), preoccupied individuals typically demonstrate no agency of self and are particularly at risk for depression.

Furthermore, mothers lacking agency may express and regulate their emotions through externalizing rather than more internalizing behavior. This idea is supported by the associations found in our study between insecurity and antisocial behavior and may be related to deficient mentalization and reflective abilities (as discussed earlier), and potential lack of empathy. Hence, young mothers may represent a group of individuals

different from adolescents who are not parents, in that they may regulate emotions in dissimilar ways (through externalizing behavior). This may be partly explained by the complexity and uniqueness of the contextual variables surrounding young mothers (i.e. lack of social support, poverty, stressful life circumstances, etc.) as demonstrated in Tarabulsky and colleagues' study (2005).

4.1.3. Breakdown of Children's Attachment Patterns

As predicted, an overrepresentation of insecure (52.5%) Strange Situation attachment classifications was found in our sample of preschool/early-school aged children (aged 4-7) of adolescent mothers, compared with normative samples, in which the secure classifications are predominant. Also, as anticipated, higher prevalence rates than those obtained in non-clinical samples, with respect to disorganized attachment classifications, were found in our study (47.6%). Prevalence rates of insecure and disorganized attachment classifications of 38% and 15%, respectively, were found in normative samples, by van IJzendoorn and colleagues (1999) in their meta-analysis. In addition, our findings substantiate attachment distributions obtained in studies examining adolescent mother samples, with respect to the distribution of the child secure/insecure attachment classifications, but differ, with respect to the disorganized/organized child attachment classifications, in that the prevalence of disorganized classifications in these studies is significantly lower.

Based on four adolescent samples (Broussard, 1995; Hubbs-Tait et al., 1996; Spieker & Bensley, 1994; Ward & Carlson, 1995), prevalence rates of insecure and disorganized attachment classifications, of 60% and 23%, respectively, were found by van IJzendoorn and colleagues (1999) in their meta-analysis. Moreover, recently, Keller

and colleagues (2005) found similar results in their study examining a sample of preschool-aged children of adolescent mothers to those obtained in the samples of adolescent mothers included in the meta-analysis (insecure: 58% and disorganized:25%). In another study, examining a sample of adolescent mothers, not included in van IJzendoorn and colleagues' meta-analysis (1999), conducted by Levine and Tuber (1991), the distributions differed from ours in that 62% of infants were rated insecure and 19% disorganized.

The distributions obtained in our study, with respect to the disorganized attachment classification, resemble more closely those obtained using clinical samples. For instance, van IJzendoorn and colleagues (1999) in their meta-analysis, reported that in groups of mothers with alcohol and drug abuse (n=144), and of maltreating parents (n=165), 43 and 48%, respectively, of infants were classified disorganized. Adolescent mothers have been shown to lack parenting skills, in part due to deficits in their emotional development (Furstenberg et al., 1989). They have also been found to respond to their babies with less sensitivity and affection, to view their children as more difficult, and to experience greater parenting stress (Miller et al., 1996; Sommer et al., 1993), than older mothers. These difficulties impede the development of secure attachment in these mothers' offspring, and may explain the overrepresentation of insecure, and more specifically disorganized attachment, found in our sample of adolescent mothers, compared with normative samples. If mothers are struggling to regulate their own emotions, it may be difficult for them to foster their child's emotional regulation by being sufficiently attentive and available, and responsive to his/her needs, and in turn provide the child with a secure base and promote his/her exploration of the environment. In fact,

according to Thompson (1994), children learn about emotion regulation, mainly in the context of their relationship with their parent.

In addition, a greater prevalence of insecure and disorganized attachment classifications in our sample of adolescent mothers may be explained by the fact that teenage mothers are more likely to be abusive with their children than their older counterparts. In fact, studies have found adolescent mothers to be particularly at risk for abusive behavior (e.g., Black, Heyman, & Slep, 2001). Abusive behavior exhibited by the attachment figure, may instill fear in his/her child, which has been found to be associated with the development of a disorganized attachment pattern (Barnett, Ganiban, & Cicchetti, 1999; Carlson, 1998; Lyons-Ruth and Jacobvitz, 1999). In line with Bowlby's theory (1969/1982), when a child is exposed to a frightening attachment figure, his/her attachment and fear systems are simultaneously activated, thereby presenting the child with opposing tendencies that cannot be resolved, namely the tendencies to simultaneously approach and avoid the caregiver (Cassidy & Mohr, 2001). Similarly, in our study, mothers with an Unresolved state of mind may frighten their children, in turn, leading to insecurity, particularly disorganization.

Hence, the fact that the prevalence rate of mothers with an unresolved status is higher in our sample than in other samples of adolescent mothers, may explain the discrepancy found between our findings and those obtained examining other adolescent mother-infant samples, with respect to the prevalence of disorganized attachment classifications. Similarly, the fact that the group of mothers who show none to low agency (representative of insecurity) is overrepresented in our sample, may explain the higher proportion of disorganized attachment classifications. Indeed, an association was

found between helplessness in mothers and controlling attachment in children in middle childhood (George & Solomon, 1996).

Another explanation for the above-mentioned divergence is that the adolescent mother-child samples included in the above-cited studies were comprised of infants, not preschool/early-school aged children as in our study. Disorganization may be more apparent and established as a pattern in older children. Perhaps, over time, children's defenses become stronger and their cognitive capacity may be increasingly overwhelmed by their state of fear (Moss, Cyr, Bureau, Tarabulsky, & Dubois-Comtois, 2005). In turn, these children may develop a disorganized/controlling attachment with their mother, perhaps in response to their mother's overwhelming frightening behaviors or to their stronger defenses.

Furthermore, an explanation for the similarity observed between our findings and those obtained in studies examining clinical samples, with respect to the disorganized classification, may be that as mentioned above, mothers in our sample may represent a group with higher levels of unresolved states of mind, lower levels of agency of self, antisocial traits, and early maltreatment, relative to other adolescent mothers, and may, in turn, be at greater risk for abusive and frightening behavior with their children, thus potentially accounting for the greater prevalence of disorganized attachment in our sample.

4.1.4. Mother and Child Attachment Correspondence

In line with our hypothesis, we found a significant correspondence between mothers' attachment representations (agency of self: security/insecurity) and her preschooler's attachment classification (secure/insecure). Our results showed that secure

children are more likely than insecure children to have mothers who show higher levels of security as assessed with the agency of self scale of the AAP, whereas insecure children are more likely to have mothers who show insecurity. These findings corroborate several studies that have found high correspondence between mother and infant attachment (Ainsworth & Eichberg, 1991; Grossman et al., 1988; Main et al., 1985; Main & Goldwyn, 1984; van IJzendoorn, 1995). They also corroborate studies examining adolescent mother samples and their infants that have demonstrated a correspondence between adolescents' mental representations of their attachment relationships and their offspring's patterns of attachment (Tarabulsky et al., 2005; Ward & Carlson, 1995;), as well as one study conducted with a normative sample of mothers and their preschool-aged children, that also found a high correspondence (Bélineau et al., 2002). In addition, at a descriptive level, the majority of insecure mothers and children in our sample have respectively, low levels of agency and unresolved attachments, and disorganized models of attachment. Thus, the correspondence found between maternal and child attachment substantiates the results obtained in a recent study conducted by Lyons-Ruth and colleagues (2003), in which Hostile-Helpless maternal states of mind were found to be related to infant insecurity, more specifically disorganization at 18 months of age, as well as those obtained by George and Solomon (1996) demonstrating a relation between helplessness in mothers and controlling attachment in children in middle childhood. Therefore, our findings are consistent with attachment theory, which posits that parental mental representations of their own attachment relationships have an impact on the quality of attachment that will be established between the mother and child (Cassidy, 1994; Main et al., 1985).

As discussed above, according to West and George (2002), an absence of agency of self is analogous to the cognitive concept of ‘helplessness’, and insecure individuals, specifically, preoccupied individuals, typically demonstrate no agency of self, and are particularly at risk for depression. Research has demonstrated an association between maternal depression and both caregiving behavior and insecurity in the child. Research has shown that maternal depressive symptoms are associated with negative parenting behaviors (Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986; Downey & Coyne, 1990; Lyons-Ruth et al., 1993). More specifically, depressed mothers have been found to be less contingently responsive, more disengaged, and more negative during dyadic interactions with their infants, who, in turn, are also less positive and more negative (Campbell, Cohn, & Meyers, 1995; DeMulder & Radke-Yarrow, 1991; Field, 1992; Field, Healy, Goldstein, Perry, Bendell, Schanberg, Zimmerman, & Kuhn, 1988). In addition, studies have found that mothers with greater psychological health provide their infants with higher-quality care (Belsky, 1984; Gelfand & Teti, 1990), and their infants are more securely attached to them (Belsky & Isabella, 1988; Benn, 1986; Ricks, 1985). Studies have also shown that mothers who are clinically depressed engage in more intrusive/hostile and detached/unresponsive styles of caregiving (Gelfand & Teti, 1990), and their infants are more likely to be insecurely attached to them (Gaensbauer, Harmon, Cytryn, & McKnew, 1984; Hipwell, Goossens, Melhuish, & Kumar, 2000; Radke-Yarrow, 1991; Seifer, Sameroff, Dickstein, Keitner, & Miller, 1996; Tarabulsky et al., 2005; Teti et al., 1995).

Interestingly, the latter findings indirectly corroborate our results, in that mothers lacking agency reported a higher level of antisocial traits, relative to mothers with

agency. These traits may have been manifested/expressed through their interactions with their children, and may have promoted the development of insecurity in the child. For instance, feeling helpless, mothers lacking agency may not have the capacity to handle stressful situations in which their children are in distress and seek their care/attention, potentially leading them to withdraw or mask their emotions, and not appropriately respond to their children's needs, thereby potentially resulting in the development of insecurity in the child.

4.1.5. Relations between Mother-Child Interactions, and both Maternal and Child Attachment

The hypothesized relations between mother-child interaction patterns and both maternal and child attachment classifications were not supported by our findings. Disparate from our expectation that communication patterns of secure children and mothers would be more open, synchronous, and reciprocal than those of insecure children, our findings showed that both secure and insecure children and their mothers did not significantly differ from one another with respect to interaction patterns. Previous studies have, for the most part, concentrated on parental behaviors without taking into account child behavior in interaction with maternal behavior. In other words, they have not examined mother-child interactions *per se*, that is, the relational exchange between mother and child (Culp, Culp, Osofsky, & Osofsky, 1991; Madigan et al., 2006; Tarabulsky et al., 2005; Ward & Carlson, 1995). For instance, disrupted maternal behavior has been examined and has been found to mediate the relation between parental unresolved states of mind and infant disorganization in both low- and high-risk samples.

(e.g., Goldberg, Benoit, Blokland, & Madigan, 2003; Lyons-Ruth et al., 1999; Madigan, Ladd, & Goldberg, 2003; Madigan et al., 2006).

One explanation for our unpredicted findings is the nature of our sample. A large proportion of our sample was comprised of disorganized children and unresolved mothers. Given that atypical parenting behavior, particularly frightening behavior, has been found to mediate the link between unresolved and disorganized attachment classifications, the aspects of the interactions measured in our study may not have accurately portrayed actual interactions as the measure used did not capture maternal frightening behaviors. In fact, sensitivity was not found to predict insecurity in a sample in which disorganization was the main insecure classification (True et al., 2001). Also, unresolved status has not been found to predict maternal sensitivity (Lyons-Ruth et al., 1999; Schuengel et al., 1999).

Another explanation for our lack of significant findings is that the task that was used in this study was structured and cognitive in nature involving a precise cognitive goal. The nature of the task may have directed the dyad's attention to the activity at hand, rather than to their relationship, and may have impeded expression of the affective aspect of the mother-child relationship. Previous studies which have found associations between mother-child interaction and attachment have used more unstructured tasks (e.g., Moss et al., 1998). Indeed, it has been highlighted by several researchers that not all measures of maternal interactive behavior have been found to be associated with infant attachment security (e.g., Atkinson et al., 2000; Raval et al., 2001).

The affective nature of the relationship may prove to be particularly important in the assessment of mother-child interactions in a high-risk sample of adolescent mothers.

and children, potentially struggling with emotional regulation, as according to several authors, styles of affect regulation are entrenched in dyadic interchanges (Cassidy, 1994, Thompson, 1994). According to Silvan Tomkins' affect theory (1962/1963: as cited in Magai, 1999), parents act as influential agents of their children's development of emotion skills and affect regulation, via their expressed thoughts about affect, displayed affective behavior, and responsiveness to their children's affect. Several studies support this theory (Cohn & Tronick, 1983; Haviland & Lelwica, 1987). In addition, Magai (1999) argues that early relational experiences of an affective quality are the basis on which emotion traits and attachment styles are formed. Moreover, research has demonstrated a relation between parental attachment style, and both parental emotion regulation styles and parental information-processing biases related to affect (e.g., Dozier & Kobak, 1992). Hence, it is evident that affect is an imperative element to consider and assess when examining the quality of mother-child interactions.

Another factor to consider is that the majority of our disorganized children were controlling-caregivers, whose interactions often appear to be "pseudo-secure" in that their strategy is to maintain a positive atmosphere in the dyad to heighten maternal positive affect (Moss et al., 2004). In a structured context, the interactive difficulties of these children (lack of reciprocity, open emotional expression) may have been even harder to detect. Conducting both structured and unstructured tasks in different contexts (laboratory, home) would have been ideal, but due to time and budgetary restraints, was unfortunately impossible.

In summary, the cognitive nature of the interaction task may not have been conducive to affect expression. An affect-oriented task like that used by Thompson,

Laible, & Ontai (2003) in their study examining preschoolers, or an unstructured task where there are no rules and no specific goals to achieve, may better promote affective expression and, in turn, a more accurate picture of the quality of the dyads' interactions, and, in turn, be related to mother and child attachment, which are predominantly based on affect. Future studies should examine the relation between both maternal and child attachment, and mother-child interactions, using structured and unstructured tasks, particularly affect-oriented tasks, in a variety of contexts. Also, future studies should use measures assessing dyadic interchange rather than solely parenting behaviors (e.g., sensitivity/responsiveness) in samples of adolescent mothers and preschool-aged children.

4.1.6. Maternal Attachment and Maternal Callous-Unemotional Traits

As expected, a relation was found between antisocial traits (callous-unemotional traits) and maternal agency of self. Mothers with lower levels of agency of self (representative of insecurity) had significantly higher levels of callous-unemotional antisocial traits than did mothers showing higher levels of agency of self (representative of security). This is the first study to specifically examine the relation between the callous-unemotional dimension of the Antisocial Process Screening Device (Frick & Hare, 2001; APSD), and maternal states of mind. These findings are consistent with research that has demonstrated associations between unresolved and dismissing states of mind (insecure states of mind) and antisocial behavior (Allen et al., 1996), antisocial personality disorder, and self-reported antisocial personality traits (Rosenstein & Horowitz, 1996).

According to attachment theory, internal working models of the self, others, and relationships, all of which are rooted in early experiences with attachment figures, influence expectations one has about future social relationships, and provide the basis for the nature of these relationships, thereby influencing the quality of the child's primary attachments (Bowlby, 1973). In line with this theory, a mother with an insecure state of mind and callous-unemotional traits, may have negative expectations about her relationship with her child, consequently leading to a misinterpretation of her child's signals, and, in turn, adversely impacting the nature of her interactions with her child, potentially leading to the development of insecurity in the child. In fact, differences in maternal perceptions of child affect have been shown to be related to differences in maternal interactive behavior, as well as to differences in child attachment patterns (see Goldberg, 2000 for a review). Moreover, Meins, Fernyhough, Fradley, and Tuckey (2001) found an association between mothers' appropriate mind-related comments and infant secure attachment.

Agency of self is one of three variables that allows for the assessment of a core element of attachment theory, namely the manner in which an individual behaves in relationships when his/her attachment system is activated, and specifies the extent to which a story character is depicted as integrated and capable of action (George and West, 2001). Mothers with lower levels of agency of self (representative of insecurity) portray story characters as being poorly integrated and lacking the capacity to act. These are elements characteristic of hostile/helpless states of mind, which may be potentially expressed to their child through antisocial behaviors, given that they report having higher levels of antisocial traits. Hence, the group of mothers with none to low agency of self

(representative of insecure mothers) may represent a group of mothers with helpless/hostile states of mind. Future studies should examine the relation between hostile/helpless state of minds and callous-unemotional traits.

According to George and West (2001), security as measured by the AAP is the capacity to use attachment by resorting to internal or external resources (internalized secure base, or haven of safety), and attachment figures, to resolve distress. Conversely, characterizing the AAP stories of unresolved individuals are the absence of the manifestation of the capacity to act, internalized secure base, or haven of safety. The Hostile/Helpless coding system denotes the presence of a pervasive unintegrated state of mind with respect to attachment. At the core of the system is the process in which the individual fails to integrate globally negative appraisals of the caregiver and of the self with other elements of his/her thinking about attachment. The system denotes the degree to which the individual has unconsciously identified with an aggressive or helpless-fearful caregiver (Lyons-Ruth et al., 2003). Hence, the latter demonstrates how the group of mothers with low levels of agency of self (representative of insecure mothers) may represent a group of mothers with helpless/hostile state of mind classifications, which may perhaps be manifested to their child via antisocial behaviors, given their higher levels of antisocial traits.

4.1.7. Maternal Callous-Unemotional Traits and Child Attachment

The hypothesized relation between maternal callous-unemotional traits and child attachment security/insecurity was supported. Children with insecure attachment were found to have mothers with significantly higher levels of callous-unemotional traits than did children with a secure attachment. Research has not yet examined the specific

association between maternal antisocial traits and child attachment. However, prior studies suggest that parental antisocial history is a significant risk factor for negative parenting behaviors (e.g., Caspi & Moffitt, 1995; Dishion et al., 1995; Quinton et al., 1993), which, in turn, are related to child attachment insecurity (Lyons-Ruth et al., 1991). For instance, Lyons-Ruth and colleagues (1991) found that hostile and intrusive caregiving was related to development of disorganized attachment, and DeWolff and van IJzendoorn (1997), in a meta-analysis, found maternal sensitivity to be a significant variable in the prediction of child security. Moreover, research has demonstrated a relation between coercive parenting and parental antisocial behavior (e.g., Johnson et al., 2001; Patterson et al., 2000; Verlaan & Schwartzman, 2002). More specifically, links between maternal sensitivity and maternal conduct disorder (Cassidy et al., 1996), a history of maternal aggression (Serbin et al., 1991), and maternal antisocial personality disorder (Hans et al., 1999), have been found.

Hostile, intrusive, insensitive, and unresponsive caregiving may elicit hostility, fear, and helplessness in the child, all of which impede the development of a secure mother-child attachment relationship. In fact, lack of parental warmth, which is a characteristic callous-unemotional trait, has been associated with increased hostile-intrusive behavior toward the infant (Lyons-Ruth et al., 1989). In addition, maternal negative-intrusive behavior has been shown to be associated with disorganized-insecure forms of infant attachment behavior (Lyons-Ruth et al., 1999a; 1999b). Lyons-Ruth and colleagues (2003) found an Hostile/Helpless state of mind to be related to maternal disrupted communication and to infant disorganization.

According to Bowlby (1980), the development of self-regulatory capacities in the child is partly a function of maternal responsiveness. In theory, a child who has received less contingent caregiving might behave more disruptively in order to acquire parental attention (Greenberg & Speltz, 1988). Such interaction patterns may impede the development of self-regulatory abilities in the child and, in turn, lead to attachment insecurity. The child may internalize, in his/her internal representations of attachment relationships, a mother who is inadequate to respond to his /her needs, thereby potentially leading to insecurity in the child.

Furthermore, given the seeming importance of affect in the assessment of the quality of mother-child interactions, the use of the callous-unemotional dimension of the APSD, which captures the affective interpersonal aspects of psychopathy (Frick, O'Brien, Wootton, & McBurnett, 1994), may allow for a more accurate portrayal of the affective nature of the mother-child relationship. As supported by the findings, maternal callous-unemotional traits play an influential role in the development of child security, potentially via negative maternal parenting practices and dyadic exchanges. In fact, as shown above, maternal antisociality has been found to be related to negative parenting behaviors.

4.1.8. Maternal Callous-Unemotional Traits as a Mediator in Attachment

Transmission

In line with our hypothesis, a mediation model for the prediction of child attachment security/insecurity was supported. In our study, maternal callous-unemotional traits acted as a mediator in the relation between maternal and child attachment security. These results substantiate attachment theory, which emphasizes the influential role of

parental mental representations of their own attachment relationships on the patterning and quality of interactions with their child, which in turn, determine, in large part, the quality of attachment bond (Cassidy, 1994; Main et al., 1985). Although studies have established the role of parent-child interactions in transmitting attachment patterns from parent to child (Fonagy et al., 1991; Pederson & Moran, 1996; Tarabulsky et al., 2005; van IJzendoorn, 1995), research has not yet examined the role of more generally, maternal antisocial traits, and more specifically, maternal callous-unemotional traits in the transmission of attachment security/insecurity.

One explanation for our findings is that, in a high-risk sample of young mothers and their preschool-aged children, maternal callous-unemotional traits may play an influential role in transmitting maternal representations of attachment relationships, or potentially maternal hostile/helpless states of mind, to children (19% of the variance is explained in our study by callous-unemotional traits compared to 23% explained in van IJzendoorn's study examining sensitivity, 1995). Research has found that adolescent motherhood is associated with a history of conduct problems in girls (e.g., Jaffee, 2002; Wakschlag et al., 2000; Woodward & Fergusson, 1999). Maternal antisocial traits may be expressed via mother's states of mind through interactions with their children, as maternal antisocial traits have been found to be associated with maternal insecure states of mind and negative parenting practices, which hypothetically adversely impact mother-child interactions, and, in turn, lead to the development of insecurity in the child.

In addition, one may expect mothers with antisocial traits to select partners with antisocial traits (assortative mating), thus exacerbating the negative parenting behaviors exhibited towards the child, potentially further contributing to the development of

insecurity in the child. In fact, a history of antisocial behavior in men has been found to be related to less-positive co-parental relationships and to higher levels of paternal parenting stress (Florsheim, Moore, Zollinger, MacDonald, Sumida, 1999), as well as to the development of socioemotional problems in their child (Jaffee, Moffitt, Caspi, & Taylor, 2003). Also, research suggests that when hostile conflict characterizes a co-parental relationship, there is a greater likelihood for parents to engage in negative parenting practices (e.g., Belsky et al., 1991; Emery & Tuer, 1993; Erel & Burman, 1995). Furthermore, studies have demonstrated a link between a conflictual parental relationship and the development of insecure attachment patterns (Davies, Harold, Goeke-Morey, & Cummings, 2002; Owen & Cox, 1997). The hostile and conflictual parental relationship may act as a model of relationships for the child, and in this way lead the child to engage in similar hostile and conflictual behaviors and relationships, representative of insecure patterns of attachment.

4.2. Associations between Maternal Resolved/Unresolved Attachment and Child Organized/Disorganized Attachment, and the Development of Externalizing Behavior Problems

4.2.1. Contextual Variables (Maternal Stress and Child Age) and Child Externalizing Behavior Problems

As anticipated, our findings reveal an association between maternal stress and child externalizing behavior problems. Our results are in line with other studies examining these variables (Deater-Deckard et al., 1996; Johnston & Pelham, 1990; Webster-Stratton, 1988). Maternal stress level as measured using the Parenting Stress Index has been found to be associated with more controlling, and less stimulating and

positive behaviors exhibited by mothers towards their children, relative to mothers reporting a lower stress level (Miller et al., 1996; Uno et al., 1998). As mentioned earlier, these negative parenting behaviors have been found to be related to adverse mother-child interactions, and in turn to disorganized attachment, which has been found to be associated with externalizing behavior problems in children (see below for references).

Our findings revealing an association between child age and externalizing behavior problems have been previously well-documented in the literature (e.g., Patterson, Shaw, Snyder, & Yoerger, 2005; Snyder, Reid, & Patterson, 2003). Recently, Patterson and colleagues (2005) found a decline in disruptive and aggressive behavior in children during the preschool and early elementary school years. Researchers have attributed this decline to neuropsychological maturation, as well as to peer, school, and family socialization (Snyder et al., 2003). More specifically, several studies have demonstrated a link between antisocial behavior and deficits in language-based verbal skills and 'executive' or self-control functions (Lynam & Henry, 2001). The literature demonstrating an increase in verbal and indirect aggressions, as children grow older (e.g., Cairns, Cairns, Neckerman, Ferguson, & Gariepy, 1989) implies that the majority of children learn alternative ways to handle conflicts (Tremblay & Nagin, 2005), through peer and school socialization, or neuropsychological maturation, as briefly discussed above.

4.2.2. Maternal and Child Attachment Organization/Disorganization, and Child Externalizing Behavior Problems

Our expectation that children classified as disorganized would have higher levels of externalizing behavior problems than children classified as organized, was supported.

Our findings are in line with substantial research that has demonstrated a link between infant disorganization and externalizing behavior problems (e.g., Carlson, 1998; Lyons-Ruth et al., 1997; Shaw et al., 1996), and between disorganized preschool or school-age attachment and externalizing behavior problems (Greenberg et al., 1991; Moss et al., 1998, 2004; Solomon, George, & DeJong, 1995; Speltz et al., 1990). More specifically, a relation between attachment disorganization and aggressive behaviors in children has been shown (Lyons-Ruth et al., 1993; Shaw et al., 1996). An association was also found between infant disorganization and preschool behavior problems in a sample of adolescent mothers and their children (Hubbs-Tait et al., 1994).

The majority of the disorganized sample in our study was in a controlling, role-reversed relationship with their mothers. Controlling children may manifest more externalizing behavior problems than other children because they receive little support from their caregivers in regulating their own emotions and, at the same time, attempt to take the role of the parent, attending to her needs and attempting to regulate her emotions (Moss et al., 2004). They may, in turn, develop anxiety, anger, and resentment. These negative feelings may manifest themselves through hostile and aggressive behaviors (externalizing behaviors) at home or with other children. The manifestation of externalizing behavior problems is an expression of emotional dysregulation that may have been mainly learned in the parent-child relationship, and that has been found to be associated with disorganized attachment (e.g., Greenberg et al., 1991; Moss et al., 1998, 2004; Solomon et al., 1995; Speltz et al., 1990).

Our anticipation that mothers with an unresolved attachment classification would differ from those with a resolved classification, with respect to externalizing behavior

problems in their children, was not supported. According to Main and Hesse (1990), unresolved mothers may manifest frightening behavior in the presence of their children, which may be linked to child disorganization (Main & Hesse, 1990), which, in turn, has been found to be associated with the development of externalizing behavior problems (e.g., Carlson, 1998; Greenberg et al., 1991; Lyons-Ruth et al., 1997; Moss et al., 1998, 2004). Different from this theory, our findings suggest that other maternal psychosocial variables, possibly maternal depression and hostility, may constitute more important variables in the prediction of externalizing behavior problems, than maternal representations of attachment relationships or may interact with other such variables.

In fact, in Lyons-Ruth and colleagues' (1993) study, infant security of attachment, particularly disorganization, serious maternal psychosocial problems, particularly the presence of chronic depressive symptoms, and maternal hostile-intrusive behavior toward the infant at home were found to predict deviant levels of hostile aggression towards peers in kindergarten. Moreover, 56% of infants classified as disorganized, having a mother with psychosocial problems, showed deviant levels of hostile behavior in kindergarten, compared with 25% and 5% respectively, of low-income children with only one or none of these risk factors. Furthermore, in Routh and colleagues' (1995) study examining children with conduct disorder, and their mothers, psychosocial factors, namely maternal psychopathology, socioeconomic deprivation, social support, and size of family, were combined to create a composite psychosocial risk index, which was found to contribute independently of attachment status, to the prediction of follow-up child behaviour scores (after parent training courses). Unfortunately, studies examining

specific associations between maternal attachment and child externalizing behavior problems have yet to be conducted.

4.2.3. Moderating Role of Maternal Attachment in the Relation between Child Attachment and Externalizing Behavior Problems

As predicted, the results obtained from the moderation analyses suggest an interaction between mother and child organized/disorganized attachment in the prediction of child externalizing behavior problems. In other words, when there is transmission of a disorganized attachment pattern from mother to child, there is greater risk for the development of externalizing behavior problems in children. More precisely, children classified "Disorganized" who have mothers who are "Disorganized" with respect to attachment, were shown to have higher levels of externalizing problems than dyads with divergent attachment classifications (children categorized as "Organized" who have mothers who are "Unresolved" and children categorized as "Disorganized" who have mothers who are "Resolved"). These findings are consistent with our hypothesis and are innovative in that our study is the first to examine and support a moderation model indicating an interactive link between mother and child attachment in the prediction of behavior problems. They are indirectly supported by studies that have found associations between maternal unresolved states of mind, maternal frightened, frightening, or dissociative behavior (Main & Hesse, 1990; Schuengel et al., 1999), and disorganized child attachment, and between child disorganization and behavior problems.

Perhaps the unresolved mothers who transmit their representations of attachment relationships to their children represent a particular group of mothers who are at greater risk for negative caregiving behaviors, which, in turn, put their children at risk for

developing externalizing behavior problems. More specifically, mothers with unresolved states of mind who transmit their attachment representations to their children may represent a group of helpless or hostile moms, who may engage in passive, helpless, unresponsive, or hostile, intrusive, aggressive interactions with their children, thereby negatively impacting the internal working models of self and others developing in their children, and leading them to develop externalizing behavior problems. The helpless, passive, and unresponsive behaviors manifested by the unresolved mothers may result in feelings of resentment, anger, or unworthiness in the child during infancy, which may transform into externalizing behaviors (e.g. aggressiveness), at preschool age (discussed above). Moreover, the hostile, intrusive, and aggressive behavior of the mother may be modeled to her child. Children may learn from their mothers that being aggressive is an efficient means of handling interpersonal conflicts (e.g., Cappell & Heiner, 1990; Covell, Grusec, & King, 1995). In fact, several studies have demonstrated an association between negative and coercive maternal behaviors and aggressive behavior in children (e.g., Dodge, Pettit, & Bates, 1994; Eddy, Leve, & Fagot, 2001; McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996).

Conversely, mothers who do not transmit their disorganized attachment may have received psychotherapy (they may have sought professional help), or may be more resilient due to the positive contextual variables surrounding them, such as social support and a stable and secure partner or alternative caregiver (e.g. teacher, babysitter, grandmother). They may provide healthier parenting than mothers with Unresolved states of mind who do transmit their disorganized attachment pattern to their child. Healthier parenting may protect the child from developing a disorganized attachment, and, in turn,

lead to the manifestation of fewer externalizing behavior problems. Similarly, children of Unresolved mothers who do not become disorganized may be exposed to protective factors, such as an alternative secure and stable caregiver and social support, that may directly support the development of a more secure internal working model and better social adaptation. Negative contextual variables may promote the transmission of a disorganized attachment pattern from mother to child, thereby potentially presenting a greater risk for the development of externalizing behavior problems in children.

Moreover, inconsistent with our hypothesis, our moderational analyses revealed that children categorized as "Organized" who have mothers who are "Resolved" with respect to attachment have higher levels of externalizing behavior problems than dyads composed of children categorized as "Organized" who have mothers who are "Unresolved". This result is surprising as disorganized models of attachment have been shown to be associated with externalizing behavior problems (Greenberg et al., 1991; Moss et al., 2004; Solomon et al., 1995). Moreover, research has found that maternal psychosocial problems (depressive symptoms and maternal hostility), independent of infant disorganized status, predict hostile-aggressive behavior in preschool-aged children, and that the effects of disorganized attachment status and maternal psychosocial problems (possible consequences of unresolved maternal traumatic experiences) are additive; they are not interactive (Lyons-Ruth et al., 1993).

One explanation for our findings is that organized children of disorganized mothers may have developed an organized attachment relationship with another principal caregiver, which may be more powerful than that developed with his/her mother. For instance, a partner, a grandmother, or other alternative caretaker, may have acted as an

important attachment figure for the child, and may, in turn, have had a positive impact on his/her adaptation. In fact, studies have shown that the process through which attachment relationships are formed between toddlers and alternative caretakers (repeated interactions) resembles that through which mother-child attachment is developed (e.g., Raikes, 1993). According to the literature, children who have experienced relationship difficulties in the past with their main caregivers, seem to have the capacity to reorganize their attachment representations or form new attachment relationships with caretakers, if they are exposed to and interact repeatedly with sensitive caretakers (Howes & Segal, 1993, Howes & Ritchie, 1998). Therefore, children who have developed an organized attachment relationship with another principal caregiver may not manifest externalizing behavior problems.

4.3. Research Contributions

Inherent in this study are several research contributions. Results obtained in this study offer support for the construct validity of the Cassidy-Marvin (1992) and the Main and Cassidy (1988) attachment classification systems as measures of attachment during the preschool and the early school-age years. More specifically, they show that differences in maternal psychosocial state (callous-unemotional traits) are associated with differences in child attachment classifications (secure vs. insecure), and that maternal reports of child externalizing behavior problems are related to child attachment classifications (organized vs. disorganized).

Our study is innovative in being one of the few studies to examine attachment processes with a sample of adolescent mothers and their preschool/early school-aged children. In addition, it is innovative in its examination of associations between maternal

and child attachment measures. Studies examining the transmission of attachment and relations between child attachment and externalizing behavior problems in adolescent mother-child samples have, for the most part, examined infants, have never used the Adult Attachment Projective, and have rarely used the Preschool Attachment Classification System of attachment.

Moreover, our study is the first to examine the relation between maternal agency of self and child security/insecurity, and to demonstrate the mediating role of maternal callous-unemotional traits in the relation between maternal agency of self and child attachment. Also, our study is unique in that it is the first to test for and find interaction effects between maternal and child attachment, in the prediction of child externalizing behavior problems.

Finally, our study highlights the importance of designing and implementing intervention programs for adolescent mother-child dyads. Our findings suggest that these programs should target maternal representations of attachment relationships, namely lack of agency and unresolved states of mind, maternal parenting stress, as well as maternal antisocial traits. Possible intervention strategies include promoting maternal emotional self-regulation and empathy for others. Our results suggest that these factors put children at risk for the development of insecurity and externalizing behavior problems.

4.4. Limitations of study

Limitations of our study warrant mention. First, the correlational design of our study, and the fact that measures were concurrently examined did not allow for causal interpretations, thereby rendering it impossible to determine the directionality of the associations found in our study.

Second, only a few of the many variables that have been found to predict child attachment security, and the development of behavior problems in children of adolescent mothers, were examined in our study. Many other potentially significant variables, such as maternal sensitivity, maternal social support (particularly from the child's father, mother's live-in partner, child's maternal grandmother), antisocial characteristics of mother's live-in partner, maternal relationship satisfaction, and maternal mental health (e.g., depressive symptomatology), were not considered in our study, and merit further exploration. As shown in recent studies (Tarabulsky et al., 2005), when attempting to account for mechanisms involved in the development of attachment security and externalizing problems, the complexity of family ecology, as well as maternal sensitivity needs to be taken into account.

Third, our study was limited to mother reports of child behavior problems. Owing to the potential bias inherent in mother reports (Bank, Duncan, Patterson, & Reid, 1993), acquiring additional teacher or other caregiver reports may have allowed for a more accurate portrayal of the level of child behavior problems. Mothers who are depressed and antisocial may portray their children's behaviors in a biased manner. Also, studies have demonstrated discrepancies in reports of child behavior problems across different reporters (Grietens, Onghena, Prinzie, Gadeyne, Van Assche, Ghesquière, & Hellinckx, 2004; Vitaro, Gagnon, & Tremblay, 1991; Moss, Smolla, Cyr, Dubois-Comtois, Mazzarello, & Berthiaume, 2006).

Fourth, although our sample was not a clinical sample, at least some of the participants were seen over a considerable amount of time at a Children's Hospital. It is

possible that this association may have influenced certain outcome variables in undetermined ways.

Fifth, since the sample size used in our study is small, our results should be replicated with a larger sample size. Because of the small sample size, we had to regroup the mothers and children into two groups: secure versus insecure and organized versus disorganized, and were unable to do comparisons based on four attachment classifications.

Sixth, given that the children's ages in our study ranged from 4-7, our findings can only be generalized to developmental periods, namely the preschool and school-age periods, but not to specific age points.

Seventh, for the majority of the mothers, the AAP was administered about 1-2 years following the administration of most of the other measures in the study (for the others the AAP was administered concurrently). Although the stability of AAP classifications has not yet been examined, the stability of AAI classifications over both a 2-month and 3-month period, as well as over 1.5 years, has been demonstrated (respectively, Bakermans-Kranenburg and van IJzendoorn, 1993; Sagi et al., 1994; and Benoit & Parker, 1994). Given the strong inter-judge reliability and convergent agreement between the AAI and the AAP (George and West, 2001) one may infer that the codes yielded by the AAP are stable. Moreover, the AAP is a relatively new measure that requires further validation with normative, adolescent mother, and clinical samples as empirical validation for the AAP has predominantly been provided by George and West (2001) and is based on a subsample of mothers of Failure to Thrive Infants and their low-risk controls, a subsample from the Calgary Depression Study, and a subsample

including participants recruited from both community and clinical populations. Also, the AAP was adapted to the French language in our study, therefore there may be errors in measurement. In addition, for fifteen AAP protocols from our sample that were randomly selected and evaluated by independent coders, certified by Carol George, the inter-judge reliability for the four major attachment groups was found to be low. Nonetheless, discussions between the coders and Carol George allowed for the resolution of discrepancies in the codes assigned to the protocols. Further training may have resulted in better inter-judge reliability but was not feasible due to financial and time restraints.

Eighth, due to the voluntary participation of people in our study, the results obtained are not necessarily representative of adolescent mother-child dyads in general. Due to the fact that our sample was recruited on a voluntary basis, a high percentage of mothers who agreed to participate may constitute a group who are at particularly high-risk, who feel helpless, and are seeking help from us. Hence, the external validity of our study may be compromised by the recruitment method used. The external validity may also be questioned due to a selection bias as the participation rate was low (34%). Unfortunately, it was impossible to compare our sample with the potential participants (those included in the list who did not participate) due to the unavailability of information about them.

Finally, the retrospective nature of the questionnaire (mothers reported on behaviors or personality traits present in their childhood or adolescence) used to assess maternal callous-unemotional traits, represents a limitation. This questionnaire is based on the mother's perception which could be biased and inaccurate, perhaps because of her

representations of herself, and social desirability or memory lapses, thereby potentially misrepresenting the actual level of maternal callous-unemotional traits.

4.5. Future Directions

Given that studies have not focused on the agency of self dimension in the prediction of child security/insecurity, future studies should examine this dimension, in order to provide further validation of the agency of self dimension of the AAP.

Future studies should also examine associations between maternal hostile/helpless state of mind, caregiving behavior, and the development of child insecurity and behavior problems in samples of adolescent mothers. Adolescent mothers have been shown to be particularly at risk for the frequent exhibition of controlling, inadequate, intrusive, and aggressive behaviors towards their children (e.g., Culp et al., 1991; Luster & Okagaki, 1993; Paquette, Bigras, Zoccolillo, Tremblay, Labelle, & Azar, 2001). Such behaviors have been found to promote negative behaviors in the child, namely passive resistance, and demonstrations of anger and defiant opposition (e.g., Kuczynski & Kochanska, 1995; Rothbaum & Crockenberg, 1995). Helpless/hostile states of mind may be reflected in such negative behaviors towards their children.

Furthermore, studies have for the most part focused on the role of mothers in the transmission of attachment and in the prediction of behavior problems. In an evolving society in which mothers are increasingly involved in the work force and fathers are playing a more active role in the upbringing of children, research should examine the role of fathers in the transmission of attachment, and in the prediction of child externalizing behavior problems, especially since previous research has shown that fathers' attachment histories may be a better predictor of children's externalized behaviors than mothers'

histories (Cowan et al., 1996). Moreover, future studies should examine whether mothers with antisocial traits select partners who are also antisocial, as doing so can exacerbate the negativity of the general caregiving environment, and in turn increase the likelihood of the development of insecurity in the child, and of externalizing behavior problems. In fact, several studies have demonstrated that boys who become adolescent fathers are much more likely to have a history of antisocial behavior problems, when compared with their peers (Kessler et al., 1997; Ketterlinus, Lamb, & Nitz, 1994). Hence, future studies should examine the role of fathers in the prediction of child attachment and externalizing behavior problems.

In addition, future studies should examine the role of maternal depression in the development of child externalizing behavior problems. Maternal insecurity, and more specifically unresolved attachment, may be linked to maternal depression. Indeed, maternal depression has been found to be a significant risk factor for insecure attachment in the child, particularly disorganized attachment (Lyons-Ruth & Jacobvitz, 1999), which in turn has been found to be associated with the development of externalizing behavior problems in the child.

Family psychosocial correlates of maternal states of mind and preschool attachment, such as ecological variables (e.g., depression, social support, marital satisfaction, maternal psychiatric state, child or parental history of abuse or neglect), should also be explored in future studies.

Lastly, given that childhood aggression and withdrawal have been found to predict adolescent pregnancy, early parenthood, and environmental risk for the next generation (Serbin et al., 1991), it is imperative that intervention programs be designed

and implemented for children exhibiting behavior problems, in order to impede the transmission of adversity to the next generation. Also, preventive intervention programs focusing on the 'agency of self' construct of attachment and on maternal callous-unemotional traits in young mothers should be considered and applied as our study has found them to be important factors in the prediction of insecurity in the child.

CONCLUSION

The results obtained in our study are innovative in that they underline novel associations and models that warrant further exploration and validation. Our findings provide support for the validation of two recently developed measures of attachment, namely the Adult Attachment Projective (AAP) and the Preschool Attachment Classification System (PACS). More specifically, our results underscore the empirical utility of both the "agency of self" construct, a newly examined concept, in the prediction of child attachment security/insecurity, and of the Antisocial Process Screening Device, measuring maternal antisocial traits, in relation to maternal agency of self and child attachment. Given the limited extant research on these measures, further validation of these measures is needed.

In addition, the observed mediating role of maternal antisocial traits in the relation between maternal agency of self and child attachment is a novel finding, and thus worthy of note and of further examination. Moreover, the empirically supported moderation model is also ground-breaking, in that our study is the first to explore interaction effects between maternal and child attachment, in the prediction of child externalizing behavior problems. Our results are preliminary and are based on a limited adolescent mother-preschool/early school-aged child sample. However, given the demonstrated adverse effects associated with teenage parenthood on mothers' and on their children's psychosocial and developmental well-being, results obtained in our study offer original and interesting avenues for future research.

Furthermore, in highlighting the importance of maternal representations of attachment in the prediction of child security/insecurity and of both maternal representations and child attachment in the prediction of child externalizing behavior problems, our results have significant clinical implications. Although there is accumulating research on attachment relationships, a gap remains in our understanding of the application of attachment theory to clinical work, as publications directly devoted to the value of attachment theory and research for clinical work are quite limited. In fact, only recently have efforts been made to promote the bridging of the theory/empirical-practice gap (e.g., Steele and Baradon, 2004; Koren-Karie, Oppenheim, and Getzler-Yosef, 2004).

Steele and Baradon (2004) discuss the utility of a safe therapeutic context for promoting the integration of childhood experiences in mothers whose childhood experiences have remained unresolved and unintegrated, thereby eliciting empathic identification with their child and impeding attachment transmission by altering parenting behaviors. Koren-Karie and colleagues (2004) address the contribution of maternal insightfulness, namely the meanings mothers attribute to their children's behavior, feelings, and motivations that are related to the mother's internal representational world and to mother-child dialogues. They emphasize the importance of implementing interventions for mothers who have experienced childhood traumas, that are aimed at mother's personal issues and functioning as parents. Moreover, Lyons-Ruth and Spielman (2004) enumerated treatment guidelines for mothers presenting with a helpless/hostile profile, namely establishing security in the therapeutic relationship, creating room for openness to a wider range of affective experience, differentiating

attachment needs from other emotional communications of the baby, and developing new models of balancing the needs of self and baby.

In addition, Oppenheim, Goldsmith, and Koren-Karie (2004) conducted a study comprised of 32 preschoolers referred to a therapeutic preschool program for behavioral and emotional problems, and their mothers. They found a decrease in behavior problems in children of mothers who went from noninsightfulness before treatment to insightfulness after treatment, and an increase in problems in children of mothers who maintained an uninsightful stance. The authors interpret their results as showing the clinical usefulness of promoting an increase in mothers' insightfulness and empathic understanding of their children's inner world as a method of increasing children's sense of security and reducing behavior problems. van IJzendoorn's meta-analysis (1995) substantiates these studies in demonstrating the greater efficacy of interventions in changing parental insensitivity than in changing children's attachment insecurity, as well as the greater efficacy of short-term preventive interventions in comparison with longer, more intensive interventions. The results suggest that preventive intervention programs targeting parental insensitivity be designed and implemented.

In summary, the above articles pertaining to clinical applications of attachment theory and research underscore the following treatment guidelines, namely promoting: 1) the integration of childhood experiences in mothers; 2) maternal empathic identification with their child; 3) the alteration of parenting behaviors (e.g. parental insensitivity) and mother-child interactions; 4) maternal insightfulness; and 5) preventive interventions. In conclusion, given: 1) the high prevalence rates of none to low agency of self in mothers (insecurity), potentially reflective of helpless profiles, of maternal unresolved attachment

classifications, and of child insecurity and disorganization found in our sample, relative to normative-low-risk samples; 2) the correspondence obtained between maternal agency of self and child security; 3) the mediating role of antisocial maternal traits in the relation between mother and child attachment, potentially reflected in negative parenting behaviors and mother-child interactions; and finally 4) the interaction effects between maternal and child attachment in the prediction of externalizing behavior problems, it is imperative to design and implement preventive programs targeting adolescent mother-child dyads.

In fact, developing preventive intervention programs adapted to adolescent mothers, entailing an assessment of their representations of attachment at the end of their pregnancy, just prior to birth, may allow one to identify mothers who are at risk for negative parenting behaviors and interactions with their children, and in turn follow them up. Immediately following child birth, treatment principally targeting mothers' attributions of their children's behaviors, emotions, and motivations, and in turn potentially altering their parenting behaviors and promoting security in their child, and decreasing the development of externalizing behavior problems, should unquestionably be provided to adolescent mothers.

APPENDIX A
CONSENT FORM

The development of children of young mothers: The importance of the mother-child relationship

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CONSENT FORM

The purpose of this study is to explore the role of maternal psychosocial factors and mother-child relationships in childrens' development. It will be conducted in a laboratory located at Université du Québec à Montréal. Participants are required to complete a number of short questionnaires related to their past and present life. In addition, there will be a session whereby the mothers will interact with their children and a developmental assessment of the child. The entire process should take between two and three hours to complete. We will also need for you to identify and give us permission to contact someone who knows you and your child in order for that person to complete questionnaires and give us some information about you. The information obtained will enable us to determine the role of maternal factors and mother-child interactions in childrens' development, therefore it will be very beneficial. Hence, we request your collaboration.

All personal information will be kept strictly confidential. However, should you inform us that you are currently harming or intend to harm either yourself, your child or someone else, we are obligated by law to inform your medical care provider of the situation, who will then discuss the situation with you. Moreover, although we will have to record your name in order to obtain relevant information from the medical files, it will not be mentioned in the research and any nominal information will be removed so that you cannot be identified. The results of the study may be published but the participant's name will be kept confidential. Participation in the study is strictly voluntary. A decision not to participate in the study will in no way affect the quality of care you receive at the Montreal Children's Hospital.

Should we find a significant emotional problem or delay in development of your child we will help you find appropriate care. Should we find significant emotional problems that you want help with we will help you find mental health care.

I understand that there are no adverse effects, nor risks associated with this study. If any of the questions or procedures cause distress, research assistants will be available to discuss this with me. I am aware that I am free to refuse any questions, to not fill out the questionnaires or to withdraw from the study at any time.

Dr. Ellen Moss and Dr. Mark Zoccolillo are primarily responsible for the study. If you have any questions or comments about the study, please feel free to contact them. Dr. Moss can be reached at 987-3000 ext. 8525 and Dr. Zoccolillo can be reached

at (514) 412-4493.

I have read the consent form, been given the opportunity to ask questions and my questions have been answered to my satisfaction.

DATE: _____ SIGNED: _____

This consent form has been read and signed in my presence by _____
who has informed me that he/she has carefully considered and understood each point in the
consent form.

DATE: _____ SIGNED: _____

I will conform to the above-mentioned guidelines.

DATE: _____ SIGNED: _____

APPENDIX B SOCIO-DEMOGRAPHIC QUESTIONNAIRE

SOCIO-DEMOGRAPHIC QUESTIONNAIRE

Date of visit _____ / _____ / _____
 (year) (month) (day)

Participant information

NAME _____

DATE OF BIRTH _____ / _____ / _____ AGE _____
 (year) (month) (day)

PLACE OF BIRTH _____

ETHNIC BACKGROUND _____

CIVIL STATUS	1. Single	2. Married	3. Separated, divorced	4.
Remarried				
	5. Common Law Union	6. Widowed		

CURRENT ADDRESS

PLACE OF RESIDENCE _____

POSTAL CODE _____

PHONE () _____

CURRENT LIVING ARRANGEMENT

- | | |
|--|-----------------------------|
| 1. Family of origin | 7. Apartment with roommates |
| 2. Adoptive family | 8. Room |
| 3. Relatives | 9. Youth Center |
| 4. Foster family | 10. Group home |
| 5. Apartment with spouse (boyfriend, etc.) | 11. Friend's place |
| 6. Apartment alone | 12. other |
-

EDUCATION

- | | | |
|-------------------|------------------|-----------------------|
| 1. Primary school | 4. High school 3 | 7. CEGEP |
| 2. High school 1 | 5. High school 4 | 8. College/University |
| 3. High school 2 | 6. High school 5 | |

ARE YOU CURRENTLY A STUDENT ? Yes _____ No _____

ORIGIN OF CURRENT REVENUE

- | | |
|--|---------------------------|
| 1. Work (specify _____) | 5. Family, spouse |
| 2. Welfare (Social Assistance) | 6. Others (specify _____) |
| 3. Unemployment benefits | |
| 4. Government financial aid for students | |

NUMBER OF CHILDREN BORN FROM YOU _____

NUMBER OF CHILDREN LIVING WITH YOU _____

IF YOU HAVE CHILDREN WHO ARE NOT CURRENTLY LIVING WITH YOU,
WHAT IS THEIR PLACE OF RESIDENCE ?

- | | |
|---|--------------------------|
| 1. With the natural father | 5. Youth Center |
| 2. With foster parents | 6. Adoptive parents |
| 3. With grand-parents | 7. Deceased |
| 4. With other relatives (specify _____) | 8. Other (specify _____) |

ARE YOU USING CONTRACEPTIVES ?

1. Yes, regularly 2. Yes, occasionally 3. Never

IF SO, WHICH ONES ?

- | | |
|--|--|
| 1. Pill | 7. Diaphragm |
| 2. Cervical Cap | 8. Contraceptive Sponge |
| 3. Condom | 9. Rhythm, Calendar |
| 4. Sterilization | 10. Estimation of fertility period
(calendar) |
| 5. Emergency Pill (Morning after pill) | 11. Other (specify _____) |
| 6. Vaginal Ring | |

Information about your spouse

AGE _____ IS HE LIVING WITH YOU ? Yes _____ No _____

CIVIL STATUS

1. Single
2. Married with you
3. Married with other
4. Divorced or separated
5. Widowed

OCCUPATION

1. Work (specify _____)
2. Retired or invalid
3. Unemployed
4. Welfare recipient
5. Other (specify _____)

IF NOT CURRENTLY WORKING, WHAT WAS HIS LAST EMPLOYMENT ?

IS YOUR SPOUSE THE FATHER OF YOUR CHILDREN ?

Yes _____ No _____

IF NOT, DO YOU KNOW WHO THE NATURAL FATHER IS ?

Yes _____ No _____

AGE OF THE NATURAL FATHER _____

WHAT IS YOUR ESTIMATION OF THE NUMBER OF PARTNERS YOU HAD IN THE LAST 5 YEARS ?

WHAT IS THE DURATION OF THE LONGEST RELATIONSHIP YOU HAD ?

HOW OFTEN DOES THE NATURAL FATHER SEEES HIS CHILDREN ?

1. Never
2. Rarely (few times a year)
3. Occasionnally (few times a month)
4. Regularly (few times a week)
5. Lives with child

HOW WOULD YOU DESCRIBE THE RELATIONSHIP BETWEEN THE NATURAL FATHER AND HIS CHILDREN ?

1. Poor
2. Fair
3. Good
4. Very good
5. No relation

REGARDING THE NATURAL FATHER OF YOUR CHILDREN

1. Before the end of high school (secondary 5), did he more than once swipe things from stores or from other children, or steal from his parents or from anyone else?

Yes _____ No _____ Don't know _____

2. Before the end of high school (secondary 5), did he often get into fights that he had started?

Yes _____ No _____ Don't know _____

3. Before the end of high school (secondary 5), has he ever been in trouble with the police, been arrested or involved with Social Services (DYP-Youth Protection) because of his misbehavior?

Yes _____ No _____ Don't know _____

4. Before the end of high school (secondary 5), has he ever been expelled or suspended from school?

Yes _____ No _____ Don't know _____

5. Since leaving or finishing school, has he been fired from more than one job?

Yes _____ No _____ Don't know _____

6. Since leaving or finishing school, has he ever been arrested for anything other than traffic violations?

Yes _____ No _____ Don't know _____

7. Since leaving or finishing school, has he more than once gotten into fights, assaulted or physically hurt anyone, including yourself?

Yes _____ No _____ Don't know _____

8. Since leaving or finishing school, has he ever been in trouble at work, with the police or with his family, or had a car accident because of drugs or alcohol?

Yes _____ No _____ Don't know _____

REGARDING YOUR PARTNERS (for the last 5 years)

1. Before the end of high school (secondary 5), have they more than once swipe things from stores or from other children, or steal from their parents or from anyone else?

Yes _____ No _____ Don't know _____

Which partner ? _____

2. Before the end of high school (secondary 5), did they often get into fights that they had started?

Yes _____ No _____ Don't know _____

Which partner ? _____

3. Before the end of high school (secondary 5), have they ever been in trouble with the police, been arrested or involved with Social Services (DYP-Youth Protection) because of their misbehavior?

Yes _____ No _____ Don't know _____

Which partner ? _____

4. Before the end of high school (secondary 5), have they ever been expelled or suspended from school?

Yes _____ No _____ Don't know _____

Which partner ? _____

5. Since leaving or finishing school, have they been fired from more than one job?

Yes _____ No _____ Don't know _____

Which partner ? _____

6. Since leaving or finishing school, have they ever been arrested for anything other than traffic violations?

Yes _____ No _____ Don't know _____

Which partner ? _____

7. Since leaving or finishing school, have they more than once gotten into fights, assaulted or physically hurt anyone, including yourself?

Yes _____ No _____ Don't know _____

Which partner ? _____

8. Since leaving or finishing school, have they ever been in trouble at work, with the police or with their family, or had a car accident because of drugs or alcohol?

Yes _____ No _____ Don't know _____

Which partner ? _____

General health information

DO YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) SUFFER FROM A PHYSICAL HANDICAP (e.g., PARALYSIS) ?

Yes _____ No _____

If yes, what handicap

Who suffers from it

DO YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) SUFFER FROM A CHRONIC ILLNESS ?

Yes _____ No _____

Who suffers from it

HAVE YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) EVER BEEN DIAGNOSED WITH A PSYCHIATRIC OR EMOTIONAL DISORDER ?

Yes _____ No _____

Who has been diagnosed

HAVE YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) EVER CONSULTED A MENTAL HEALTH PROFESSIONAL (e.g., PSYCHIATRIST, PSYCHOLOGIST, SOCIAL WORKER...) ?

Yes _____ No _____

Who has consulted

HOW OFTEN IN THE LAST 12 MONTHS HAS YOUR CHILD SEEN THE FOLLOWING SPECIALISTS

	Never	Rare	Occassionally	Regularly
Neurologist	_____	_____	_____	_____
Learning specialist	_____	_____	_____	_____
Psychiatrist	_____	_____	_____	_____
Psychologist	_____	_____	_____	_____
Social Worker	_____	_____	_____	_____
Family Doctor	_____	_____	_____	_____
Dentist	_____	_____	_____	_____

HAVE YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) EVER TRIED TO KILL YOURSELF (Successfully or not) ?

Yes _____ No _____

Who did

DO YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) HAVE SUBSTANCE ABUSE PROBLEMS (ALCOHOL, DRUGS, MEDICATION...) ?

Yes _____ No _____

Who has

HAVE YOU OR SOMEONE FROM YOUR FAMILY (CHILD, PARENTS, PARTNER, RELATIVES) EVER BEEN ARRESTED ?

Yes _____ No _____

Who has

Substance use

DURING THE LAST 12 MONTHS, HOW MANY TIMES HAVE YOU...

	Never	1-2	3-5	6-9	10-19	20-39	40+
1. Smoked cigarettes	1	2	3	4	5	6	7
2. Drank alcohol (e.g., beer, wine, liquor)	1	2	3	4	5	6	7
3. Smoked or eaten marijuana or haschish ("pot")	1	2	3	4	5	6	7
4. Taken other drugs	1	2	3	4	5	6	7
5. If you have taken other drugs than marijuana or haschish, please identify them in the following categories :							

_____ Psychedelics [LSD (acid), mescaline, peyote, PCP, mushrooms, etc.]

_____ Cocaine ["Coke", crack]

_____ Amphetamine [stimulants, speed, "bennies", excluding diet pills]

_____ Barbiturates [“downers”, sleeping pills, Seconal, Quaalude]

_____ Tranquilizers [Librium, Valium]

_____ Heroin [“smack”, “horse”, “skag”]

_____ Other narcotics [methadon, opium, morphine, codein, demerol]

_____ Inhalants [glue, liquid paper, spray, gas]

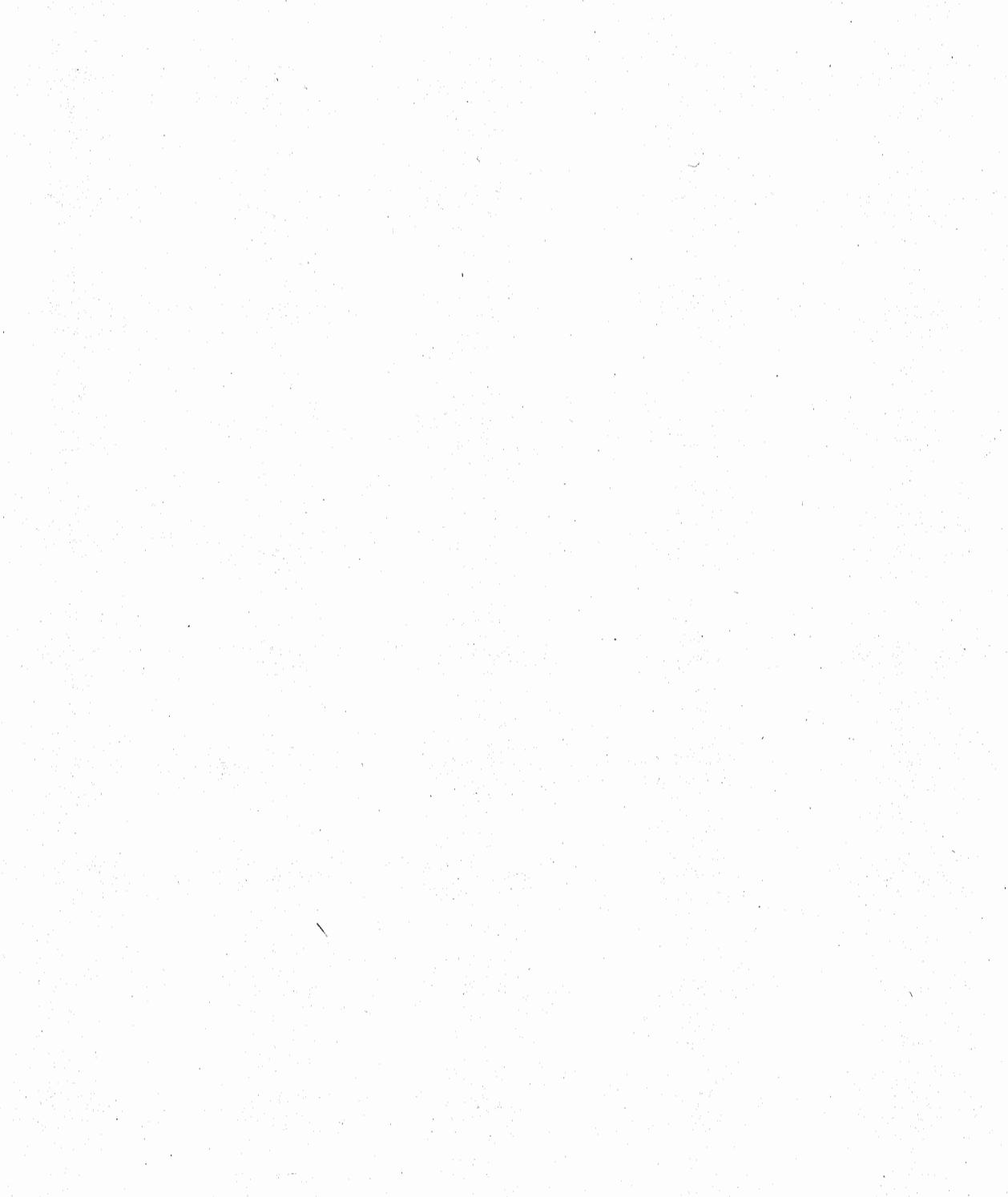
Information on social network

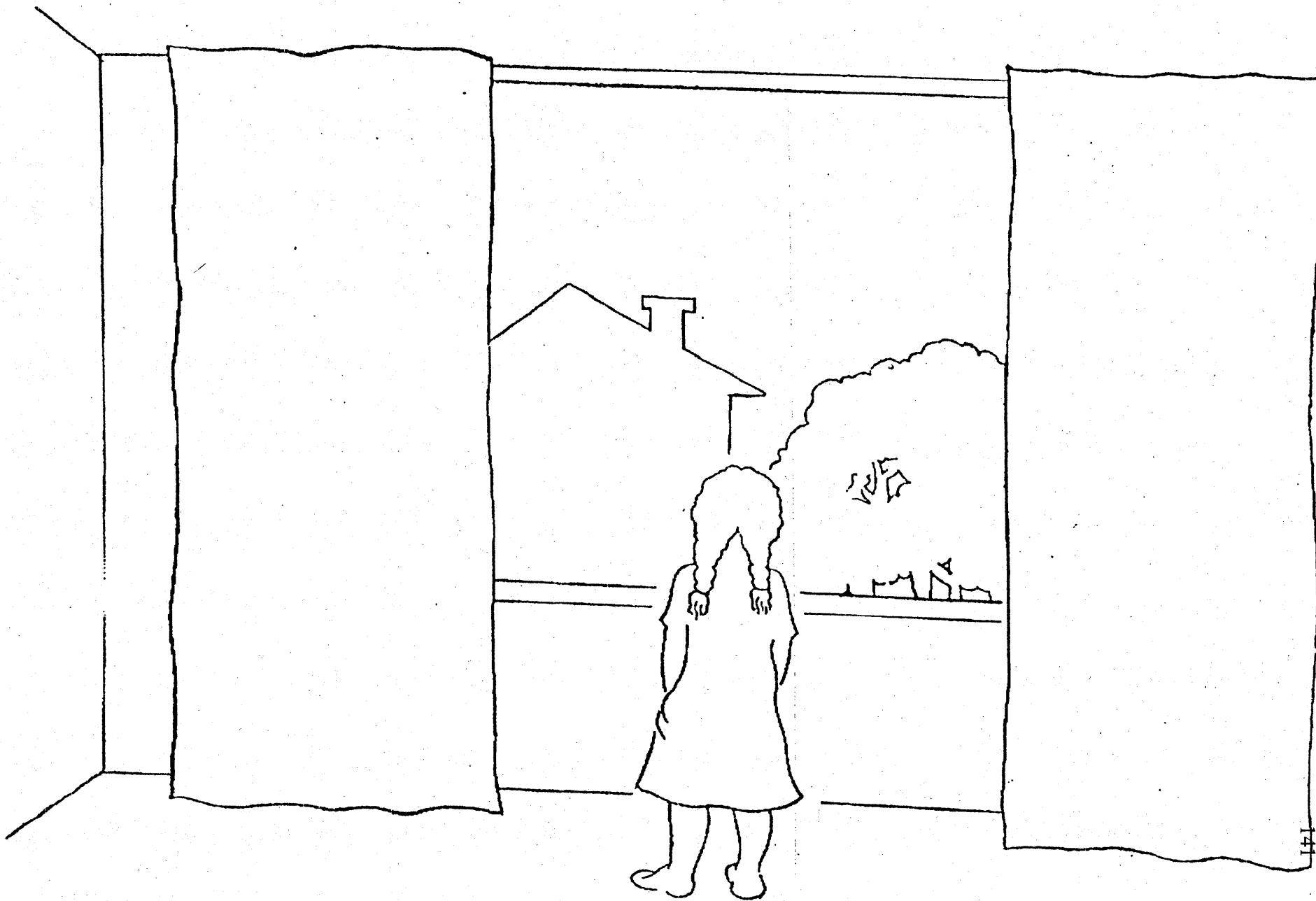
HOW OFTEN DO YOU SEE THE FOLLOWING PERSONS...

	Never	Rarely	Occasionnally	Regularly
1. Parents	_____	_____	_____	_____
2. Grandparents	_____	_____	_____	_____
3. Siblings	_____	_____	_____	_____
4. Relatives (cousins, uncles, etc.)	_____	_____	_____	_____
5. Friends	_____	_____	_____	_____
6. Others	_____	_____	_____	_____
Specify	_____	_____	_____	_____

IDENTIFY THE PEOPLE WHO FEEL THE CLOSEST TO OR WHO ARE THE
MOST IMPORTANT IN YOUR LIFE

APPENDIX C
EXAMPLE OF PICTURE USED FOR AAP





APPENDIX D
AAP CODING SUMMARY SHEET: ATTACHMENT PICTURES

AAP Coding Summary Sheet: Attachment Pictures

Subject ID _____ Rater _____ Date _____

Classification _____

<u>Dyadic</u>	<u>Personal Exp</u>	<u>Synchrony</u>	<u>Coherency</u>	<u>Ds</u>	<u>E</u>	<u>Seg</u>	<u>Agency</u>	<u>Personal Exp</u>	<u>Connected</u>	<u>Coherency</u>	<u>Ds</u>	<u>E</u>	<u>Seg</u>
Dept (3)						Window (2)							
Bed (5)						Bench (4)							
Ambul (6)						Cemetery (7)							
						Corner (8)							

Neutral scene not rated. Presentation order: Neutral, Window, Train, Bench, Bed, Ambulance, Cemetery, Corner

Decision Tree:

1. Sec vs. Insec (U, Ds, E)
 $2a = \frac{\text{Agency}}{\text{HOS}}$ $2b = \frac{2}{1} = \text{internalized secure base}$
 $2b = \frac{1}{1} = \text{capacity to act}$

Agency

0 = absent

Coherency

2 = high
1 = moderate
0 = incoherent

Synchrony

2 = synchrony
1 = failed reciprocity; functional
0 = no relationship

Connectedness

2 = connected
1 = not connected
0 = own activity

Ds = Deactivation; E = Cognitive Disconnection; Seg = Segregated Systems (mark if present). See defense coding sheet for details.
10/98 Version 93.2

APPENDIX E

SUMMARY OF AAP CODING DIMENSIONS

Table 2 Summary of AAP coding dimensions

Dimensions		Pictures coded	Definition
<i>Discourse dimensions</i>			
Personal experience	All	Story includes own life experience in response.	Present; Absent
Coherency	All	Degree of organization and integration in the story as a whole	3-point rating scale combining quality, quantity, relation, manner
<i>Content variables</i>			
Agency of Self	Alone	Designates degree to which story character is portrayed as integrated and capable of action.	Internalized Secure Base, Haven of Safety; Capacity to Act; No agency
Connectedness	Alone	Expression of desire to interact with others	Clear signs of a relationship in the story.
Synchrony	Dyadic	Characters' interactions are reciprocal and mutually engaging.	Relationship not possible (e.g. someone walks away, someone is dead); engaged in own activity Mutual, reciprocal engagement; Failed reciprocity; No relationship is acknowledged in the story.
<i>Defense variables</i>			
Deactivation	All	Evidence of deactivation and demobilization	Negative evaluation, Rejection, Social roles, Power, Stereotyped scripts, Achievement, Minimization, Nullification, Shutting down narrative, Distracting, Neutralizing, Demotion, Deactivating language

Continued.

Table 2 Continued

<i>Dimensions</i>	<i>Pictures coded</i>	<i>Definition</i>
Cognitive disconnection	All	Evidence of uncertainty, ambivalence, and preoccupation
Segregated systems	All	Evidence of being overwhelmed by attachment trauma

APPENDIX F

AAP DECISION RULES

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GEORGE AND WEST: ADULT ATTACHMENT PROJECTIVE

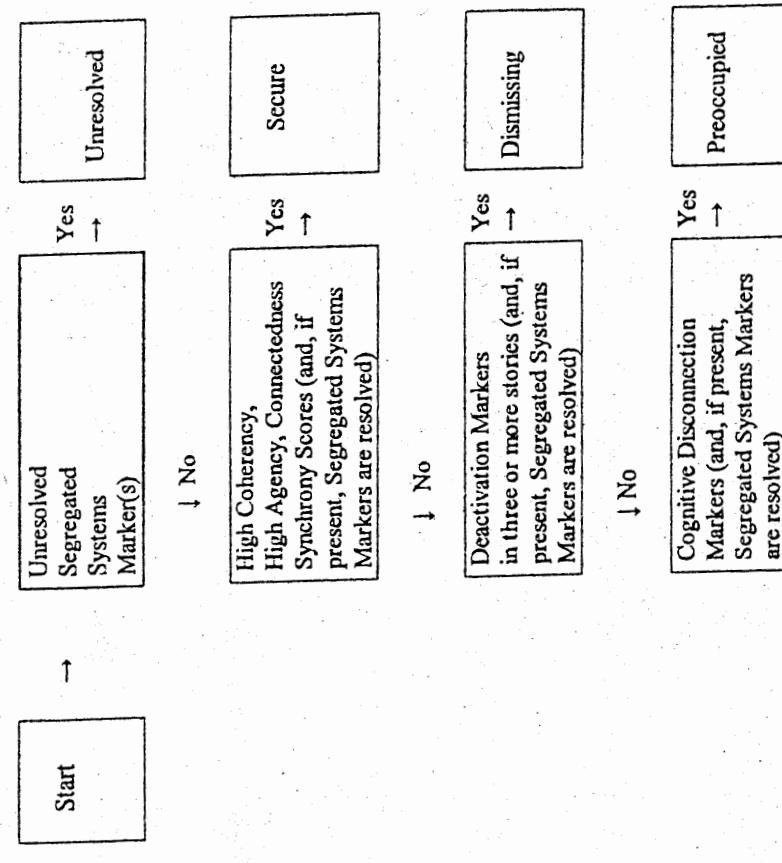


Figure 4 AAP decision rules

APPENDIX G
ANTISOCIAL PROCESS SCREENING DEVICE

APSD

Instructions : Please read each statement and decide how well it describes you *as you were in your adolescence and childhood*. Mark your answer by circling the appropriate number (0-2) for each statement. Do not leave any statement unrated.

	Not at all true	Sometimes true	Definitely true
In your childhood and adolescence...			
1. You blamed others for your mistakes.	0	1	2
2. You engaged in illegal activities.	0	1	2
3. You cared about how well you did at school / work.	0	1	2
4. You acted without thinking of the consequences.	0	1	2
5. Your emotions were shallow and "fake".	0	1	2
6. You lied easily and skillfully.	0	1	2
7. You were good at keeping promises.	0	1	2
8. You bragged a lot about your abilities, accomplishments, or possessions.	0	1	2

9. You got bored easily.	0	1	2
10. You used or "conned" other people to get what you wanted.	0	1	2
11. You teased or made fun of other people.	0	1	2
12. You felt bad or guilty when you did something wrong.	0	1	2
13. You did risky or dangerous things.	0	1	2
14. You acted charming and nice to get what you wanted.	0	1	2
15. You got angry when corrected or punished.	0	1	2
16. You thought you were better or more important than other people.	0	1	2
17. You did not plan ahead or you left things until the last minute.	0	1	2
18. You were concerned about the feelings of	0	1	2

others.

19. You hid your feelings or emotions from others.

0 1

2

20. You tended to keep the same friends.

0 1

2

APPENDIX H

CODING SYSTEM FOR MOTHER-CHILD INTERACTIONS

COORDINATION

1. LITTLE INTERACTION OR UNPRODUCTIVE INTERACTION	2.	3.	4. SOMETIMES IMBALANCED OR SOMETIMES UNCLEAR INTERACTION (Good enough)	5. SMOOTHLY ORGANIZED (Good)	6.	7. (Excellent)
<p>1.0 (-other-)</p> <ul style="list-style-type: none"> *No compensation for disruptions *Little flexibility *Seldom ready to begin and/or end activity at same time *Lacks smoothness in transitions 			<ul style="list-style-type: none"> *Disruptions addressed but delayed or not necessarily all resolved *Some attempts at negotiation evident *Activities sequenced about half of the time *Moderate fluidity 	<ul style="list-style-type: none"> *Disruptions addressed moderately well, smoothly *Clear negotiation *Naturally sequenced *Smooth continuity 		<ul style="list-style-type: none"> *Mostly all differences resolved
<p>1.1 (-a-)</p> <ul style="list-style-type: none"> *Disdain, avoidance, or withdrawal from initiations for contact *Unwillingness to engage verbally or physically *Dyad performs separate and unrelated activities *No interactive play 			<ul style="list-style-type: none"> *Moves toward contact may be inconsistent *No active ignoring of the other *Some synchronous activity level *Some evidence of play (open) or goal-directed activities (meal) 	<ul style="list-style-type: none"> *Reciprocity *Comments supporting organization 		<ul style="list-style-type: none"> *Synchrony, harmony
<p>1.2 (-c-)</p> <ul style="list-style-type: none"> *Abrupt physical move away *Forceful "NO" and withdrawal *Confusing activities *Intense friction for more than one minute *Interaction tense with friction unresolved 			<ul style="list-style-type: none"> *Sometimes awkward sharing of space *Some interaction evident *Tasks completed but may be unevenly paced *Disagreements mild 	<ul style="list-style-type: none"> *Gives appropriate space to each other *Attention giving and directing shared *Shared responsibilities *Good eye contact 		<ul style="list-style-type: none"> *Balance of who initiates/responds

COMMUNICATION

1. INCONSISTENT, INCONGRUENT	2.	3.	4. SOMETIMES INDIRECT OR ROUTINIZED	5. (Some of items listed in column 7 evident)	6. (More of items listed in column 7 evident)	7. CLEAR, DIRECT, MEANINGFUL (Most of items listed below evident)
<p>1.1 (-a-)</p> <ul style="list-style-type: none"> *Ignoring of messages *Reliance on non-verbal *Awkward silences *Conversation minimal and brief *Mostly distal modes of communication 			<ul style="list-style-type: none"> *Some missed messages *Some messages encoded in non-verbal actions *Some awkward silences *Messages not always acknowledged as received *Use of objects as mediators 			<ul style="list-style-type: none"> *Words and gestures clearly congruent *Silences are comfortable *Reflects back understanding of received messages
<p>1.2 (-c-)</p> <ul style="list-style-type: none"> *Unclear *Skewed patterns *Irrelevant talking 			<ul style="list-style-type: none"> *Sometimes clear messages but lacking in quality *Messages indirect at times 			<ul style="list-style-type: none"> *Messages clear *Messages direct *Balance of who does the talking *Checks explicitly with the other
<p>1.3 (-d-)</p> <ul style="list-style-type: none"> *Verbal/non-verbal incongruencies 			<ul style="list-style-type: none"> *Mother can explain either when, how, why? 			<ul style="list-style-type: none"> *Clarifications given when needed *Age appropriate content

APPROPRIATE ROLE ASSUMPTION

1.ROLE REVERSAL BEHAVIOURS	2.	3.	4. FUNCTIONAL CONTROL	5. AUTHENTICITY	6.	7.
<p>1.2 (c)</p> <ul style="list-style-type: none"> * Chaotic * Child uses fear, humiliation, as control agents * Oppositional shifts apparent * Gaze aversion apparent * Rigid pattern or laissez-faire 		* Laissez-faire	* Rigid pattern	* Flexible		* Parent offers choices
<p>1.3 (d)</p> <ul style="list-style-type: none"> * Adult abdicates parent role: <ul style="list-style-type: none"> - submissive - denigrates own position - plays "dumb" - does not offer any help or information - rewards "scene stealing" - focuses on own concerns * Child adopts inappropriate role: <ul style="list-style-type: none"> - child does much more controlling of the situation than does the adult - child is coercive or manipulative - instructive to adult - overly interested, solicitous or helpful with adult - responds to adult's need of approval or attention - persistent struggle for control 		<ul style="list-style-type: none"> * Adult assumes his/her role as a parent some of the time (evidence of #5 behaviours at some point) 	<ul style="list-style-type: none"> * Child able to return to child role after adult intervention * May see some evidence of control from child and mother - submissive 	<ul style="list-style-type: none"> * Adult assumes parent role some of the time: <ul style="list-style-type: none"> - able to set limits - helpful and informative - rewards desired behaviours - respects child's needs including those of independence or of reassurance - No role reversal between adult and child apparent - child permitted to share certain aspects of the situation some of the time - child talks about own experiences sometimes - child free to seek help sometimes 	<ul style="list-style-type: none"> * Adult assumes parent role more of the time: <ul style="list-style-type: none"> - able to set limits - helpful and informative - rewards desired behaviours - respects child's needs including those of independence or of reassurance - No role reversal between adult and child apparent - child permitted to share certain aspects of the situation more of the time - child talks about own experiences more than in #5 - child free to seek help more than in #5 	<ul style="list-style-type: none"> * Adult assumes parent role most of the time: <ul style="list-style-type: none"> - able to set limits - helpful and informative - rewards desired behaviours - respects child's needs including those of independence or of reassurance - No role reversal between adult and child apparent - child permitted to share certain aspects of the situation most of the time - child talks about own experiences often - child free to seek help as often as needed

<p>1.4 (u)</p> <ul style="list-style-type: none"> *Adult does much more controlling than is warranted for child's developmental level most of the time *Adult uses fear as control agent *Adult woos child for attention *Sexualizes interactions *Forces intimacy *Adult loses control when ignored by child *Adult too intimate and child is like an equal 			<ul style="list-style-type: none"> *Adult does somewhat more controlling than necessary at times *Adult uses language as regulator or control agent 	<ul style="list-style-type: none"> *Adult promotes shared control when appropriate *Adult uses suggestion to control *Adult can self-correct and self-regulate 			<ul style="list-style-type: none"> *Parent is adapted to child's developmental level (zone of proximal development).
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EMOTIONAL EXPRESSION

1. DISRUPTIVE EMOTIONAL EXPRESSION	2.	3.	4. MODERATE BALANCE OF EMOTIONAL EXPRESSION	5.	6.	7. AFFECTIVE EXPRESSION ENHANCES FLOW
<p>1.1 (-a)</p> <ul style="list-style-type: none"> *Difficulty with both expressing and responding *Little or no physical contact (blocking evident) *Extremely constricted emotionally *Physical posture implies inaccessibility 			<p>*Imbalance in quality of expressing emotions and responding noted at times</p> <ul style="list-style-type: none"> *Some physical contact evident *Evidence of both positive and negative expressions *Physical posture implies some accessibility 	<p>*Some evidence of items listed in column 7 but not all</p>	<p>*More evidence of items listed in column 7 but not all</p>	<p>*Emotional expression encouraged and always responded to</p> <ul style="list-style-type: none"> *Physical contact appears spontaneous and positive *Full range of emotions accepted *Physical posture implies openness emotionally
<p>1.2 (-c)</p> <ul style="list-style-type: none"> *Unexplained rapid changes of affect *Emotions expressed are incongruent with context "As if" quality prevails? *Rough words or actions predominate *Whining or negative voice tone prevails 			<p>*Emotions expressed related to situation part of the time</p> <ul style="list-style-type: none"> *Verbal and nonverbal emotion expression congruent part of the time 			<p>*Never rough or abrupt changes</p> <ul style="list-style-type: none"> *Emotions expressed related to situation most of the time *Verbal and nonverbal emotion expression congruent most of the time *Words for emotions used well <p>*Modulated, soft voices prevail</p>
<p>1.3 (-d)</p> <ul style="list-style-type: none"> *One emotion prevails or "floods" *Intense, over-charged emotionally, exaggerated 			<p>*Intensity or duration of emotion expressed may be somewhat unbalanced at times</p> <ul style="list-style-type: none"> *Emotions may be bland or not very obvious 			

RESPONSIVITY/SENSITIVITY

1. MISSED CUES	2.	3.	4. BASIC LEVEL OF RESPONSE	5.	6.	7. BALANCED RESPONSE PATTERN
				Some evidence of items listed in column 7 but to a lesser degree than that warranted by column 6	More evidence of items listed in column 7 but not all	Globally characterized by items listed below
1.0 (-other-) *Poor interpretation of cue			*Regards the other but sometimes doesn't gauge cue appropriately			*Evidence of ability to see other's perspective
1.1 (-a-) *Under involved *More than one instance of ignoring strong appeals *Distracted *Inhibited *Rejecting *Oblivious *Preoccupied *Indifferent			*Sometimes aloof *Responses evident but may be slow or somewhat mis-timed *Pays moderate attention			*Timely responses *Good attention to other *Accepting *Empathy
1.2 (-c-) *Responses abrupt or forceful *Unanticipated responses			*Responses are approximate *Sometimes spontaneous appearing responses			*Responses related to situation *Spontaneity and congruence evident
1.3 (-d-) *Over involved *Intrusive *Over responding *Frequent over-stimulation by mother		*Frequent unwanted physical contact	*Sometimes intrusive or controlling			*Accessible *Never intrusive *Well anticipated responses *Consistent
1.4 (-u-)? *Intrusive *Frequent over-stimulation by mother			*Either member cues/responds but may be some imbalance			*Balance of initiating and responding

TENSION/RELAXATION

1. TENSE, ANXIOUS	2.	3.	4. MODERATE ANXIETY	5. Some of items listed in column 7 evident but to a lesser degree than that warranted by column 6	6. More of items listed in column 7 evident but not all	7. OPEN, RELAXED
<p>*Nervous mannerisms (foot shaking, run-on voice, sing-song voice, exaggerations, repeated smoking, jittery hands, darting gazes, etc.)</p> <p>*Elevated activity level (unable to sit still, jumping up and down, moving frequently from one activity to another, over excited, etc.)</p> <p>*Loud, high pitched voice</p> <p>*Hyper-vigilant</p> <p>*Rapid, run-on speech</p> <p>*Search for approval</p> <p>*Persistent question asking/checking</p> <p>*Closed</p> <p>*Rigid</p> <p>*Anxious</p> <p>*Tense</p> <p>*Hidden messages</p>			<ul style="list-style-type: none"> *Some evidence of nervous mannerisms but not prevailing *At ease generally but shows differences between manner of handling free activity and structured activity *Some instances of awkwardness or discomfort in situations *May show awareness of being "watched" by video *Moderate openness *Silences appear uncomfortable 		<ul style="list-style-type: none"> *One partner may show mild anxiety 	<ul style="list-style-type: none"> *Gestures and postures are smooth and integrated *No anxiety evident on either part *Easy stepping out/homing in *At ease for whole taped event

MOOD

1. NEGATIVE (More than 25% of the time)	2. More evidence of items listed in column 1	3. Some evidence of items listed in column 1	4. MIXED QUALITY (Negative mood less than 10% of the time and positive mood less than 25% of the time)	5. (Positive mood more than 25% of the time)	6.	7. POSITIVE
*Exceptions to negative mood are infrequent and brief						*Exceptions to positive mood are infrequent and brief and related to something obvious and real
-Externalizing: *Anger *Annoyance *Frustration *Irritation *Sarcasm *Criticism *Sharpness						*Happiness *Liking *Encouragement *Cheerfulness *Supportive
-Internalizing: *Disappointment *Pessimism *Worry *Depression *Flat affect *Affect difficult to discern *Solemnity						*Surprise *Optimism *Worry free *Joy *Modulated affect *Affect readily discernable *Enthusiasm

ENJOYMENT

1. LITTLE PLEASURE	2.	3.	4. MODERATE INVOLVEMENT	5.	6.	7. ACCEPTANCE
1.0 (-other-) *Displeasure in contact *Low approval of child *Resistant for the most part			*Pleasure in contact evident at some point *Approval of child at some point *Some resistance evident	*Equally enjoyable; enjoyment evident on both parts		*Pleasure in contact most of the time *High approval and acceptance of child evident *Little or no resistance
1.1 (-a-) *No contact *Rebuffs contact attempts *Frequent or long duration of disinterest *Cold *Bored *Withholding			*Contact at some point *Accepts contact at least 50% of the time *Shows interest or engagement at least 50 % of the time *Warmth evident at some point *Enjoyment evident more by one partner *Involvement may lack feeling to some extent			*Contact? *Accepts contact more than 50% of the time *Long or frequent engagement in activity *Sustained warmth *Obvious pleasure in interacting; quiet pleasure or obvious delight *Empathic involvement
1.3 (-d-) *Persistent rejection			*May seem detached some of the time; moderate attention paid to the other			*Engagement clear in both words and gestures

OVERALL

1. POOR QUALITY	2.	3.	4. MODERATE QUALITY (Good enough)	5.	6.	7. HIGH QUALITY
<ul style="list-style-type: none"> *Characterized by fear or dependency -Internalizing *Basically not interested in the other, indifference *Centered on "self" *Appears preoccupied, inaccessible *No pleasure 			<ul style="list-style-type: none"> *Sometimes interested in the other *Balance of interaction *Appears accessible; moderately responsive *Enjoyment is neutral or positive about half the time 			<ul style="list-style-type: none"> *Authentic interest in the other *Relationship oriented *Continually responsive *Continuous enjoyment
<ul style="list-style-type: none"> -Externalizing *Much discord and conflict *Negativity or opposition *Unpleasant 			<ul style="list-style-type: none"> *Not smooth throughout but not rigid either *No evident problems *Positive atmosphere about half the time 			<ul style="list-style-type: none"> *Very harmonious, agreeable; allows for individual differences *Friendly, peaceful *Quality of interaction is high

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