

**THE ROLE OF ATTACHMENT AND AFFECT  
REGULATION IN AGGRESSIVE BEHAVIOUR:  
CONCURRENT AND PROSPECTIVE EFFECTS AMONG  
AT-RISK ADOLESCENTS**

by

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DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

In the  
Department of Psychology

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SIMON FRASER UNIVERSITY

Fall 2009

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## **ABSTRACT**

Insecure attachment and maladaptive affect regulation are linked to a host of negative outcomes, including aggressive behaviour. This study examined the relation between these two key developmental processes and adolescent aggression. Based on previous research, I hypothesized that attachment anxiety in girls and attachment avoidance in boys would be uniquely related to aggression concurrently as well as two years later. I further hypothesized that affect regulation would moderate these relationships. The participants consisted of 167 adolescent girls and boys at high risk for aggressive behaviour. Results revealed several gender specific patterns in support of the predicted relationships. Specifically, in girls, attachment anxiety was more strongly related to overt aggression than was attachment avoidance, both concurrently and at follow-up. Further, in girls, low affect regulation mediated the relation between attachment anxiety and concurrent overt aggression and moderated the relation between attachment anxiety and relational aggression at follow-up. In boys, on the other hand, attachment avoidance was more strongly related to relational aggression than was attachment anxiety at either time point; and attachment avoidance was also more strongly related to concurrent overt aggression. As predicted, affect regulation moderated the relation between attachment avoidance and relational aggression at follow-up. Implications of these findings for theory and interventions are discussed.

**Keywords: attachment; affect regulation; adolescence; aggression; high-risk**

## **ACKNOWLEDGEMENTS**

I would like to express my deepest appreciation to my supervisor, Dr. Marlene Moretti, for her guidance and mentorship throughout my training in the Ph.D. program. Without your expertise and unending patience and help, this dissertation would not have been possible.

I would also like to thank my committee members, Dr. Jodi Viljoen and Dr. Jeremy Carpendale for their invaluable guidance and assistance on this project. In addition, I would like to thank Dr. Ray Koopman for statistical consultation on earlier drafts.

Thanks are also extended to all the youth participants who openly shared their life stories, as well as all the undergraduate and graduate research assistants of the Adolescent Health Lab for their hard work and commitment to data collection.

I sincerely appreciate the support and patience of my family and friends throughout the years. A special thanks goes to my closest friends Maya, Albion, and Tomas – I would have had neither the drive nor the determination or ability to complete this journey without the continuing support and encouragement you had to offer.

My thanks also go to my parents, for supporting me in embarking on this adventure to follow my dreams, even though it took me far away from them. My only wish is that my father lived to see me progress along this exciting journey.

Finally, I would like to acknowledge the funding for this study, which was provided by the Canadian Institutes of Health Research (CIHR) New Emerging Team Grant awarded to Dr. Marlene Moretti (Grant #54020), and a Canadian Institutes of Health Research (CIHR) Professional Student Research Award, a Simon Fraser University Graduate Fellowship and a Simon Fraser University President's Research Stipend awarded to Ingrid Obsuth.

# TABLE OF CONTENTS

<b>Approval</b> .....	<b>ii</b>
<b>Abstract</b> .....	<b>iii</b>
<b>Acknowledgements</b> .....	<b>iv</b>
<b>Table of Contents</b> .....	<b>v</b>
<b>List of Figures</b> .....	<b>vi</b>
<b>List of Tables</b> .....	<b>vii</b>
<b>Introduction</b> .....	<b>1</b>
Attachment Theory .....	2
Attachment Classification .....	3
Attachment and Affect Regulation .....	4
Attachment, Affect Regulation, and Aggression .....	7
Attachment and Aggression.....	7
Gender and Attachment.....	10
Moderating Role of Affect Regulation .....	12
Aggression .....	15
Aggression during Adolescence .....	15
Types of Aggression .....	16
The Current Study .....	18
<b>Method</b> .....	<b>23</b>
Overview .....	23
Participants and Procedure .....	23
Treatment of Missing Data and Sample Descriptives .....	25
Measures.....	27
The Family Attachment Interview.....	27
The Affect Regulation Checklist.....	29
The Form-Function Aggression Measure .....	30
Analytical Procedure .....	32
<b>Results</b> .....	<b>34</b>
Preliminary Analyses .....	34
Descriptive Analyses and Zero Order Correlations .....	34
Attachment, Gender, and Aggression .....	41
Attachment, Affect Regulation, and Aggression .....	50
<b>Discussion</b> .....	<b>59</b>
Gender Differences in Attachment and Aggression.....	59
Gender Specific Relations between Attachment and Aggression.....	61
Attachment, Affect Regulation, and Aggression .....	62
Strengths of the Current Study and Clinical Implications.....	64
Limitations and Directions for Future Research.....	66

Conclusion.....	71
<b>Reference List.....</b>	<b>72</b>
<b>Appendices .....</b>	<b>85</b>
Appendix A - Consent Forms .....	86
Appendix B - Measures .....	90



## LIST OF FIGURES

<i>Figure 1.</i> Moderation Effect – Attachment Anxiety and Gender in Relation to Time 1 Overt Aggression .....	42
<i>Figure 2.</i> Moderation Effect – Attachment Anxiety and Gender in Relation to Time 1 Relational Aggression .....	44
<i>Figure 3.</i> Moderation Effect – Attachment Anxiety and Gender in Relation to Time 2 Relational Aggression .....	45
<i>Figure 4.</i> Moderation Effect – Attachment Avoidance and Gender in Relation to Time 1 Overt Aggression .....	46
<i>Figure 5.</i> Moderation Effect – Attachment Avoidance and Gender in Relation to Time 1 Relational Aggression .....	48
<i>Figure 6.</i> Moderation Effect – Attachment Avoidance and Gender in Relation to Time 2 Relational Aggression .....	49
<i>Figure 7.</i> Mediation Effect – Affect Control as a Mediator Between Attachment Anxiety and Time 1 Overt Aggression in Females .....	51
<i>Figure 8.</i> Moderation Effect – Attachment Anxiety and Affect Control in Relation to Time 2 Relational Aggression in Females.....	54
<i>Figure 9.</i> Moderation Effect – Attachment Avoidance and Affect Control in Relation to Time 2 Relational Aggression in Males.....	58

## LIST OF TABLES

<i>Table 1.</i> Efficiency of multiple imputations (%) .....	27
<i>Table 2.</i> Variable Means and Standard Deviations Across Location for Males and Females.....	35
<i>Table 3.</i> Variable Means and Standard Deviations Within and Across Gender at Time 1 and 2. ....	36
<i>Table 4.</i> Zero-order Correlations of Major Independent and Dependent Variables at Time 1 and 2. ....	40
<i>Table 5.</i> Zero-order Correlations of Major Independent and Dependent Variables for Males and Females at Time 1 and 2.....	41
<i>Table 6.</i> Regression Examining the Relation Between Attachment Anxiety, Gender and Time 1 Overt Aggression. ....	42
<i>Table 7.</i> Regression Examining the Relation Between Attachment Anxiety, Gender and Time 2 Overt Aggression. ....	43
<i>Table 8.</i> Regression Examining the Relation Between Attachment Anxiety, Gender and Time 1 Relational Aggression. ....	44
<i>Table 9.</i> Regression Examining the Relation Between Attachment Anxiety, Gender and Time 2 Relational Aggression. ....	45

<i>Table 10.</i> Regression Examining the Relation Between Attachment Avoidance, Gender and Time 1 Overt Aggression.....	46
<i>Table 11.</i> Regression Examining the Relation Between Attachment Avoidance, Gender and Time 2 Overt Aggression.....	47
<i>Table 12.</i> Regression Examining the Relation Between Attachment Avoidance, Gender and Time 1 Relational Aggression.....	48
<i>Table 13.</i> Regression Examining the Relation Between Attachment Avoidance, Gender and Time 2 Relational Aggression.....	49
<i>Table 14.</i> Regression Examining the Relation Between Attachment Anxiety, Affect Control and Time 1 Overt Aggression in Females.....	51
<i>Table 15.</i> Regression Examining the Relation Between Attachment Anxiety, Affect Control and Time 2 Overt Aggression in Females.....	52
<i>Table 16.</i> Regression Examining the Relation between Attachment Anxiety, Affect Control and Time 1 Relational Aggression in Females. ....	53
<i>Table 17.</i> Regression Examining the Relation between Attachment Anxiety, Affect Control and Time 2 Relational Aggression in Females. ....	53
<i>Table 18.</i> Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 1 Overt Aggression in Males. ....	56
<i>Table 19.</i> Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 2 Overt Aggression in Males. ....	56
<i>Table 20.</i> Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 1 Relational Aggression in Males. ....	57
<i>Table 21.</i> Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 2 Relational Aggression in Males. ....	57

## INTRODUCTION

Both attachment and affect regulation strategies develop and are shaped within the parent-child relationship. Depending on the quality of these relationships and interactions, children develop secure or insecure attachments (Bowlby, 1980) and adaptive or maladaptive affect regulation strategies (Thompson, 2001). Direct links between insecure attachment and a wide range of emotional (e.g., Gilbert, 2005; Shaw & Dallos, 2005) and behavioural (e.g., Guttman-Steinmetz & Crowell, 2006) difficulties have been well documented. Similarly, maladaptive affect regulation strategies have been implicated in the development of a host of negative outcomes, including internalizing (e.g., Mennin, Heimberg, Turk, & Fresco, 2005; Silk, Shaw, Forbes, Lane, & Kovacs, 2006) and externalizing (e.g., Rydell, Berlin, & Bohlin, 2003) problems. Researchers (e.g., Pine et al., 2002) point to the need for studies that investigate the processes or mechanisms through which *specific risk factors* are linked to *particular disorders* resulting in a better understanding of the associations between risk factors and disorders.

The current study examines the role of affect regulation as a possible process or mechanism through which specific attachment dimensions are related to aggression in girls and boys. According to Mikulincer and Florian (2004), the relation between the attachment system, emotion regulation and mental health is the backbone of Bowlby's theoretical framework of attachment, yet little is known about how they interact, particularly in adolescence. In fact, very few researchers (e.g., Mansfield, Addis, Cordova, & Dowd, 2009) have examined their *combined*

*impact* on outcome variables. The purpose of the current study is to explore affect regulation as a possible mechanism through which attachment anxiety and attachment avoidance are related to overt and relational aggression. Theoretical models will be proposed and tested separately for adolescent females and males in relation to concurrent and prospective aggression. Understanding these processes may assist in developing gender tailored prevention and intervention programs to reduce risk for aggressive behaviour in adolescents.

### ***Attachment Theory***

Attachment theory (Bowlby, 1969/1982, 1973, 1980) emphasizes the importance of parent-infant interactions and communication and its impact on children's healthy social-emotional-personality development. Bowlby argued that all infants are born with a range of attachment behaviours, or behaviours to satisfy the basic need for survival and healthy development. The role of attachment figures (or supportive others) is to provide infants with a *safe haven* which is a source of support and comfort, and a *secure base* from which they can gradually explore and learn about the world. Proximity seeking, or the effort to seek and maintain proximity with attachment figures in times of distress, is a primary attachment behaviour. To maximize proximity to caregivers (and thus feel safe), infants adapt their behaviour to be congruent with the care they experience. They learn to view themselves and others accordingly.

When caregivers are available and respond to their infants' needs sensitively, their infants feel safe in the world and develop a positive view of self

and others, or *secure attachment*. However, if caregivers are unavailable, unresponsive or inconsistent, attachment security is not attained and negative views of self and/or others develop. According to Bowlby (1988), attachment needs and relationships last “from cradle to grave” (p. 62). In fact, Bowlby maintains that starting in infancy and continuing throughout the lifespan, individuals derive security from the availability of responsive others (e.g., caregivers, partners). Although early attachment bonds that develop with caregivers in infancy persist throughout life, during healthy adolescence and adulthood these relationships extend to bonds with close others.

#### *Attachment Classification*

When testing Bowlby’s theory of attachment, researchers have focused on attachment styles, meaning expectations, emotions, and behaviour that are presumed to result from internalization of specific attachment experiences (e.g., Charles & Charles, 2006; Fraley & Shaver, 2000; Henderson, Bartholomew, Trinke, & Kwong, 2005). Initially, the typology of secure, anxious, and avoidant attachment styles was introduced by Ainsworth (Ainsworth, Blehar, Waters, & Wall, 1978) in infancy and Hazan and Shaver (1987) in adult romantic relationships. Later, Bartholomew and Horowitz (1991), and Brennan, Clark, and Shaver (1998) suggested that adult attachment styles are best conceptualized as comprising of two dimensions – attachment anxiety and attachment avoidance.

*Attachment anxiety* is characterized by fear of rejection and abandonment, and a negative view of self. *Attachment avoidance* is defined as discomfort with closeness, dependence and intimacy and is characterized by a negative view of

others (Pietromonaco & Feldman-Barrett, 2000). Individuals high on attachment anxiety are interested in and generally seek out relationships, while individuals high on attachment avoidance do not find relationships important and do not seek them out. Based on the interaction between the dimensions of anxiety and avoidance, Bartholomew and Horowitz (1991) developed a four-category model of attachment – secure (low anxiety, low avoidance; positive view of self and other), fearful (high anxiety, high avoidance; negative view of self and other), preoccupied (high anxiety, low avoidance; negative view of self and positive view of other), and dismissing (low anxiety, high avoidance; positive view of self and negative view of other).

### ***Attachment and Affect Regulation***

Parents model emotional expression and affect regulation techniques in their interactions with their children. Parenting and attachment relationships are thus paramount in the development of affect regulation (e.g., Calkins, 1994; Cassidy, 1994; Eisenberg & Morris, 2002; Eisenberg & Spinrad, 2004; Thompson, 1993). In infancy and early childhood, parents help their children regulate their emotions (Cassidy, 1994). For example, when one-year-olds stumble and fall they turn to their parents, ‘check’ their parents’ emotional response and respond to their fall and resulting pain and/or fright consistent with their parents’ response. If the fall is relatively harmless, and the parents remain calm and uninterested, children generally carry on as if nothing happened. However, if parents express concern and fright at the same situation, children

often respond by crying. These kinds of interactions result in children internalizing the emotion regulation techniques of their parents. In turn, adaptive regulation of a child's emotions further enhances the quality of parent-child relationships and secure attachments with others. Thus, the developmental processes of affect regulation and attachment are mutually influential and develop in the context of specific interactions with others (Thompson, 1993).

Classical and contemporary attachment researchers and theorists have described attachment theory as one of the most fundamental frameworks for understanding affect regulation (Bowlby, 1973; Cassidy, 1994, Sroufe, 2005). Bowlby (1969/1982) viewed attachment as an evolved behavioural system that motivates infants to seek proximity to caregivers in times of distress. Others suggested that proximity seeking as a primary attachment strategy is an “inborn affect regulation device” (e.g., Mikulincer, Shaver, & Pereg, 2003, p. 78) utilized when a potential or actual threat is perceived.

Considerable evidence exists suggesting that early attachment relationships shape the regulation of emotions in general. Parents who are attuned to their infant and sensitive to their infant's needs respond in a way that soothes their young child. Through this process, the child is reassured of the emotional and physical availability of the parent and develops a fundamental sense of psychological security, which according to Mikulincer and Florian (2004) further supports the development of adaptive strategies for the broader regulation of a variety of emotional states (e.g., proximity seeking, self-soothing).

Although most influential in infancy, caregivers continue to play an important role in their children's affect regulation, but their contributions evolve together with their children's growing capacities to self-regulate their own emotions (Thompson, 1991). Similar behavioural and emotional processes, characteristic to the development and maintenance of secure attachment, have been linked to more adaptive affect regulation in adolescence (e.g. Cooper, Shaver, & Collins, 1998) and adulthood (e.g., Mikulincer, Shaver, & Pereg, 2003), suggesting that security in attachment relationships plays a crucial role in the development but also maintenance of adaptive affect regulation over the life span (Cassidy, 1994). Recent research supports this notion and the link between emotional experiences within attachment relationships and vulnerability to maladaptive affect regulation strategies in adulthood (Critchfield, Levy, Clarkin, & Kernberg, 2008).

Bowlby (1973) first introduced the notion of distinct emotion regulation strategies resulting from different patterns of caregiver interactions. His research indicates that the availability of an attachment-figure is one of the major sources of variation in strategies of emotion regulation. Individuals with a predominantly secure attachment style have a positive view of themselves, a sense of self-efficacy when dealing with distress (Hazan & Shaver, 1994) and are able and comfortable approaching others when they are in need of support (e.g., Bartholomew, 1990; Bartholomew & Horowitz, 1991; Cassidy, 2001). On the other hand, it is theorized that persons with a predominantly insecure attachment style are not able to regulate their emotions or seek support adaptively.



Specifically, individuals who score high on the anxiety dimension retreat to strategies of *hyperactivation*, which involves hypervigilance toward threats to the self and fear of abandonment by attachment figures resulting in excessive approaching toward them (e.g., Lopez & Brennan, 2000; Mikulincer, Shaver, & Pereg, 2003; Shaver & Mikulincer, 2002). Further, individuals who score high on the avoidance dimension retreat to *deactivating strategies* (e.g., Cassidy & Kobak, 1988; Shaver & Mikulincer, 2002) meaning that they inhibit their support seeking tendencies and set out to deal with their distress on their own.

Thus, both secure attachment and adaptive affect regulation are necessary for healthy development. In other words, adaptive or maladaptive affect regulation does not replace, or account for (mediate), the effects of secure or insecure attachment. Instead, because the two processes and their development are closely related, variations in affect regulation modify (moderate) the effects of attachment.

### ***Attachment, Affect Regulation, and Aggression***

#### *Attachment and Aggression*

Attachment theorists (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1988) maintain that early interactions with caregivers are critical as they serve to facilitate future psychological adjustment. When the quality of early parent-child interactions is poor, and individuals develop an insecure attachment style, successful psychological adjustment is hindered and psychopathology may develop (Cicchetti & Toth, 1995; Gerhardt, 2004). Numerous studies examined

this link between attachment and child adjustment and found insecure attachment to be associated with a host of negative outcomes including externalizing problems and aggression.

The relation between insecure attachment and externalizing problems and aggression has been well established. Beginning with Bowlby (1944, 1988), attachment theorists and researchers (e.g., Ainsworth, Blehar, Waters, & Wall, 1978) concerned themselves with the role of functional but maladaptive anger and aggression in attachment relationships. According to Bowlby (1988), children who are frightened, fatigued, or sick exhibit behaviours aimed to elicit care-giving responses from others, including angry and aggressive behaviour. In contexts where caregivers are disengaged, anger and aggressive behaviour are adaptive and lead to stronger bonds between mother and child. Bowlby (1988) concluded that “at the right time, and to the right degree, anger is not only appropriate but may be indispensable. ... and serves to protect a relationship which is of very special value to the angry person” (p. 89). Thus, Bowlby saw normative levels of anger and functional displays of aggressive behaviour as adaptive in maintaining the attachment relationship. He also argued that maladaptive parent-child interactions give rise to extreme aggression and violence. Specifically, he maintained that the most violently angry and dysfunctional responses are likely elicited in youth who experience repeated separations and threats of abandonment.

In his early work related to attachment theory, Bowlby (1944) proposed a link between early insecure attachment and engagement in minor delinquent

acts, such as petty stealing, later in life. Since then the link between insecure parent-child attachment and externalizing problems, such as aggressive behaviour in childhood (e.g., Greenberg, 1999; Greenberg, Speltz, & DeKlyen, 1993; Lyons-Ruth, 1996) as well as in adolescence (e.g., Allen, et. al, 2002; Arbona & Power, 2003; Guttman-Steinmetz & Crowell, 2006; Kobak, Zajac, & Smith, 2009; Simons, Paternite, & Shore, 2001) and young adulthood (e.g., Fergusson & Lynskey, 1998) has been well established.

Although most studies have focused on the examination of insecure attachment overall, attempts to identify the links between the dimensions of insecure attachment (i.e., attachment anxiety versus attachment avoidance) and aggression have revealed non-specific findings. In other words, both attachment anxiety and attachment avoidance have been shown to be associated with increased levels of aggressive behaviours. For example, when examining the relation between insecure attachment and psychosocial functioning in adolescent females and males, Allen, Moore, Kuperminc, and Bell (1998) found a link between anxious-preoccupied attachment and peer-reported delinquency. The authors point to the relative uniqueness of these findings and attribute them to the specific nature of their sample. Namely, they suggest that this relation is perhaps typical, specifically for adolescents, who may deal with their critical developmental task of establishing autonomy in their relationships through heightened anxiety, which is in turn linked to aggressive and delinquent behaviours. Similar findings were reported by Brown and Wright (2003). A more frequent finding, documented in a variety of contexts, is that attachment

avoidance predicts aggressive behaviour longitudinally (e.g., Allen, Hauser, & Borman-Spurrell, 1996) and concurrently (e.g., Danov & Bucci, 2002). Thus both attachment anxiety and attachment avoidance are expected to be related to aggression in the current study.

### *Gender and Attachment*

Originally, attachment theory was introduced as a primarily gender-neutral developmental theory of the ways in which early interactions with caregivers become internalized and guide expectations and interactions later in life. As a result, many researchers examining attachment from infancy to adolescence do not explore possible gender differences in attachment related effects.

However, gender theorists (e.g., Chodorow, 1978) have argued that females and males view relationships differently – through connectedness and separateness, respectively. Similarly, biological theorists (e.g., Taylor et al., 2000) argue for a sex-specific response to stress and threat, in which females demonstrate a tendency to ‘tend-and-befriend’ and males demonstrate a tendency to ‘fight-or-flight.’ Available studies examining sex/gender specific effects of attachment reveal support for these hypotheses as early as in infancy (e.g., Carlson, Cichetti, Barnett, & Braunwald, 1989; David & Lyons-Ruth, 2005). For example, David and Lyons-Ruth (2005) found that female infants responded to maternal frightening behaviour with approach while male infants responded with avoidance and resistance accompanied by conflict. Consistent findings were reported in middle childhood by Karavasilis, Doyle, and Markiewicz (2003) who administered the Coping Styles Questionnaire (CSQ; Finnegan, Hodges, &

Perry, 1996), a self-report measure designed to tap anxious-preoccupied and avoidant styles of coping within parent-child relationships in middle childhood to nine to eleven year olds to assess the relation between parenting and attachment. They found that girls were significantly more likely to cope through preoccupied-anxiety and boys through avoidance.

More recently, gender specific findings have been reported in adolescents (e.g., Kobak, Zajac, & Smith, 2009) and young adults (e.g., Orcutt, Garcia, & Pickett, 2005). Kobak, Zajac, and Smith (2009), for example, examined the trajectories of adolescents' impulsive and hostile behaviours and found higher rates of hostile feelings in anxious-preoccupied girls than boys. Catchpole and Moretti (2008) found that high scores on avoidant-dismissingness in boys but not in girls were related to early behaviour problems as well as serious criminal behaviours. Further, Marusic, Kamenov, and Jelic (2006) found higher rates of attachment anxiety among females than males and higher rates of attachment avoidance among males than females in general.

Research on gender socialization suggests that from an early age girls are encouraged to attend to the needs and well being of others, to value relationships and judge their self-worth in light of others' opinions of them (Cross & Madson, 1997; Moretti & Higgins, 1999; Moretti & Obsuth, in press). As a result of socialization and perhaps due to the neurobiological propensity for females to orient toward caregiving (Beech & Mitchell, 2005), from infancy girls demonstrate an increased sensitivity to interpersonal stressors and orientation toward relationship goals (Zahn-Waxler, Crick, Shirtcliff, & Woods, 2006). Consequently,

as a result of this sensitivity, girls may express their hostility and aggression when their interpersonal goals are threatened and they experience heightened attachment anxiety. In contrast, boys are socialized to be more concerned about their social status than are girls (Maccoby, 2004) and their engagement in aggressive acts tends to be motivated by instrumental concerns rather than relationship goals (e.g., Leadbeater, Kuperminc, Blatt, & Hertzog, 1999; Nelson, Mitchell, & Yang, 2008). Such motivations are often attributed to avoidant-dismissing approaches and attachment styles in relationships.

Undoubtedly, gender differences in the relations between specific attachment dimensions and aggression need to be further examined. The goal of the current study is to contribute to this body of research by focusing on gender-specific predictions.

The findings outlined above suggest that for females aggression may be more commonly associated with over-activation of the attachment system (attachment anxiety), while in males aggression may be more commonly associated with deactivation of the attachment system (attachment avoidance). Therefore it is predicted that high attachment anxiety in girls and high attachment avoidance in boys will be related to more aggression.

#### *Moderating Role of Affect Regulation*

The definition of affect regulation varies across researchers; however, most agree that this construct encompasses the capacity to identify, control, and modulate affect (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Pope & Bierman, 1999; Shields & Cicchetti, 1998). Difficulties in affect regulation include a lack of

control over the experience of emotions, including feeling overwhelmed by emotions. Numerous studies have documented the link between low affect regulation and maladjustment. For example, Shields and Cicchetti (1998, 2001) examined maltreatment and affect regulation as risk factors for bullying and victimization in 8- to 12-year-old boys and girls. They found that the effects of maltreatment on bullying behaviours and victimization were mediated by low affect regulation. Further, Eisenberg et al. (1993) suggest that children who have difficulties regulating their emotion are more likely to experience a host of negative outcomes, including engagement in aggressive behaviour.

As mentioned previously, anxiously attached individuals are characterized by hyperactivation of the attachment system, and this tendency to 'overreact' is said to generalize to other systems including affect regulation (Mikulincer & Florian, 2004). In fact, Shaver and Mikulincer (2002) suggest that hyperactivation is a maladaptive affect regulation strategy, through which individuals learn to overreact to their negative feelings overall.

Research not only supports links between attachment anxiety (e.g., Allen, Kuperminc, & Bell, 1998; Allen, et al. 2002) and attachment avoidance (e.g., Danov & Bucci, 2002) with aggression, but it also supports links between low affect regulation and aggression (e.g., deCastro, Merk, Koops, Veerman, & Bosch, 2005). In a recent study, Mansfield, Addis, Cordova, & Dowd (2009) examined the mediational role of 'emotional skillfulness' in the relation between attachment avoidance and aggression in an adult sample of 43 females and 49 males. Emotional skillfulness is a construct they liken to affect regulation and

emotional intelligence, and encompassed the ability to recognize, name and respond adaptively to emotions. Although they originally did not predict any gender differences, their analyses revealed that emotional skilfulness mediated the relation between attachment avoidance and aggression in males but not in females. Attachment anxiety was also measured; however, analyses related to it were not carried out as a result of non-significant correlations between attachment anxiety and aggression for either females or males. These authors point to the need to further examine the potentially gender-specific processes that link attachment to aggression. Research available thus far suggests that affect regulation may mediate (account for) or moderate (exacerbate) the relation between attachment anxiety and aggression, as well as the relation between attachment avoidance and aggression.

Given prior research and the conceptualization of attachment dimensions and affect regulation strategies as separate but interacting psychological factors, it is predicted that affect regulation will moderate the relation between attachment and aggression. In other words, the relation between attachment anxiety or avoidance and aggression will be exacerbated in youth who are unable to effectively modulate negative affect states. While a moderated model is congruent with the theoretical conceptualization of attachment and affect regulation, a mediated model will also be tested to assess whether the conjoint effects of these two variables is better captured by a model which assumes that the relation between attachment and aggression is indirect. More specifically, in a mediated model, affect regulation would be seen as an intervening variable of the



relation between attachment and aggression, in the absence of which there would be no relation between these two variables.

## ***Aggression***

### *Aggression during Adolescence*

Aggression in general has been identified as one of society's "major contemporary concerns" (CPA, 2007) and one of the best known predictors of future social, emotional, behavioural and academic problems (for review, see Coie & Dodge, 1998). Longitudinal research suggests that with the exception of about 2% of youth, in the normative population physical aggression tends to drop during early to late childhood (e.g., Brame, Nagin, & Trembley, 2001; Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007). However, adolescence presents new and complex developmental tasks and potential risk factors which include navigating broadening social relationships and contexts. Youth expand their social circles and engage in first romantic relationships, increasing the risk for relationship-based aggression, such as verbal conflicts as well as other types of covert antisocial behaviour, such as cheating and stealing (Loeber & Hay, 1997).

Compared to normative populations, in high risk youth and youth involved in the justice system, the rates of aggressive and delinquent behaviour in general remains high. In fact, in adolescence a new group of youth, including some who did not exhibit any aggressive behaviours during childhood, engage in aggressive, delinquent and antisocial behaviours and are often diagnosed with adolescent or late-onset conduct disorder (Moffitt, 2006). Although many of these

youth continue to engage in these behaviours into adulthood (i.e., “life course persistent” offenders), others desist (Moffitt, 1993; Bergman & Andershed, 2009). Examination of the processes linked to aggression in adolescence (a time when the attachment system is undergoing substantial changes and shifts in the attachment functions shaped by parents) as well as in the transition into adulthood could elucidate some of the mechanisms related to differential outcomes (persistence vs. desistance) with respect to aggressive behaviour over time.

### *Types of Aggression*

In recent years researchers have focused on differentiating and examining different types of aggression. In this research the two most commonly examined types of aggression are explored, namely overt and relational aggression. Overt aggression includes physical and verbal behaviours directed toward others with the intent to hurt them. Relational aggression involves socially-based behaviours, such as spreading rumours about others, with the intent to hurt them (Little, Jones, Henrich, & Hawley, 2003).

Research is mixed with respect to rates of overt and relational aggression in adolescent girls and boys. Some researchers (e.g., Crick, Ostrov, & Werner, 2006; Underwood, 2003) have suggested that relational aggression is more common in girls as opposed to boys. However, the most consistent finding in normative populations is that girls and boys are equally relationally aggressive but boys are more likely than girls to be physically and overtly aggressive (e.g., Archer, 2004; Blitstein, Murray, Lytle, Birnbaum, & Perry 2005; Card, Stucky,

Sawalani, & Little, 2008; Karriker-Jaffe, Foshee, Ennett, & Suchindran; 2008; Loeber & Hay, 1997). These findings do not appear to have been replicated in clinical or high risk populations of youth. The current study examined both forms of aggression in the relation between attachment and aggression as they are both relevant and tap a broader range of aggressive behaviour.

Researchers have examined normative developmental shift in the level and types of aggressive behaviours that children engage in and the processes and mechanisms that underlie this behaviour. Numerous studies show that the way in which children and youth express their aggression changes over time as a function of their maturation. Specifically, both cross-sectional (e.g., Björkqvist, Österman, & Kaukiainen, 1992; Österman et al., 1998) as well as longitudinal studies (e.g., Brame, Nagin, & Tremblay, 2001; Côté, Vaillancourt, LeBlanc, Nagin, Tremblay, 2006) have shown higher rates of physical aggression in younger children than in older children and conversely higher rates of relational aggression in older versus younger children. However, not all children follow this normative shift and tend to consistently rely on one form of aggression somewhat more than others (e.g., Vaillancourt, Brendgen, Boivin, & Tremblay, 2003). Research in normative samples also suggests that aggressive behaviour in general tends to decline with age (e.g., Brame, Nagin, & Trambley, 2001).

However, researchers report at least modest correlations between different types of aggression (e.g., Crick, Ostrov, & Werner, 2006; Hoff, Reese-Weber, Schneider, & Stagg, 2009). In other words, children and youth who engage in overt aggression often also engage in relationally aggressive

behaviour. This is true particularly in high-risk samples (for a review see Farrington, 2004). Therefore all predictions in this study are expected to hold for both types of aggression as specified above.

Furthermore, prospective longitudinal studies are key in understanding change and developmental processes. Availability of longitudinal data will allow for the examination of the stability of the predicted models. Thus, each of the hypothesized relations will be tested in relation to overt and relational aggression measured concurrently (Time 1) as well as two years following the initial administration (Time 2).

### ***The Current Study***

Attachment theory has been examined in relation to aggressive behaviour; however, findings have been equivocal and few studies have considered gender when examining these relationships. The current study builds on previous research and theory and examines gender specific relations of attachment anxiety and avoidance with aggression. Further, in keeping with the call for an examination of the processes linking specific risk factors to outcomes the current study proposes and explores affect regulation as a potential mechanism which contributes to the strength of the relation between insecure attachment and aggression.

To date, only one study (Mansfield, Addis, Cordova, & Dowd, 2009) has examined the relation between affect regulation, attachment and aggression. Findings were consistent with those predicted in the current study; however,

Mansfield et al. (2009) utilized an exclusively male sample of high-risk adults in their analyses, relied entirely on self-report measures and did not examine these relationships prospectively over time.

The current study extends this research by examining the proposed processes in a sample of high-risk adolescent females and males, drawing on a larger sample than in the previous study. This present study utilizes a semi-structured interview to assess parent-child attachment and a questionnaire specifically designed to measure affect control as a form of affect regulation, which allows for a more sensitive examination of the proposed models. In addition, this study adopts a longitudinal design and examines the impact of the interaction between attachment and affect regulation at Time 1 on both concurrent (Time 1) and subsequent aggressive behaviour approximately two years later (Time 2). Finally, to tap a broad range of aggressive behaviour, this study examines the predicted models both with respect to overt and relational aggression at Time 1 and Time 2. Altogether the current study allows for a more comprehensive examination of the proposed models and thus has the potential to further the understanding of the developmental processes underlying aggressive behaviour. Gaining a better understanding of these processes could ultimately assist in developing gender specific and targeted prevention and intervention programs to reduce risk for aggressive behaviour.

Thus, the purpose of the current study is to gain a better understanding of the mechanisms through which attachment is related to overt and relational aggression. With respect to attachment this study will limit its focus to the

broader dimensions of attachment anxiety and attachment avoidance, rather than focusing on the four attachment categories. This decision was made based on a relatively recent shift in the attachment field to examine these underlying dimensions instead of categories and to ensure that it is possible to compare the findings from this study with conclusions drawn based on other studies examining similar processes.

Given prior research and the conceptualization of attachment dimensions and affect regulation strategies as separate but interacting psychological factors and given that the relation between insecure attachment and aggression is well established, it is conceptually reasonable to predict that affect regulation will moderate the relation between attachment and aggression. However, given some evidence in support of a meditational relationship between attachment and affect regulation, this possibility is also explored.

Theoretical models are proposed and tested separately for adolescent females and males in relation to concurrent and prospective aggression (relational and overt). Specifically, attachment anxiety in girls and attachment avoidance in boys is expected to be related to aggression. Low affect regulation is expected to be related to aggression in both girls and boys. Further, in line with the gender specific predictions related to attachment avoidance vs. anxiety and aggression, low affect regulation is expected to moderate the relation between attachment anxiety and aggression in girls and the relation between attachment avoidance and aggression in boys. Thus, in females, high attachment anxiety combined with low affect control is expected to be related to high levels of

aggression. In males, high attachment avoidance combined with low affect control is expected to be related to high levels of aggression. Examinations of the concurrent relations between the variables explored in this study will be an important first step in understanding the links between psychological risk factors (attachment anxiety and avoidance; affect regulation) and psychopathology (aggression). However, this examination will not allow for drawing conclusions with respect to causality and stability of constructs.

To address these shortcomings of concurrent research, this study will also examine the relation between these psychological risk factors and aggression two years later. Parallel patterns of findings are expected in the relations between attachment and affect regulation at Time 1 and aggression concurrently (at Time 1) as well as two years later (at Time 2). A prospective longitudinal examination of the proposed models will allow drawing at least preliminary conclusions related to the directionality (or causality) of the proposed relations.

#### Summary of predictions:

1. Attachment anxiety in girls and attachment avoidance in boys will be uniquely related to overt and relational aggression concurrently (Time 1) as well as overt and relational aggression two years later (Time 2).
2. Low affect regulation will be related to overt and relational aggression concurrently (Time 1) as well as overt and relational aggression two years later (Time 2) in both girls and boys.

3. In girls, low affect regulation will moderate the relation between attachment anxiety and concurrent overt and relational aggression (Time 1) as well as overt and relational aggression two years later (Time 2).
4. In boys, low affect regulation will moderate the relation between attachment avoidance and concurrent overt and relational aggression (Time 1) as well as overt and relational aggression two years later (Time 2).



## **METHOD**

### ***Overview***

This study is part of a larger longitudinal project examining gender and aggression among high-risk youth. Select measures administered at Time 1 and Time 2, approximately two years later, are included in this study. Time 3 data collection is currently ongoing, thus only data from the first two Times were utilized for the current study.

### ***Participants and Procedure***

Participants at Time 1 consisted of 179 adolescents (82 females, 97 males) between the ages of 12 and 18 with comparable mean age for females ( $M = 15.20$ ,  $SD = 1.44$ ) and males ( $M = 15.46$ ,  $SD = 1.60$ ;  $\chi^2 = .29$ ,  $p > .05$ ). Approximately half were drawn from two custody centers (53%) and a probation office (2%) in BC, and 45% from a provincial assessment center targeting youth with severe behaviour problems.

In the youth justice settings, parental consent was sought to approach 132 youth and was refused by parents of 28 youth (21%). Of the 104 youth whose parents gave consent, 5 youth (4%) refused to consent/assent and one youth withdrew prior to completing the study (<1%). In the mental health setting, parental consent was sought and received for 102 youth. Of these youth, 19 (19%) refused to give consent/assent and two (2%) withdrew prior to completing the study. No significant differences were found between youth who participated

versus those who did not participate with respect to age [ $F(1, 226) = .78, p > .05$ ] and gender ( $\chi^2 = .31, p > .05$ ).

Given that the overall focus of the larger project was to explore gender differences, efforts were made to approach all females admitted to the custody or mental health center who were then matched with males based on age alone<sup>1</sup>.

The exclusionary criteria, which included an IQ below 70 and presence of a significant Axis I psychotic symptomatology, were assessed based on a file review in both samples. All files contained a combination of information based on recent formal testing (e.g., WISC-IV) as well as diagnostic interviews and observations by mental health and/or correctional staff. Youth who agreed to participate were administered three modules which were comprised of a number of semi-structured clinical interviews, self-report measures and a computerized diagnostic assessment. Measures were administered in three separate testing sessions to reduce fatigue and enhance validity of responses. Each testing session required approximately 2 hours for completion and was administered by trained graduate students and research assistants. Participants received a \$30 cash honorarium or a gift certificate after completing Time 1 measures. All assessments were digitally recorded, for which consent was received.

At Time 1, consent was secured to contact youth for follow-up assessments (i.e., Time 2), which included a subset of measures administered at Time 1 as well as additional measures to assess their mental and physical

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<sup>1</sup> Reasons for non-completion (19 participants; 17 from forensic sites, 2 from the Maples assessment program) included insufficient time allotted for protocol completion (11 forensic youth); withdrawal due to disinterest (4 forensic youth, 2 Maples youth); and transfer to another institution (2 forensic youth).

health. Time 2 data collection occurred over the telephone between 22 months and 33 months ( $M = 26.0$ ,  $SD = 3.7$ ) following Time 1 data collection. Consent was provided by all youth and their legal guardians at Time 1, and 98 participants (47 males, 51 females) were located and agreed to participate at Time 2 (54% of youth who participated in Time 1)<sup>2</sup> for a \$50 cash honorarium. Supplementary analyses based on Time 1 data revealed no significant differences on demographic or variables of interest in this study between youth who completed versus those who did not complete a Time 2 interview<sup>3</sup>.

### ***Treatment of Missing Data and Sample Descriptives***

Due to reasons of fatigue, unanticipated discharge, and scheduling difficulties, it was sometimes not feasible to administer all assessment modules at Time 1. Of the 179 participants assessed at Time 1, 12 did not complete any of the measures of interest in this study; these participants were excluded from further analyses. Of the remaining 167 participants, complete data (i.e., no missing data on any of the variables included in this study at Time 1) were available for 120 participants. The percentages of missing data for variables collected at Time 1 ranged from 0% to 36%<sup>4</sup> with a total percentage of 15% missing across all participants and all variables included in the study. Data related to the variables of interest in this study were available for all 98

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<sup>2</sup> Attrition was primarily related to difficulties in tracking youth (e.g., obtaining current contact information, particularly for those youth who had moved outside of the province) rather than refusal to participate (only two youths refused to participate).

<sup>3</sup> The demographic variables considered in this analysis were: age, sex, ethnicity, and location.

<sup>4</sup> Rates of missing data per variable were: Aggression 0%, Attachment 36% and Lack of Affect Control 13%.

participants who completed Time 2. The missing data were imputed rather than deleted given recent developments in data analytic procedures that have led to the consensus that when data are available for a given participant on any of the variables of interest, it is preferable to impute data that are missing and thereby retain important information that would otherwise be lost (Harrell, 2001; Rubin 1987; Schafer & Graham, 2002; Widaman, 2006). The multiple imputation (MI; Rubin, 1987) procedure is the state-of-the-art procedure to deal with missing data and is recommended for use in developmental research (e.g., Jeličić, Phelps, & Lerner, 2009) and in general in data sets in which the amount of missing data is moderate (10 – 15%) to relatively high (25% or higher; Widaman, 2006)<sup>5</sup>. MI replaces missing values with a set of possible values that represent the uncertainty about the right value to impute. The number of imputations necessary is determined based on the percentage of missing values with the goal to maximize the precision of imputation and power to detect significant effects.

In the present study, ten data sets were generated (for total missing rates of 15% at Time 1 alone and 25% in the combined Time 1 and Time 2 data set) indicating excellent efficiency or power to detect a significant effect of 98% according to Rubin's (1987, p. 114, see Table 1) guidelines. The data were imputed through the Markov Chain Monte Carlo procedure (MCMC; Gilks, Richardson, & Spiegelhalter, 1995), using SAS version 9.1 software.

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<sup>5</sup> According to experts on missing data (e.g., Schafer, & Graham, 2002; McArdle, 1994; Allison, 2002), MI will handle the analyses with adequate proficiency for data sets with missingness of up to 50% on any individual variable.

Table 1. Efficiency of multiple imputations (%).

Number of imputations	Rate of missingness				
	.1	.3	.5	.7	.9
3	97	91	86	81	77
5	98	94	91	88	85
10	99	97	95	93	92
20	100	99	98	97	96

Note: Estimates between 95% and 97% efficiency are considered excellent estimations (Rubin, 1987).

Following imputation, the final sample for the current study consisted of 167 adolescents (80 females, 87 males) between the ages of 12 and 18 with a comparable mean age for females ( $M=15.18$ ,  $SD=1.44$ ) and males ( $M=15.61$ ,  $SD=1.53$ ;  $\chi^2 = .30$ ,  $p > .05$ ). Of the 167 youth, 94 (56%; 43 females, 51 males) were drawn from the forensic settings and 73 (44%; 37 females, 36 males) from the mental health setting. Youth in the study were predominantly Caucasian (66%), with a significant minority of Aboriginal youth (23%). Of the remaining 11% who classified themselves as 'Other', 8 % indicated a mixed background and 3% of youth were from a variety of other ethnic backgrounds (including African/Caribbean, South Asian, and Hispanic). Over half (60.9%) of participants were under the legal care of their biological parents at the time of the first interview.

### **Measures**

*The Family Attachment Interview (FAI)* is a 60-120 minute long semi-structured interview designed to assess youth's attachment to and quality of relationship with their primary caregivers. Youth were asked to describe their

family history, characteristics of their primary caregivers and their experiences in their relationships with them. Youth were also asked about their experiences and responses to separations from their caregivers currently and historically and they were asked to report on any experiences of emotional neglect or emotional, physical, or sexual abuse by their primary caregivers.

The interviews were coded using Bartholomew and Horowitz's (1991) attachment framework. Youths' degree of correspondence to each of the four prototypic attachment patterns (secure, fearful, preoccupied, and dismissing) was rated on a scale ranging from 1 (no correspondence with the prototype) to 9 (excellent fit with the prototype). Linear combinations of the four prototype ratings were calculated in order to obtain scores for each of the two higher-order attachment dimensions – attachment anxiety and attachment avoidance (Griffin & Bartholomew, 1994a). Specifically, a score for anxious attachment was calculated by adding the two scales defined in terms of high anxiety (preoccupied and fearful) and subtracting the ratings of the scales defined by low anxiety (dismissing and secure). Avoidant attachment was calculated by adding the avoidant scales (fearful and dismissing) and subtracting the approach-oriented scales (preoccupied and secure). This coding system has been well researched in various populations (e.g., Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994b; Scharfe & Bartholomew, 1994) including a similar clinically referred sample of adolescents (Scharfe, 2002) and has been shown to be a reliable and valid method of examining individuals' attachment representations.

In the current study all interviews were coded by graduate students with advanced training in this coding system. Excellent inter-rater reliability was established with single-rater intra-class correlations (ICC) on a subset of 32 (20%) of the 130 coded interviews. Specifically, the ICCs for secure, fearful, and dismissing styles were .96 and for preoccupied style .98. Inter-rater reliabilities for the anxiety and avoidance dimensions were .95 and .97, respectively<sup>6</sup>.

Given the length of the interview and extensive time requirements related to coding of the interview, the FAI was administered only at Time 1. The means and standard deviations of attachment anxiety and attachment avoidance are presented in Table 1.

*The Affect Regulation Checklist* (ARC; Moretti, 2003) is a 12-item measure adapted from published scales of emotion regulation (Gross & John, 2003; Shields & Cicchetti, 1995) and augmented with supplementary items to tap three aspects of affect regulation in adolescents. In keeping with contemporary models, the ARC is based on a multidimensional view of emotion regulation that includes both maladaptive (e.g., lack of control, suppression) and adaptive (reflection) aspects of regulation. Furthermore, the ARC assesses regulatory characteristics independent of specific emotions. Items do not refer to specific emotions and avoid confounding regulatory processes with emotional states.

The ARC yields three factors: affect control (e.g., “I have a hard time controlling my feelings”; “It’s very hard for me to calm down when I get upset”), affect suppression (e.g., “I try hard not to think about my feelings”; “I try to do

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<sup>6</sup> Internal consistencies are not reported because styles are not made up of individual items but are rather singular ratings.

other things to keep my mind off of how I feel”), and adaptive reflection (e.g., “Thinking about why I have different feelings helps me to learn about myself”). Each subscale consists of four items which are scored on a 3-point scale ranging from “*not like me*” to “*a lot like me*” and ask about experiences of affect in general. The ARC was administered both at Time 1 and Time 2 of the larger project; however, only the Time 1 data related to the affect control subscale of the ARC will be utilized in the present analyses as it was the variable of interest. This subscale demonstrated acceptable internal consistency ( $\alpha = .87$  and  $\alpha = .82$ , respectively). Results from confirmatory factor analyses at Time 1 supported a 3 factor solution for the ARC, CFI = .96, RMSEA = .059, 90% CI (.046 - .073). The means and standard deviations for affect control are presented in Table 1.

*The Form-Function Aggression Measure* (FFAM; Little, Jones, Heinrich, & Hawley, 2003) is a 36-item self-report measure designed to separate and assess the forms (i.e., overt, relational) and functions (i.e., instrumental, reactive) of aggression. Items on the FFAM were derived from other published measures of overt and relational aggression (Crick, 1997; Crick & Grotpeter, 1995) as well as reactive and instrumental aggression (Dodge & Coie, 1987). In the current project, a modified 25-item version of the measure was utilized at both Times 1 and 2, reflecting those items that demonstrated the highest factor loadings and highest reliabilities in supplemental analyses performed by Little in 2003 (T. D. Little, personal communication with M. Moretti, April 2003). Participants rated on a 4-point scale how true each statement is about them (1 = *not at all true*, 2 = *somewhat true*, 3 = *mostly true*, 4 = *completely true*). Items are summed to yield



six subscales, three tapping overt aggression (12 items; pure-overt, reactive-overt, and instrumental-overt) and three tapping relational aggression (13 items; pure-relational, reactive-relational, and instrumental-relational). The pure overt and relational subscales assess the type of aggression, in which no function is implied (e.g., “I’m the type of person who hits, kicks, or punches others”). The other four subscales assess the four possible combinations of two forms (overt, relational) and two functions (instrumental, reactive) of aggression. Thus, overt aggression includes physical and verbal behaviours directed toward another person and relational aggression involves purposeful damage to another’s social relationships. Sample items tapping overt aggression are “I’m the kind of person who hits, kicks, or punches others” and “I’m the kind of person who puts others down.” Sample items tapping relational aggression are “I’m the kind of person who gossips or spreads rumors” and “I’m the kind of person who tells my friends to stop liking someone.”

Little and colleagues (2003) reported acceptable levels of internal validity and satisfactory external and criterion validity for the scale across age, gender and ethnicity. A study exploring the psychometric properties on this specific sample (Lee, Penney, Moretti, & Bartel, 2005) supported the use of the 6 factor model originally proposed by the authors of this measure as well as a higher order 2 factor model (overall overt and overall relational aggression). The overall overt and relational subscales (derived from the sum of pure, reactive and instrumental subscales of overt and relational aggression) were utilized in the current study and demonstrated acceptable internal consistency at Time 1 ( $\alpha =$

.80 and  $\alpha = .84$ , respectively) and at Time 2 ( $\alpha = .78$  and  $\alpha = .80$ , respectively). The means and standard deviations for these two subtypes of aggression at Time 1 and Time 2 are presented in Table 1.

### ***Analytical Procedure***

First, independent samples t-tests and correlational analyses were utilized to evaluate simple linear relations among key variables of interest. Next, hierarchical multiple linear regression analyses were utilised to test for simple main effects and interaction effects. Preliminary analyses revealed no significant interaction effects between location (forensic vs. mental health) and any of the predictors in relation to the dependant variables, therefore the data for youth from the custody centers and the mental health center were pooled together to carry out the analyses. Thus, location was not included as a control variable in any of the analyses as it was not necessary.

Given that gender specific predictions were proposed, regression analyses were first carried out on the full sample to test for predictor (attachment anxiety; attachment avoidance) by gender interaction effects, which (if significant) would allow for testing of the proposed models separately for girls and boys. Following that, consistent with gender specific predictions, the analyses were run separately for girls and boys.

To allow for testing of both mediation and moderation effects, the linear regressions were conducted in three steps using Baron and Kenney's (1986) procedure: in the first step, an attachment dimension (attachment avoidance or

attachment anxiety) was entered. In the second step, lack of control was entered, and in the third step (to assess moderation) the two way interaction terms between the attachment dimension and lack of affect control were entered. The criterion variables were overt and relational aggression at Time 1 and at Time 2.

# RESULTS

## *Preliminary Analyses*

Preliminary regression analyses carried out to explore possible interaction effects of location by any of the predictor variables (attachment anxiety, attachment avoidance and affect control) on the outcome variables (overt and relational aggression at Time 1 and Time 2) revealed no significant findings. Therefore the data of youth from the forensic settings and mental health settings were combined for all further analyses.

## *Descriptive Analyses and Zero Order Correlations*

Table 2 presents the means and standard deviations of all independent and dependent variables across the two sites and by gender. Independent samples t-tests revealed only one significant difference in that not surprisingly and consistent with past research, boys in the forensic settings reported significantly higher rates of overt aggression than did boys in the mental health setting both at Time 1 [ $t(2,165) = 3.23, p = .002$ ] and at Time 2 [ $t(2,165) = 3.54; p = .001$ ].

Table 2. Variable Means and Standard Deviations Across Location for Males and Females.

	Forensic		Mental Health		<i>t</i>
	Females				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Attachment Avoidance T1	-29	2.80	.18	1.33	-.43
Attachment Anxiety T1	3.33	2.51	2.94	2.32	.71
Affect Control T1	3.83	2.38	4.32	2.33	-.92
Overt Aggression T1	2.10	.82	1.79	.58	1.85
Relational Aggression T1	1.70	.66	1.64	.59	.44
Overt Aggression T2	1.76	.63	1.41	.40	.65
Relational Aggression T2	1.52	.55	1.40	.41	.33
	Males				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Attachment Avoidance T1	1.34	2.28	.50	3.46	-.24
Attachment Anxiety T1	2.40	2.71	1.75	3.49	.98
Affect Control T1	3.73	2.28	3.35	2.65	.71
Overt Aggression T1	2.15	.70	1.70	.53	3.23**
Relational Aggression T1	1.44	.46	1.34	.28	1.13
Overt Aggression T2	2.03	.51	1.49	.39	3.54**
Relational Aggression T2	1.34	.32	1.14	.19	1.32

Note: \*\* $p < .01$

Table 3 summarizes the means and standard deviations for all independent and dependent variables (at Time 1 and 2) both within and across gender. Consistent with previous research, girls scored significantly higher than boys on attachment anxiety [ $t(2,165) = -2.37, p = .019$ ] and boys scored

significantly higher than girls on attachment avoidance [ $t(2,165)=2.42, p = .016$ ].

No significant gender differences were expected nor found in relation to affect

control. No gender differences were found in overt aggression; however,

analyses revealed a significant gender difference in relational aggression.

Consistent with some of the previous research, girls scored significantly higher

than boys on relational aggression both at Time 1 [ $t(2,165) = -3.38, p = .001$ ] and

at Time 2 [ $t(2,165)=-2.5, p = .017$ ].

*Table 3. Variable Means and Standard Deviations Within and Across Gender at Time 1 and 2.*

	Total		Females		Males		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Attachment Avoidance T1	1.35	3.10	.75	2.89	1.90	3.19	2.42*
Attachment Anxiety T1	2.62	2.08	3.15	2.42	2.13	3.05	-2.37*
Affect Control T1	3.80	2.40	4.06	2.36	3.57	2.43	.32
Overt Aggression T1	1.96	.70	1.96	.73	1.96	.67	.05
Relational Aggression T1	1.53	.54	1.67	.63	1.30	.40	-3.38**
Overt Aggression T2	1.69	.55	1.60	.56	1.80	.53	.14
Relational Aggression T2	1.36	.42	1.46	.49	1.25	.29	-2.5*

Note: \*\* $p < .01$ ; \* $p < .05$

Zero-order correlations between the independent and dependent variables

for the overall sample are presented in Table 4 and for females and males

separately in Table 5. Consistent with attachment theory and previous research,

attachment anxiety and attachment avoidance were significantly negatively

correlated. Neither attachment anxiety nor attachment avoidance was associated

with either type of aggression in the overall sample. As expected, low affect

control was associated with both overt and relational aggression at Time 1. At follow-up, low affect control at Time 1 was significantly correlated with overt aggression at Time 2. Further, overt and relational aggression were significantly positively correlated both at Time 1 and at Time 2. None of the other correlations were significant on the overall sample.

It was predicted that in females, the relation between attachment anxiety and aggression (both relational and overt) would be stronger than the relation between attachment avoidance and aggression. In contrast, it was predicted that in males, the relation between attachment avoidance and aggression (both relational and overt) would be stronger than the relation between attachment anxiety and aggression. To test these predictions t-test statistics with  $n - 3$  degrees of freedom following a procedure from Cohen and Cohen (1983; page 57) were calculated. The formula tests for a significant difference in the correlation between variables X (i.e., attachment avoidance) & Y (i.e., aggression) versus variables V (i.e., attachment anxiety) & Y (i.e., aggression) given the correlation between X (i.e., attachment avoidance) and V (i.e., attachment anxiety).

$$t = (r_{xy} - r_{vy}) * \sqrt{(n-1)(1 + r_{xv})} / (\sqrt{2((n-1)/(n-3))|R| + ((r_{xy} + r_{vy})/2)^2(1-r_{xv})^3})$$

*Is attachment anxiety uniquely related to aggression in females?*

For females, consistent with predictions, attachment anxiety was positively related to overt aggression at Time 1; however, it was not related to overt aggression at Time 2. Attachment anxiety was not related to relational aggression at Time 1 or Time 2. Attachment avoidance was negatively related to

overt aggression at Time 1 and Time 2 and not related to relational aggression at Time 1 or Time 2 (see Table 5).

The positive relation between attachment anxiety and overt aggression at Time 1 was significantly different from the negative relation between attachment avoidance and overt aggression at Time 1;  $t(3,77) = .30, p = .002$ . Similarly, the relation between attachment anxiety and overt aggression at Time 2 was significantly different than the relation between attachment avoidance and overt aggression at Time 2;  $t(3,77) = -2.02, p = .04$ .

However, the relation between attachment anxiety and relational aggression at Time 1 was not significantly different than the relation between attachment avoidance and relational aggression at Time 1;  $t(3,77) = -1.25, p = .21$ . Similarly, the relation between attachment anxiety and relational aggression at Time 2 was not significantly different than the relation between attachment avoidance and relational aggression at Time 2;  $t(3,77) = -1.44, p = .07$ .

Thus, in females, attachment anxiety was more strongly related to overt aggression than was attachment avoidance, both concurrently and at follow-up. However, the relations between attachment anxiety and attachment avoidance with relational aggression were not significantly different at either time point.

*Is attachment avoidance uniquely related to aggression in males?*

For males, attachment avoidance was not significantly related to overt aggression at Time 1 or Time 2. However, attachment avoidance was significantly correlated with relational aggression at Time 1 but not relational aggression at Time 2. Attachment anxiety was not significantly related to overt



aggression at Time 1 or Time 2 and it was negatively correlated with relational aggression at Time 1 but not at Time 2 (see Table 4).

The relation between attachment avoidance and overt aggression at Time 1, although not significant itself ( $r = .19$ ), was significantly stronger than the relation between attachment anxiety and overt aggression at Time 1;  $t(3,84) = 1.92, p = .05$ . However, the relation between attachment avoidance and overt aggression at Time 2 was not significantly different than the relation between attachment anxiety and overt aggression at Time 2;  $t(3,84) = 0, p = .50$ .

The relation between attachment avoidance and relational aggression at Time 1 was significantly different than the relation between attachment anxiety and relational aggression at Time 1;  $t(3,84) = 3.45, p = .006$ . Similarly, the relation between attachment avoidance and relational aggression at Time 2 was also significantly different than the relation between attachment anxiety and relational aggression at Time 2;  $t(3,84) = 1.74, p = .04$ .

Thus, in males, attachment avoidance was more strongly related to overt aggression than was attachment anxiety concurrently but not at follow-up. Attachment avoidance was also more strongly related to relational aggression than was attachment anxiety both concurrently and at follow-up.

*Is affect control related to aggression in both girls and boys?*

Consistent with predictions, for girls, low affect control was positively related to both overt and relational aggression at Time 1 but not related to either overt or relational aggression at Time 2. In males, low affect control was positively related to overt aggression at Time 1 and at Time 2 but not related to

relational aggression at Time 1 or Time 2. Thus, low affect control is related to concurrent overt aggression in both females and males but it is only related to concurrent relational aggression in females. On the other hand, low affect control does not predict either overt or relational aggression at follow-up in females but predicts overt aggression at follow-up in males.

*Table 4. Zero-order Correlations of Major Independent and Dependent Variables at Time 1 and 2.*

N = 167	1	2	3	4	5	6	7
1. Attachment Avoidance T1	---						
2. Attachment Anxiety T1	-.33**	---					
3. Affect Control T1	-.12	-.25**	---				
4. Overt Aggression T1	-.01	.04	-.37**	---			
5. Relational Aggression T1	-.01	-.02	-.31**	.53**	---		
6. Overt Aggression T2	-.11	.03	-.24*	.54**	.25*	---	
7. Relational Aggression T2	-.15	.09	-.10	.26**	.37**	.55**	---

Note: \*  $p < .05$ ; \*\*  $p < .01$

*Table 5. Zero-order Correlations of Major Independent and Dependent Variables for Males and Females at Time 1 and 2.*

	1	2	3	4	5	6	7
1. Attachment Avoidance T1	---	-.35**	-.27*	-.24*	-.13	-.25*	-.19
2. Attachment Anxiety T1	-.33**	---	.36**	.24*	.07	.07	.04
3. Affect Control T1	.02	-.14	---	-.42**	-.38**	-.08	-.08
4. Overt Aggression T1	.19	-.10	-.32**	---	.64**	.56**	.33*
5. Relational Aggression T1	.28**	-.24*	-.19	.43**	---	.30*	.32*
6. Overt Aggression T2	.07	.07	-.23*	.54**	.32*	---	.60**
7. Relational Aggression T2	.19	-.07	-.03	.18	.31*	.55**	---

*Note:* Scores for females (n = 80) are above the diagonal and scores for males (n = 87) are below the diagonal; \* $p < .05$ ; \*\* $p < .01$

### ***Attachment, Gender, and Aggression***

*Are there gender differences in the relation between attachment and aggression?*

Given that gender specific models were predicted in the relations between the predictor and dependent variables, regression analyses were first run to examine possible predictors by gender interaction effects. Regressions were run separately for the two main predictor variables – attachment anxiety and attachment avoidance at Time 1 – in relation to overt and relational aggression at Times 1 and 2.

Regression analyses revealed that for attachment anxiety and overt aggression at Time 1, the model was marginally significant at Step 3 [ $F(3,164) = 2.50$ ,  $F\Delta = 2.10$ ,  $p = .061$ ; see Table 6 and Figure 1] with a significant interaction effect of attachment anxiety and gender ( $p = .036$ ). This relation was not

significant over the Time 1 to Time 2 follow-up period (see Table 7), indicating that females who score high on attachment anxiety are concurrently, but not prospectively, more overtly aggressive than males who score high on attachment anxiety.

*Table 6.* Regression Examining the Relation Between Attachment Anxiety, Gender and Time 1 Overt Aggression.

		DV Time 1 Overt Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	.027 (.019)	.153	1.39	.169
Step 2	Anxiety	.033 (.021)	.180	1.51	.132
	Gender	-.100 (.118)	.124	-.85	.395
Step 3	Anxiety	-.112 (.070)	-.194	-1.59	.114
	Gender	-.286 (.184)	-.200	-1.55	.122
	Anxiety X Gender	.103 (.048)	.345	2.12	.036
	Gender				

*Figure 1.* Moderation Effect – Attachment Anxiety and Gender in Relation to Time 1 Overt Aggression

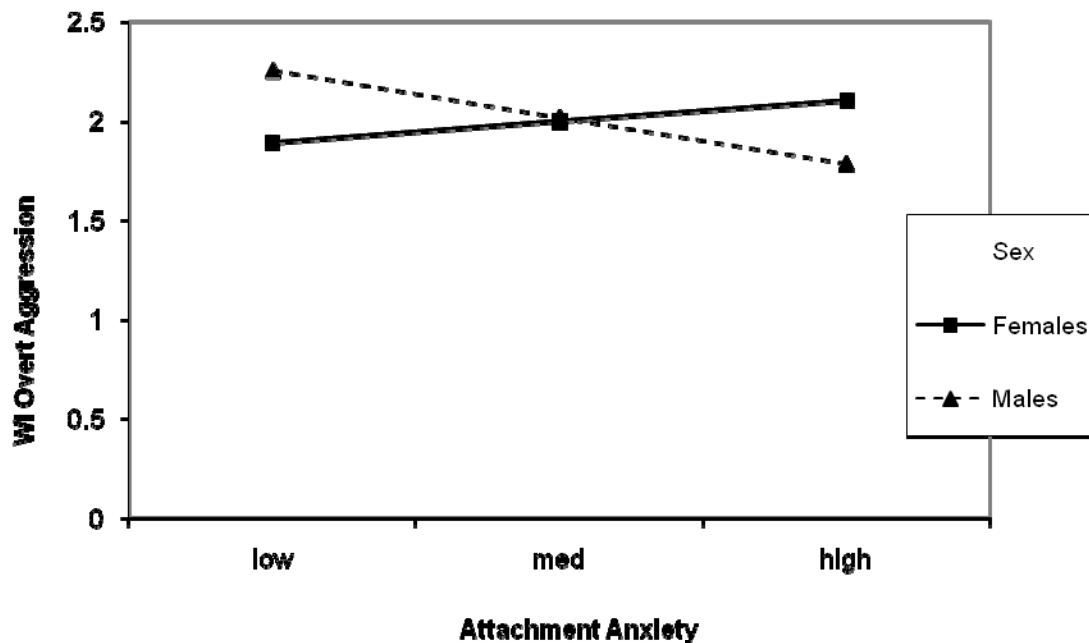


Table 7. Regression Examining the Relation Between Attachment Anxiety, Gender and Time 2 Overt Aggression.

		DV Time 2 Overt Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	-.003 (.015)	-.065	-.25	.805
Step 2	Anxiety	-.017 (.016)	-.070	-1.07	.287
	Gender	-.102 (.091)	-.146	-1.12	.263
Step 3	Anxiety	-.059 (.045)	-.200	-1.32	.190
	Gender	-.204 (.109)	-.312	-1.86	.064
	Anxiety X Gender	.033 (.029)	.174	1.15	.251

For attachment anxiety and relational aggression at Time 1 the model was significant at Step 3 [ $F(3,164) = 5.93$ ,  $F\Delta = 4.89$ ,  $p = .007$ ; see Table 8 and Figure 2] with a significant interaction effect of attachment anxiety and gender ( $p = .002$ ) indicating that males scoring low on attachment anxiety are concurrently more relationally aggressive than females scoring high on attachment anxiety. This relation was also significant over the Time 1 to Time 2 follow-up period [ $F(3,164) = 5.11$ ,  $F\Delta = 6.48$ ,  $p = .002$ ; see Table 9 and Figure 3] indicating that females who score high on attachment anxiety are prospectively more relationally aggressive than males who score high on attachment anxiety.

Table 8. Regression Examining the Relation Between Attachment Anxiety, Gender and Time 1 Relational Aggression.

		DV Time 1 Relational Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	.019 (.014)	.141	1.33	.185
Step 2	Anxiety	.007 (.019)	.078	.41	.687
	Gender	.214 (.087)	.446	2.44	.014
Step 3	Anxiety	.045 (.100)	.187	.45	.654
	Gender	.105 (.040)	.322	2.59	.010
	Anxiety X Gender	.085 (.027)	.454	3.08	.002

Figure 2. Moderation Effect – Attachment Anxiety and Gender in Relation to Time 1 Relational Aggression

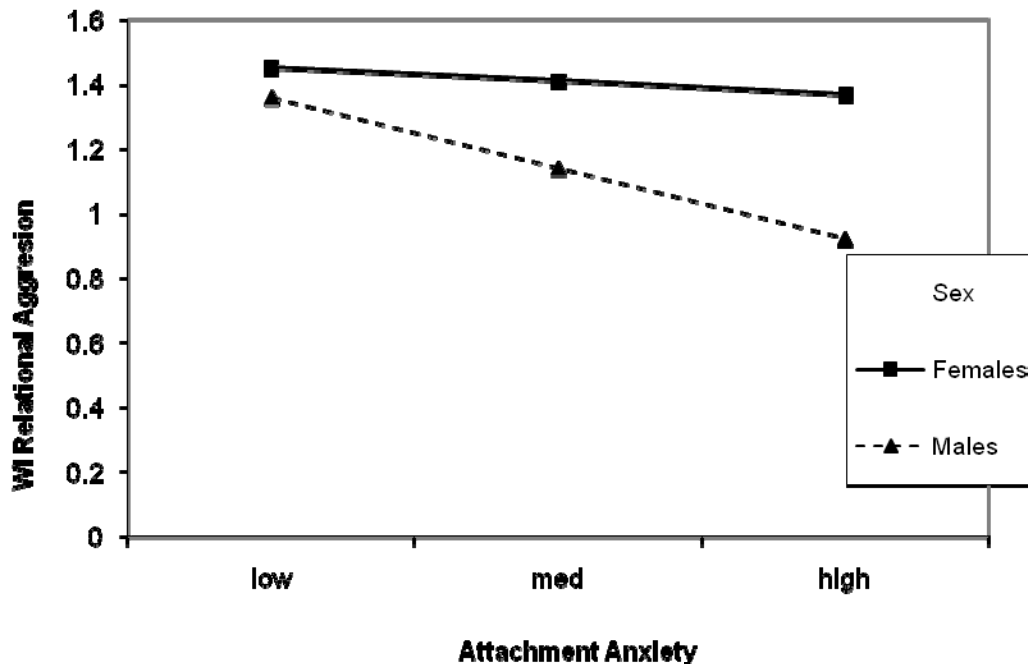
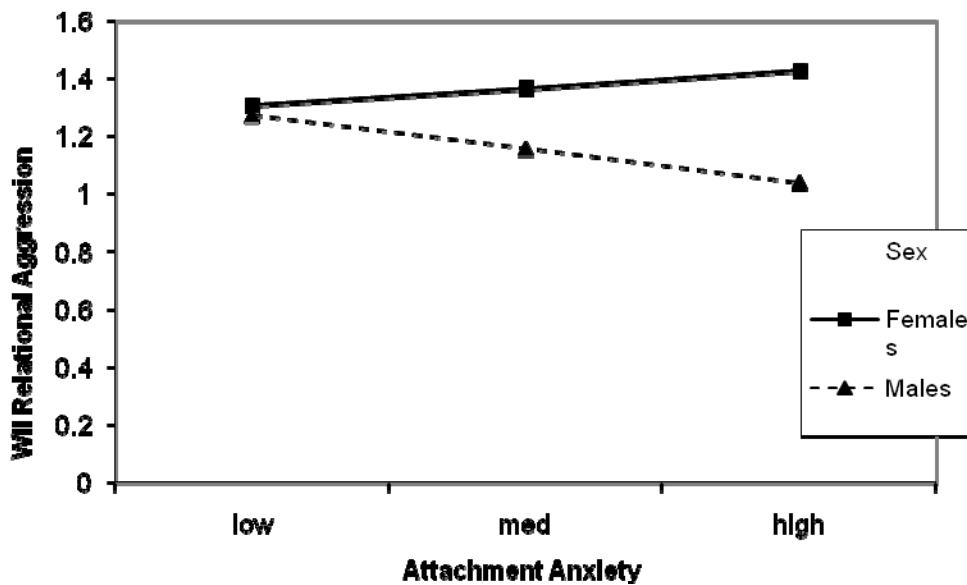


Table 9. Regression Examining the Relation Between Attachment Anxiety, Gender and Time 2 Relational Aggression.

		DV Time 2 Relational Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	-.018 (.013)	-.113	-1.29	.197
Step 2	Anxiety	.024 (.011)	.297	2.01	.046
	Gender	.101 (.068)	.223	1.49	.139
Step 3	Anxiety	-.056 (.032)	-.208	-1.75	.082
	Gender	-.013 (.079)	-.182	-.17	.862
	Anxiety X Gender	.085 (.022)	.326	2.66	.008

Figure 3. Moderation Effect – Attachment Anxiety and Gender in Relation to Time 2 Relational Aggression



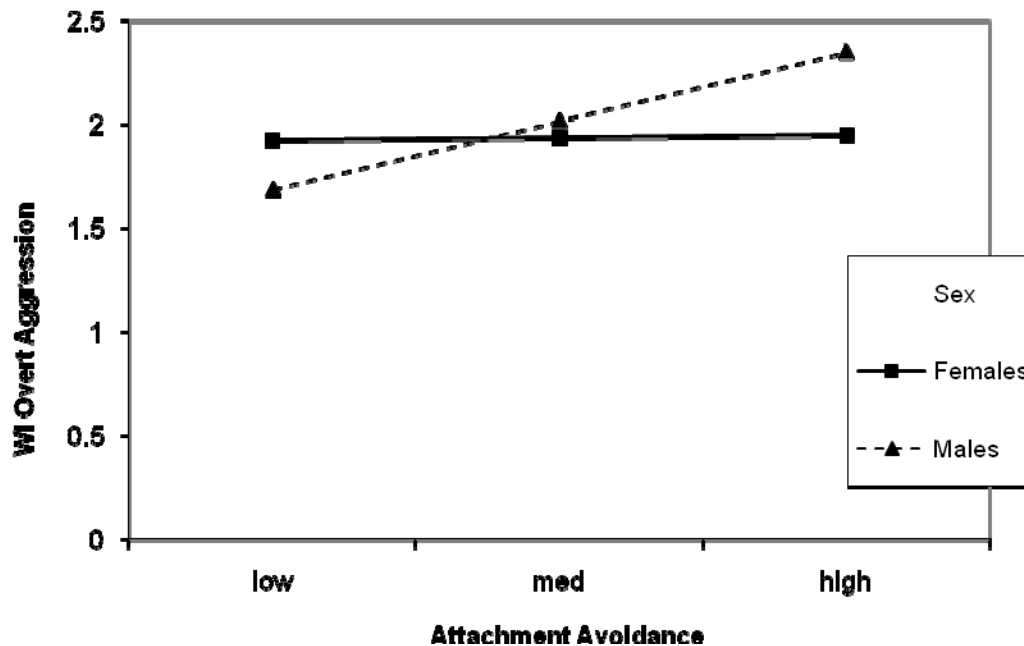
With respect to attachment avoidance and overt aggression at Time 1, the model was significant at Step 3 [ $F(3,164) = 2.84$ ,  $F\Delta = 4.36$ ,  $p = .039$ ; see Table 10 and Figure 3] with a significant interaction effect of attachment avoidance and gender ( $p = .005$ ). This relation was not significant over the Time 1 to Time 2 follow-up period (see Table 11), indicating that males who score high on

attachment avoidance are concurrently, but not prospectively, more overtly aggressive than females who score high on attachment avoidance.

*Table 10.* Regression Examining the Relation Between Attachment Avoidance, Gender and Time 1 Overt Aggression.

		DV Time 1 Overt Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Avoidance	-.008 (.010)	-.076	-.43	.664
Step 2	Avoidance	.006 (.018)	.082	.36	.736
	Gender	-.062 (.116)	-.065	-.53	.596
Step 3	Avoidance	.107 (.094)	.280	1.79	.160
	Gender	.061 (.122)	.098	.50	.617
	Avoidance X Gender	-.103 (.036)	-.374	-2.83	.005

*Figure 4.* Moderation Effect – Attachment Avoidance and Gender in Relation to Time 1 Overt Aggression





*Table 11.* Regression Examining the Relation Between Attachment Avoidance, Gender and Time 2 Overt Aggression.

		DV Time 2 Overt Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Avoidance	-.016 (.073)	-.103	-.67	.517
Step 2	Avoidance	-.019 (.023)	-.099	-.81	.436
	Gender	-.148 (.105)	-.131	-1.41	.164
Step 3	Avoidance	.045 (.042)	.182	1.07	.285
	Gender	-.169 (.092)	-.240	-1.84	.068
	Avoidance X	-.046 (.027)	-.280	-1.68	.094
	Gender				

Finally, for attachment avoidance and relational aggression at Time 1, the model was also significant at Step 3 [ $F(3,164) = 4.09$ ,  $F_{\Delta} = 3.48$ ,  $p = .007$ ; see Table 12 and Figure 5] with a significant interaction effect of attachment avoidance and gender ( $p = .036$ ). This relation was also significant over the Time 1 to Time 2 follow-up period [ $F(3,164) = 2.94$ ,  $F_{\Delta} = 3.62$ ,  $p = .035$ ; see Table 13 and Figure 6], indicating that males who score high on attachment avoidance are concurrently and prospectively more relationally aggressive than females who score high on attachment avoidance.

Table 12. Regression Examining the Relation Between Attachment Avoidance, Gender and Time 1 Relational Aggression.

		DV Time 1 Relational Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Avoidance	-.002 (.014)	-.076	-.18	.516
Step 2	Avoidance	-.009 (.013)	-.097	-.65	.694
	Gender	.237 (.085)	.332	2.77	.014
Step 3	Avoidance	.092 (.042)	.161	1.20	.280
	Gender	.105 (.090)	.280	1.36	.110
	Avoidance X Gender	-.057 (.027)	-.338	-2.11	.036

Figure 5. Moderation Effect – Attachment Avoidance and Gender in Relation to Time 1 Relational Aggression

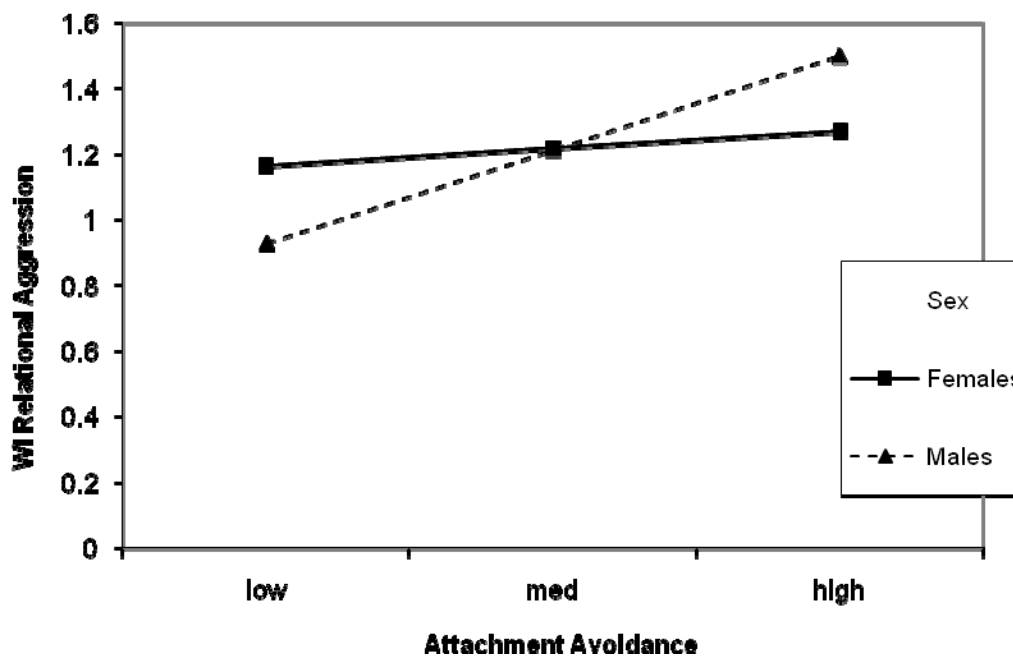
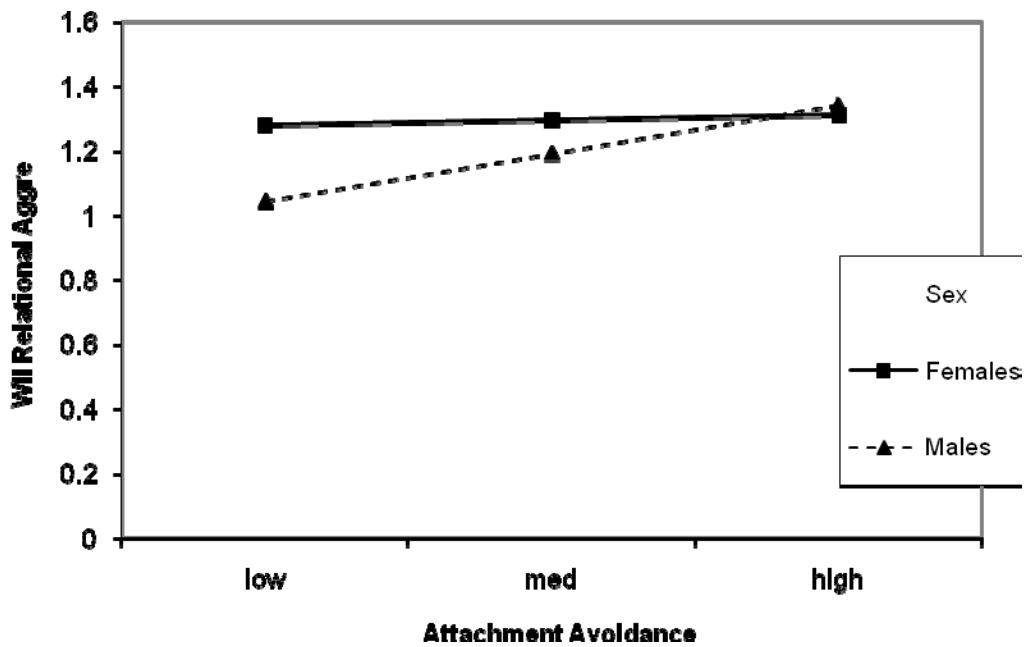


Table 13. Regression Examining the Relation Between Attachment Avoidance, Gender and Time 2 Relational Aggression.

		DV Time 2 Relational Aggression			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Avoidance	-.022 (.050)	-.175	-1.21	.254
Step 2	Avoidance	-.019 (.019)	-.113	-1.00	.345
	Gender	.163 (.093)	.312	1.76	.094
Step 3	Avoidance	.048 (.031)	.125	1.55	.123
	Gender	.163 (.074)	.280	2.20	.029
	Avoidance X Gender	-.043 (.020)	-.320	-2.09	.038

Figure 6. Moderation Effect – Attachment Avoidance and Gender in Relation to Time 2 Relational Aggression



In summary, these analyses revealed significant gender by predictor effects in all four regressions evaluating gender differences in the relation between attachment anxiety and avoidance to aggression at Times 1 and two out of four regressions related to aggression at Time 2, suggesting that gender

moderates the relation between attachment and aggression, thus warranting splitting the sample for females and males to test the predicted patterns of relations for each gender independently.

### ***Attachment, Affect Regulation, and Aggression***

*Does affect control moderate the relation between attachment anxiety and aggression in females?*

Attachment anxiety and affect control were predicted to be independently related to overt and relational aggression in females. In addition, the relation between attachment anxiety and overt and relational aggression in females was predicted to be moderated by affect control, such that high attachment anxiety combined with low affect control would be related to high levels of overt and relational aggression in females. A similar pattern of findings was predicted in the relations between attachment anxiety and affect control at Time 1 and both concurrent as well as prospective aggression at follow-up approximately two years later (i.e., aggression measured at Times 1 and 2).

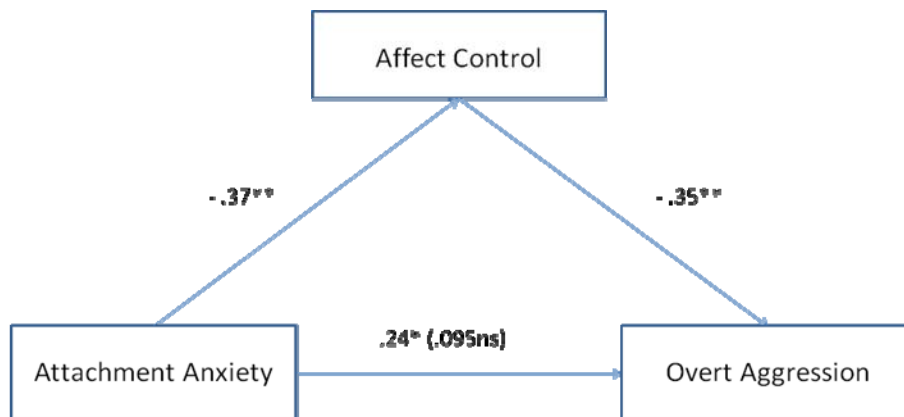
Regression analyses revealed that for overt aggression at Time 1, the model was significant at Step 1 [ $F(1,79) = 4.90, p = .030$ ] as well as Step 2 [ $F(2,78) = 8.85, F\Delta = 12.10, p = .001$ ; see Table 14). In Step 1, attachment anxiety contributed significantly to the model ( $p = .030$ ). When affect control was added in Step 2, it was a significant predictor ( $p = .001$ ) but attachment anxiety no longer predicted overt aggression ( $p = .360$ ). Together these results suggest that low affect control may mediate the relation between high attachment anxiety and overt aggression (see Figure 7). The addition of the interaction term at Step

3 did not reveal significant attachment anxiety by affect control interactions in relation to overt aggression.

*Table 14.* Regression Examining the Relation Between Attachment Anxiety, Affect Control and Time 1 Overt Aggression in Females.

		DV Time 1 Overt Aggression in Females			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	.074 (.033)	.243	2.21	.030
Step 2	Anxiety	.031 (.034)	.102	.92	.360
	Affect Control	.120 (.034)	.384	3.47	.001
Step 3	Anxiety	.044 (.058)	.145	.75	.455
	Affect Control	.136 (.070)	.438	1.94	.056
	Anxiety X Affect Control	-.005 (.017)	-.085	-.27	.785

*Figure 7.* Mediation Effect – Affect Control as a Mediator Between Attachment Anxiety and Time 1 Overt Aggression in Females



Next, the Sobel test of significance of indirect/mediated effect on overt aggression was conducted. The point estimate of the indirect effect (“Sobel value”) was significant ( $z_{\text{sobel}} = -2.7, p = .048$ ) thus supporting the mediational model explaining females’ engagement in concurrent overt aggression through low affect control. Further, as predicted, girls with low affect control were more

likely to engage in overt aggression at follow-up and the interaction between attachment anxiety and low affect control marginally predicted ( $p = .090$ ) overt aggression at follow-up approximately two years later [ $F(3,77) = 4.23$ ,  $F\Delta = 8.01$ ,  $p = .008$ ; see Table 15].

*Table 15. Regression Examining the Relation Between Attachment Anxiety, Affect Control and Time 2 Overt Aggression in Females.*

		DV Time 2 Overt Aggression in Females			
		B (S.E.)	$\beta$	$t$	$p$
Step 1	Anxiety	.009 (.035)	.005	-.52	.798
Step 2	Anxiety	.028 (.014)	.102	.92	.360
	Affect Control	.140 (.034)	.394	3.50	.001
Step 3	Anxiety	.059 (.062)	.145	1.09	.278
	Affect Control	.164 (.092)	.338	3.06	.003
	Anxiety X	-.125 (.022)	-.285	-1.71	.090
	Affect Control				

With respect to relational aggression at Time 1, the model was significant at Step 2 [ $F(2,78)=7.02$ ,  $p=.002$ ,  $F\Delta = 13.54$ ,  $p<.001$ ; see Table 16]. As predicted, low affect control predicted relational aggression, but contrary to prediction, attachment anxiety did not. Step 3 was not significant and did not reveal a significant attachment anxiety by affect control link to Time 1 relational aggression. However, as predicted, girls with high levels of attachment anxiety and low affect control were more likely to engage in relational aggression at follow-up approximately two years later [ $F(3,77) = 5.36$ ,  $F\Delta = 9.11$ ,  $p = .002$ ; see Table 17 and Figure 8].

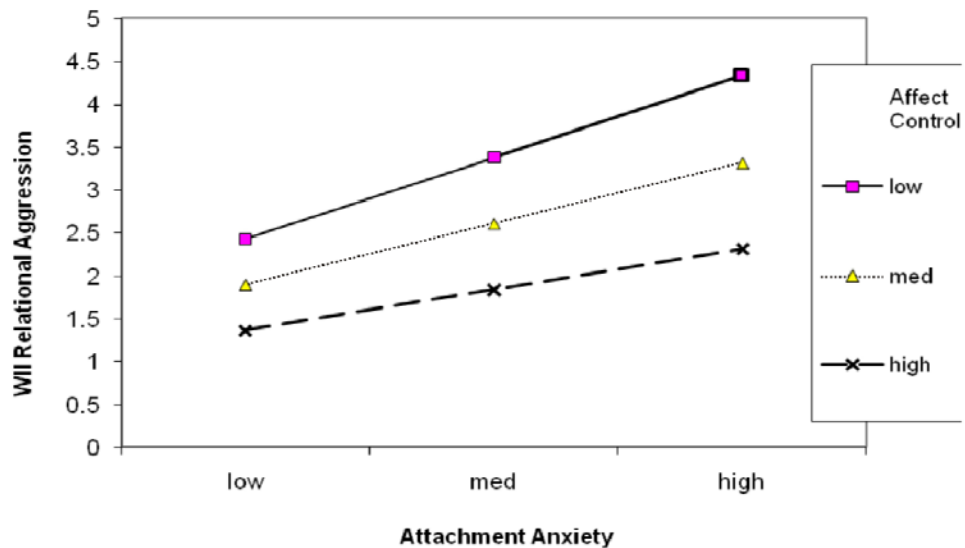
*Table 16.* Regression Examining the Relation between Attachment Anxiety, Affect Control and Time 1 Relational Aggression in Females.

		DV Time 1 Relational Aggression in Females			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	.020 (.029)	.075	.66	.507
Step 2	Anxiety	.020 (.029)	.078	.68	.493
	Affect Control	.111 (.030)	.415	3.68	<.001
Step 3	Anxiety	.001 (.051)	-.001	-.008	.994
	Affect Control	.136 (.061)	.510	2.22	.030
	Anxiety X Affect Control	-.007 (.015)	-.150	-.47	.636

*Table 17.* Regression Examining the Relation between Attachment Anxiety, Affect Control and Time 2 Relational Aggression in Females.

		DV Time 2 Relational Aggression in Females			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Anxiety	-.012 (.028)	-.065	-.44	.659
Step 2	Anxiety	.030 (.025)	.078	1.40	.166
	Affect Control	.025 (.023)	.015	1.06	.293
Step 3	Anxiety	.123 (.048)	.221	2.54	.012
	Affect Control	.195 (.088)	.110	2.20	.058
	Anxiety X Affect Control	.042 (.018)	.160	2.29	.040

Figure 8. Moderation Effect – Attachment Anxiety and Affect Control in Relation to Time 2 Relational Aggression in Females



In summary, for females, low affect control alone was related to overt aggression both concurrently and at follow-up two years later (i.e., at Times 1 and 2). In addition, low affect control accounted for (mediated) the relation between attachment anxiety and Time 1 overt aggression. Further, low affect control alone was related to Time 1 relational aggression. However, Time 2 relational aggression was related to affect control, attachment anxiety as well as the interaction between high attachment anxiety and low affect control<sup>7</sup>.

*Does affect control moderate the relation between attachment avoidance and aggression in males?*

Attachment avoidance and affect control were predicted to be independently related to overt and relational aggression in males. In addition, the relation between attachment avoidance and overt and relational aggression in

<sup>7</sup> Complementary analyses were carried out to examine the relations between attachment avoidance, affect control and aggression in girls and revealed no additional findings; i.e., in females, attachment avoidance did not significantly contribute to the prediction of overt or relational aggression concurrently or at the two-year follow-up.



males was predicted to be moderated by affect control, such that high attachment avoidance combined with low affect control would be related to high levels of overt and relational aggression in males. A similar pattern of findings was predicted in the relations between attachment anxiety and affect control at Time 1 and for both concurrent as well as prospective aggression at follow-up approximately two years later (measured at Times 1 and 2).

Regression analyses revealed that for overt aggression at Time 1, the model was significant at Step 2 [ $F(2, 85) = 6.81$ ,  $F\Delta = 10.11$ ,  $p = .002$ ; Table 18] with low affect control significantly predicting ( $p = .002$ ), and high attachment avoidance marginally predicting ( $p = .060$ ), overt aggression in males. Similarly, with respect to overt aggression at Time 2 follow-up, the model was significant at Step 2 [ $F(1,85) = 4.71$ ,  $F\Delta = 8.01$ ,  $p = .011$ ; see Table 19] with low affect control significantly ( $p = .011$ ) predicting overt aggression. The addition of the interaction term at Step 3 did not reveal significant attachment avoidance by affect control interactions in relation to overt aggression at Time 1 or Time 2. *Thus, in males, based on this model, low affect control alone is related to both Time 1 and Time 2 overt aggression.*

*Table 18.* Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 1 Overt Aggression in Males.

		DV Time 1 Overt Aggression in Males			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Avoidance	.040 (.023)	.190	1.78	.078
Step 2	Avoidance	.038 (.021)	.182	1.79	.060
	Affect Control	.090 (.028)	.322	3.18	.002
Step 3	Avoidance	.087 (.039)	.412	2.22	.029
	Affect Control	.122 (.036)	.440	3.43	.001
	Avoidance X Affect Control	-.015 (.010)	-.101	-1.48	.141

*Table 19.* Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 2 Overt Aggression in Males.

		DV Time 2 Overt Aggression in Males			
		B (S.E.)	$\beta$	<i>t</i>	<i>p</i>
Step 1	Avoidance	.009 (.038)	.190	1.58	.118
Step 2	Avoidance	.031 (.019)	.192	1.57	.120
	Affect Control	.067 (.025)	.332	2.60	.011
Step 3	Avoidance	.014 (.251)	.113	1.27	.206
	Affect Control	.096 (.068)	.230	3.82	.129
	Avoidance X Affect Control	-.010 (.014)	-.201	-0.27	.141

With respect to relational aggression at Time 1, the model was significant at Step 1 [ $F(1,86) = 6.97, p = .010$ ; see Table 20] with a significant contribution from attachment avoidance ( $p = .010$ ). Step 2 of this model was only marginally significant ( $F\Delta = 3.12; p = .076$ ), suggesting that high attachment avoidance significantly predicted ( $p = .010$ ), and low affect control marginally predicted ( $p = .076$ ), Time 1 relational aggression. The addition of the interaction term at Step 3 did not reveal significant attachment avoidance by affect control interactions in relation to relational aggression. However, as predicted, boys with high levels of

attachment avoidance and low affect control were more likely to engage in relational aggression at follow-up approximately two years later [ $F(3,84) = 5.06$ ,  $F\Delta = 9.21$ ,  $p = .002$ ; see Table 21 and Figure 9 ].

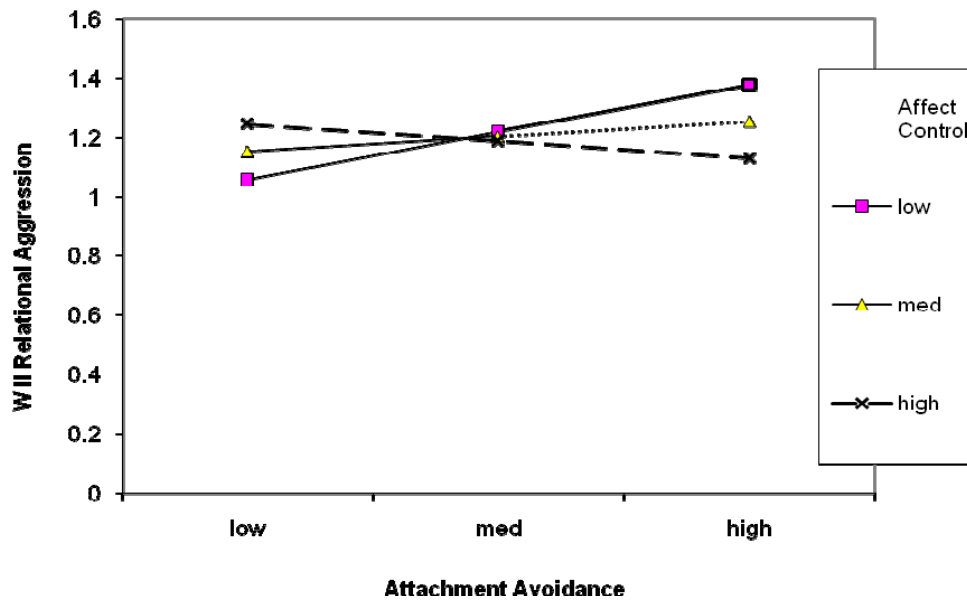
*Table 20.* Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 1 Relational Aggression in Males.

		DV Time 1 Relational Aggression in Males			
		B (S.E.)	$\beta$	$t$	$p$
Step 1	Avoidance	.035 (.013)	.275	2.64	.010
Step 2	Avoidance	.034 (.013)	.271	2.62	.010
	Affect Control	.031 (.017)	.185	1.79	.076
Step 3	Avoidance	.044 (.024)	.346	1.81	.073
	Affect Control	.037 (.022)	.223	1.69	.094
	Avoidance X Affect Control	-.003 (.006)	-.098	-.47	.640

*Table 21.* Regression Examining the Relation Between Attachment Avoidance, Affect Control and Time 2 Relational Aggression in Males.

		DV Time 2 Relational Aggression in Males			
		B (S.E.)	$\beta$	$t$	$p$
Step 1	Avoidance	.004 (.021)	.075	-0.29	.852
Step 2	Avoidance	-.019 (.011)	.070	-1.65	.102
	Affect Control	-.013 (.015)	.025	-0.87	.388
Step 3	Avoidance	-.034 (.016)	-.247	-2.10	.039
	Affect Control	-.010 (.017)	.023	-1.23	.222
	Avoidance X Affect Control	.044 (.024)	.399	3.30	.001

Figure 9. Moderation Effect – Attachment Avoidance and Affect Control in Relation to Time 2 Relational Aggression in Males



In summary, for males, low affect control alone was related to overt aggression both concurrently and at follow-up approximately two years later (i.e., at Times 1 and 2). With respect to relational aggression, attachment avoidance was related to Time 1 and Time 2 relational aggression. Time 2 relational aggression was further predicted by the interaction between high attachment avoidance and low affect control in boys<sup>8</sup>.

<sup>8</sup> Complementary analyses were carried out to examine the relations between attachment anxiety, affect control and aggression in boys and revealed no additional findings; i.e., in males, attachment anxiety did not significantly contribute to the prediction of overt or relational aggression concurrently or at the two-year follow-up.

## **DISCUSSION**

This study explored the role of affect regulation in the relation between insecure attachment dimensions and aggression concurrently as well as aggression at a two-year follow-up. Based on theory and research in the fields of attachment and affect regulation, gender specific models were tested: aggression was predicted to relate to attachment anxiety in females and attachment avoidance in males. Poor affect regulation was expected to exacerbate these relationships. Parallel models were predicted with respect to concurrent as well as prospective aggression.

### ***Gender Differences in Attachment and Aggression***

Findings revealed gender differences in the levels of attachment anxiety and attachment avoidance. Consistent with previous research (e.g., Bartholomew & Horowitz, 1991; Scharfe, 2002), females reported significantly higher levels of attachment anxiety than males; conversely, males reported higher levels of attachment avoidance than females. These differences may reflect gender stereotyped socialization practices that encourage females to attend to others' emotional experiences and relationships and encourage males toward independence (e.g., Cross & Madson, 1997; Moretti & Higgins, 1999; Moretti & Obsuth, in press). Alternatively, these differences may also reflect biological differences between the sexes and their approach to stress and relationships, such as the theorized 'tend-and-befriend' and 'fight-or-flight' biologically based

approach to others in females and males, respectively (Beech & Mitchell, 2005; Taylor, et al., 2000). The gender differences observed in this study may also reflect sex by gender interaction effects whereby both biological and social factors exert combined effects. The roles of sex and gender in relation to attachment and its consequences clearly warrant further study.

Consistent with some but not all previous research (e.g., Crick, et al., 2006; Ostrov & Keating, 2004; but see Underwood, 2003; Swearer, 2008), females were significantly more relationally aggressive than males. This pattern of findings held at both the initial assessment and subsequently two years later, suggesting that high-risk female adolescents and young adults are more likely than their male counterparts to engage in relationally aggressive behaviour. Additionally, in contrast to findings in normative samples that demonstrate lower rates of overt aggression in females compared to males (Crick, et al., 2006; Ostrov & Keating, 2004), females and males in this study engaged in comparable levels of overt aggression. Consistent with previous studies (e.g., Hoff, Reese-Weber, Schneider, & Stagg, 2009), relational and overt aggression were significantly correlated in both females and males, supporting the notion that youth who engage in one type of aggression also engage in other types of aggression. Further, findings in this high-risk sample indicated high levels of overt and relational aggression at both time points, which is contrary to findings in normative samples where aggressive behaviour tends to decline with age (e.g., Brame, Nagin, & Trambley, 2001).

### ***Gender Specific Relations between Attachment and Aggression***

As predicted, in girls, overt aggression was more strongly related to attachment anxiety than to attachment avoidance, both concurrently and prospectively two years later. It is perhaps not surprising that among females at high-risk for aggression, desperate and aggressive actions to engage others or coerce them into relationships arise out of anxiety about relationships more than avoidance. In addition, the relation between attachment anxiety and overt aggression in females may be a function of their high rejection sensitivity (Obsuth & Moretti, 2009).

However, inconsistent with predictions, girls' relational aggression was not more strongly related to attachment anxiety than was attachment avoidance at either time point. This finding is surprising and particularly so due to the high correlation between overt and relational aggression. As such, further investigation is warranted to determine whether this feature is atypical of the females in this high-risk sample.

In boys, as predicted, overt aggression was significantly more strongly related to attachment avoidance than was attachment anxiety concurrently but not prospectively. Similarly, relational aggression in boys was significantly more strongly related to attachment avoidance than was attachment anxiety both concurrently and at follow-up two years later. Thus the tendency to avoid close relationships in adolescence is not only related to relational but also overt aggression in adolescent boys. However, when these boys enter young

adulthood, their adolescent avoidance and devaluation of relationships predicts relational aggression alone.

### ***Attachment, Affect Regulation, and Aggression***

The ability to control one's affect in social interactions is necessary to moderate aggressive responses (Gottman, Katz, & Hooven, 1996). Therefore, not surprisingly and consistent with previous research (e.g., Dodge & Coie, 1987; Rydell, Berlin, & Bohlin, 2003), low affect control (as a form of affect regulation) was related to concurrent overt aggression in both females and males. However, low affect control was related to overt aggression at follow-up only in males. Furthermore, low affect control was related to concurrent relational aggression only in females and it was not related to relational aggression at follow-up in either females or males.

Affect control was predicted to moderate the relation between attachment anxiety and aggression in girls as well as the relation between attachment avoidance and aggression in boys. Mediational models were also tested and compared to moderational models.

Results provided some support for moderation and revealed one significant mediated relationship. Specifically, in girls, low affect control mediated the relation between attachment anxiety and concurrent overt aggression suggesting that low affect control accounted for the relation between attachment anxiety and overt aggression. In other words, low affect control is the mechanism through which attachment anxiety is related to concurrent overt aggression.



Further, in girls, low affect control also moderated the relation between attachment anxiety and relational aggression at follow-up. This suggests that girls who score high on attachment anxiety and exhibit low affect control in adolescence are most likely to be relationally aggressive as young adults.

In boys, on the other hand, low affect control moderated the relation between attachment avoidance and relational aggression at follow-up. That is, boys who scored high on attachment avoidance and exhibited low affect control in adolescence reported higher levels of relational aggression prospectively two years after their first assessment.

Taken together, these findings point to gender specific risk factors for engagement in overt and relational aggression. While attachment anxiety is more salient than attachment avoidance for girls in relation to overt aggression, attachment avoidance is more salient than attachment anxiety for boys in predicting relational aggression. Further, when low affect control is at play as well, it emerges as an independent risk factor, primarily linked to relational aggression in girls and to overt aggression in both girls and boys over time.

Consistent with socialization and biological theories of gender differences in social relationships, aggression in females may be associated with over-activation of the attachment system, or attachment anxiety, characterized by heightened proximity seeking which does not terminate by contact with the sought after person. Moreover, girls with high levels of attachment anxiety who lack the ability to regulate their affective state may be particularly prone to overtly aggressive behaviour. It is possible that girls who are anxious about their

relationships but are able to manage their affect refrain from engaging in relational aggression, and thus from inflicting intentional harm to their relationships. However, it seems that when worries about relationships are combined with a deficient ability to control one's emotion over time this pattern of multiple heightened emotionality exhibits in the form of relational aggression.

In contrast, aggression for males seems to be associated with deactivation of the attachment system, characterized by avoidance or behaviour that minimizes proximity seeking. In addition, boys' struggle to regulate their affect renders them prone to overt aggression. Further, the combination of deactivation of the attachment system with the inability to regulate affect appears to be related to relational aggression in boys as they enter young adulthood. This latter finding is perplexing and requires further investigation as little is known about the factors that contribute to relational aggression in boys.

### ***Strengths of the Current Study and Clinical Implications***

Until recently, researchers examining the development of psychopathology in childhood and adolescence have focused primarily on boys (Crick, & Zahn-Waxler, 2003). The current research contributes to the newly emerging body of work by exploring the role of child gender in the development of psychopathology. This study utilized a combination of reliable self-report and interview measures as well as a state-of-the-art imputation technique for missing data which maximized the use of data from this high-risk longitudinal sample. In addition, in contrast to many studies which focus on only one form of aggression,

the current study examined two forms of aggressive behaviour to test the gender specific models with reference to aggressive behaviours that are possibly more salient for girls (relational) and boys (overt). Finally, the longitudinal design of this study allowed for the examination of the stability of the proposed models over development, which is essential to extending knowledge in this field.

The findings of this study of high-risk teens can inform treatment and intervention strategies. Results suggest that while girls report higher rates of relational aggression, boys engage in it as well. Given that relational aggression, unlike overt aggression, is covert in nature it is imperative that clinicians are sensitive to identifying boys who are at highest risk for engaging in these behaviours. Sensitive identification is particularly important given that relational aggression places both boys and girls at high risk for a host of future problems, including peer rejection (Crick et al., 2006). In addition, although low affect regulation, or low affect control appeared to be the most consistent predictor of both overt and relational aggression in both girls and boys, findings also support previous research pointing to the importance of focusing on attachment related issues when treating children and youth at high-risk for aggression (e.g., Bateman & Fonagy, 2003; Moretti & Obsuth, 2009; van Zeijl et al., 2006; Velderman, Bakerman-Kranenburg, Juffer, & van IJzendoorn, 2006).

The fact that both secure attachment and adaptive affect regulation strategies develop in the context of parent-child relationships and are both related to aggressive behaviour, point to the importance of focusing prevention and intervention strategies on parenting. Parenting behaviours shape children's

attachment representations, which in turn regulate children's cognitive, affective and behavioural functioning. Secure parent-child relationships play a key role in child and adolescent development – they serve as major protective factors and can buffer adolescents from newly emerging or continued engagement in risky behaviours. Children who experience their parents as sensitive, available and curious about their lives and experiences internalize a positive view of themselves and others. Their attachment security serves to regulate their affect and increases their likelihood of navigating relationships with others without relying on aggression to be close to them (anxiety in girls) or to distance themselves from others (avoidance in boys).

Effective treatment programs, such as Connect (Moretti, Braber, & Obsuth, 2009; Moretti & Obsuth, 2009) – a brief manualized attachment-based program for parents of adolescents with behaviour problems, which focuses on building healthy parent-teen relationships – are key to maintaining and enhancing healthy adolescent development and supporting youth through the transition to young adulthood. Other attachment-based programs for adolescents include Attachment-Based Family Therapy (ABFT; Diamond, Reiss, Diamond, Siqueland, & Isaacs, 2002) and Multiple-Family Group Intervention (MFGI; Keiley, 2007).

### ***Limitations and Directions for Future Research***

It is common in developmental psychology to first examine proposed patterns in clinical samples in order to elucidate developmental processes in the

normative population (Cicchetti, 2004). However, it is important to exercise caution when such generalizations from clinical to normative samples are made and replications of findings in normative samples are necessary prior to proposing a new developmental theory.

This study explored both concurrent and longitudinal patterns of relationships between the studied variables (affect regulation and attachment in adolescence and aggression in adolescence as well as two years later), thus enabling developmental interpretations of the current findings. As is often the case in longitudinal research, in this study information was not available for all participants at both time points. Missing data were thus imputed with the goal of maximizing the sample size and avoiding biasing the estimates by deleting missing cases (Schafer & Graham, 2002). This study utilized the most rigorous imputation technique to deal with missing data and thus maximized the reliability. However, using this technique is not the same as using a complete data set. Thus the findings of this study should be interpreted with caution and need to be replicated.

Another possible shortcoming involves the measurement of aggression and affect regulation, which consistent with the majority of studies in this field, relied on self-report measures, thus introducing the possibility of response bias. Future studies using alternative assessment approaches, including parent, teacher, or peer reports, and; observational strategies or diary measures will be important to provide more comprehensive and/or objective measures of these constructs and supplement these findings. However, utilization of measures with

alternative respondents may not yet be possible due to the paucity of such measures with demonstrated acceptable psychometric properties.

With respect to the measurement of aggression in this study, it should also be noted that the response format was different at Time 1 and Time 2. While at Time 1 youth completed self-report measures independently, at follow-up the protocols were administered via telephone. It is possible that the quasi telephone interview format at Time 2 contributed to further response bias as youth may have provided exaggerated estimates (to appear 'cool') or minimized (for reasons of social desirability) their true degree of engagement in different types of aggressive acts.

Further, this study focused on exploring overt and relational aggression overall without an identified target, which was an important first step in examining the proposed models. However, given that this study explored the relational context of aggression through examining the role of attachment in its expression and because aggression by definition is an interpersonal event, exploration of the specific targets of aggression may further elucidate the relations between gender, attachment and aggression. It is possible that attachment to parents is differentially related to aggression toward them, or toward peers or romantic partners. Future studies could utilize the Conflict Tactics Scale, which assesses aggression toward each parent (CTS1; Straus, 1979) as well as toward romantic partners (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Such examination may reveal different patterns of processes underlying aggressive behaviour in different relationship contexts.

Similarly, consistent with current literature, this study examined two attachment dimensions – attachment anxiety and attachment avoidance. Future research may examine the relations between the four attachment categories (secure, preoccupied, fearful and dismissing) and affect regulation in relation to different types of aggression to further elucidate these relations. For example, it will allow for the examination of the combined effect of low attachment avoidance and high attachment anxiety, which is characteristic of a preoccupied attachment style and is common in girls (Obsuth, Moretti, & Odgers, 2005)

Further, the study revealed consistency in some of the models (low affect control predicted Time 1 and Time 2 overt aggression in both females and males; attachment avoidance predicted both Time 1 and Time 2 relational aggression in boys) over time but not others. The study only examined outcome variables longitudinally, thus assessing the long term effects of insecure attachment and maladaptive affect regulation in adolescence on aggression in young adulthood. Although these findings offer important first insights into the relations between these variables, in the future the stability of the predictor variables and their concurrent relations with aggression over time could be explored. It is possible that affect regulation at follow-up would be a stronger predictor of aggression at that point than is affect regulation in adolescence. Youth who are unable to regulate their affect in adolescence may or may not also be unable to regulate their affect as young adults and this may or may not be related to aggression. Such examination would further elucidate the stability and continuity of each of the constructs included in this study.

In addition, it will be imperative to continue follow-ups with these youth (now young adults) to gain further understanding of risk and protective factors over time. Three or more measurements are necessary to employ statistical procedures, such as growth curve analyses (e.g., structural equation modelling of latent growth curves or multi-level modelling), which are utilized to examine growth and change over time. These techniques have become widely used in developmental research as they allow for the examination of intra-individual (within-person) trajectories over time and permit examination of multiple predictors. Through exploring how risk and protective factors change over time we will be better able to understand the developmental processes and trajectories involved in the development of aggression. Such examination would, for example, provide an answer to the question of whether it is the same girls or different girls who engage in high levels of relational aggression in adolescence and/or young adulthood. Understanding the pattern of relations between aggression and its predictors in each of these girls would inform the conditions surrounding stability versus change in aggressive behaviour.

Finally, in the past decade, researchers (e.g., Swanson, et al., 2003) have pointed to the need to consider the racial and ethnic background of participants when examining developmental processes. Garcia, Coll, Akerman, and Cicchetti (2000) point to the need to consider both etic (general to all cultural groups) as well as emic (specific to a particular cultural group) perspectives when examining socialization and developmental processes. Given that close to 25% of youth in this study identified themselves as Aboriginal, consistent with these suggestions



future research could employ culturally sensitive strategies (for example, focus groups) to allow for the exploration of cultural influences on the definition and development of secure attachment and affect regulation as well as its relation to aggressive behaviour.

### ***Conclusion***

Despite the limitations of the current study, it is one of the first to explore the role of both affect regulation and attachment dimensions in relation to aggression. It is also one of the first studies to explore gender specific models with respect to relational and overt aggression concurrently and over time starting in adolescence. The study offers important insights into the gender differences in relation to different types of aggression and point to the processes (affect regulation and attachment) which are important to target in interventions with youth at high-risk for aggressive behaviour.

## REFERENCE LIST

- Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Oxford, England: Lawrence Erlbaum.
- Allen, J. P., Hauser, S. T., & Borman-Spurrell, E. (1996). Attachment theory as a framework for understanding sequelae of severe adolescent psychopathology: An 11-year follow-up study. *Journal of Consulting and Clinical Psychology, 64*(2), 254-263.
- Allen, J. P., Marsh, P., McFarland, C., McElhaney, K. B., Land, D. J., Jodl, K. M., & Peck, S. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during midadolescence. *Journal of Consulting and Clinical Psychology, 70*(1), 56-66.
- Allen, J. P., Moore, C., Kuperminc, G., & Bell, K. (1998). Attachment and adolescent psychosocial functioning. *Child Development, 69*(5), 1406-1419.
- Allison, P. D. (2002). *Missing data*. Thousand Oaks, CA: Sage.
- Arbona, C. & Power, T. G. (2003). Parental attachment, self-esteem, and antisocial behaviors among African American, European American, and Mexican American adolescents. *Journal of Counseling Psychology, 50*(1), 40-51.
- Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology, 8*(4), 291-322.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51* (6), 1173-1182.
- Bartholomew, K. (1990). Avoidance of intimacy: an attachment perspective. *Journal of Social and Personal Relationships, 7*, 147-178.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226-244.
- Bateman, A. W. & Fonagy, P. (2003). The development of an attachment-based treatment program for borderline personality disorder. *Bulletin of the Menninger Clinic, 67*(3), 187 -211.

- Beech, A. R. & Mitchell, I. J. (2005). A neurobiological perspective on attachment problems in sexual offenders and the role of selective serotonin re-uptake inhibitors in the treatment of such problems. *Clinical Psychology Review*, 25(2), 153-182.
- Bergman, L. R., & Andershed, A-K. (2009). Predictors and outcomes of persistent or age-limited registered criminal behavior: A 30-year longitudinal study of a Swedish urban population. *Aggressive Behavior*, 35(2), 164-178.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In: K. Björkqvist, & P. Niemelä, (Eds.). *Of mice and women: Aspects of female aggression*. San Diego, CA, US: Academic Press, pp. 51-64.
- Blitstein, J. L., Murray, D. M., Lytle, L. A., Birnbaum, A. S., & Perry, C. L. (2005). Predictors of violent behavior in an early adolescent cohort: Similarities and differences across genders. *Health Education & Behavior*, 32(2), 175-194.
- Bowlby, J. (1944). Forty-four juvenile thieves: their characters and home-life. *The International Journal for Psycho-Analysis*, 25(19-53), 107-128.
- Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment (2<sup>nd</sup> Ed.)*. New York: Basic Books. (Original work published in 1969).
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation*. New York: Basic Books.
- Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss, sadness and depression*. New York: Basic Books
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York: Basic Books.
- Brame, B., Nagin, D. S., & Tremblay, R. E. (2001). Developmental trajectories of physical aggression from school entry to late adolescence. *Journal of Child Psychology and Psychiatry*, 42(4), 503-512.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In: *Attachment theory and close relationships*. Simpson, J. A., & Rholes, W. S., New York, NY, US: Guilford Press, pp. 46-76.
- Brown, L. S. & Wright, J. (2003). The relationship between attachment strategies and psychopathology in adolescence. *Psychology and Psychotherapy: Theory, Research and Practice*, 76(4), 351-367.

- Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development, 79*(5), 1185-1229.
- Catchpole, R., & Moretti, M. M. (2008). Attachment to caregivers and psychopathic characteristics among adolescents at risk for aggression. Unpublished manuscript, Simon Fraser University, Burnaby, BC, Canada.
- Calkins, S. D. (1994). Origins and outcomes of individual differences in emotion regulation. *Monographs of the Society for Research in Child Development, 59*(2-3), 250-283.
- Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology, 25*(4), 525 -531.
- Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monographs of the Society for Research in Child Development, 59*(2-3), 228-283.
- Cassidy, J. (2001). Truth, lies, and intimacy: An attachment perspective. *Attachment & Human Development, 3*(2), 121-155.
- Cassidy, J., & Kobak, R. R. (1988). Avoidance and its relation to other defensive processes. In: J. Belsky, & T. Nezworski, T. *Clinical implications of attachment*. Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc, pp. 300-323.
- Charles, D. R., & Charles, M. (2006). Sibling loss and attachment style: An exploratory study. *Psychoanalytic Psychology, 23*(1), 72-90.
- Chodorow, N. (1978). Mothering, object-relations, and the female oedipal configuration. *Feminist Studies, 4*(1), 137-158.
- Cicchetti, D. (2004). An odyssey of discovery: Lessons learned through three decades of research on child maltreatment. *American Psychologist, 59*(8), 731-741.
- Cicchetti, D., & Toth, S. L. (1995). A developmental psychopathology perspective on child abuse and neglect. *Journal of the American Academy of Child & Adolescent Psychiatry, 34*(5), 541-565.
- Cohen, J. & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Hillsdale, N.J.: Lawrence Erlbaum Associates. (Second Edition)

- Coie, J. D., & Dodge, K. A. (1998). The development of aggressive and antisocial behaviour. In W. Damon & N. Eisenberg (Eds.), *Handbook of Child Psychology, 5<sup>th</sup> Ed., Vol. 3: Social, emotional, and personality development*. New York: Wiley.
- Cooper, M. L., Shaver, P. R., & Collins, N. L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology, 74*(5), 1380-1397.
- Côté, S. M., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: Predictors of continuity and change during childhood. *Development and Psychopathology, 19*(1), 37-55.
- Côté, S. M., Vaillancourt, T., LeBlanc, J. C., Nagin, D., & Tremblay, R. E. (2006). The development of physical aggression from toddlerhood to pre-adolescence: A nation wide longitudinal study of Canadian children. *Journal of Abnormal Child Psychology, 34*(1), 71-85.
- Crick, N. R. (1997). Engagement in gender normative versus nonnormative forms of aggression: Links to socialpsychological adjustment. *Developmental Psychology, 33*, 610-617.
- Crick, N. R., & Groper, J. K. (1995). Relational aggression, gender, and socialpsychological adjustment. *Child Development, 66*, 710-722.
- Crick, N. R., Ostrov, J. M., Burr, J. E., Cullerton-Sen, C., Jansen-Yeh, E., & Ralston, P. (2006). A longitudinal study of relational and physical aggression in preschool. *Applied Developmental Psychology, 27*, 254-268.
- Crick, N. R., Ostrov, J. M., & Werner, N. E. (2006). A longitudinal study of relational aggression, physical aggression, and children's social-psychological adjustment. *Journal of Abnormal Child Psychology, 34* (2), 131-142.
- Crick, N. R., & Zahn-Waxler, C. (2003). The development of psychopathology in females and males: Current progress and future challenges. *Development and Psychopathology, 15*(3), 719-742.
- Critchfield, K. L., Clarkin, J. F., Levy, K. N., & Kernberg, O. F. (2008). Organization of co-occurring Axis II features in borderline personality disorder. *British Journal of Clinical Psychology, 47*(2), 185-200.
- Cross, S. E., & Madson, L. (1997). Models of the self: Self-construals and gender. *Psychological Bulletin, 122*(1), 5-37.

- Danov, R., & Bucci, W. (2002). Attachment processes among violent-prone minority youths and their caretakers. *NYS Psychologist, 14(1)*, 28-32.
- David, D. H. & Lyons-Ruth, K. (2005). Differential attachment responses of male and female Infants to frightening maternal behavior: Tend or befriend versus fight or flight? *Infant Mental Health Journal, 26(1)*, 1-18.
- de Castro, B. O., Merk, W., Koops, W., Veerman, J. W., & Bosch, J. D. (2005). Emotions in social information processing and their relations with reactive and proactive aggression in referred aggressive boys. *Journal of Clinical Child and Adolescent Psychology, 34(1)*, 105-116.
- Diamond, G. S., Reiss, B., Diamond, G. M., Siqueland, L., & Isaacs, L. (2002). Attachment-based family therapy for depressed adolescents: A treatment development study. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 1190-1196.
- Dodge, K. A. & Coie, J. D. (1987). Social information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology, 53*, 1146-1158.
- Eisenberg, N., Fabes, R. A., Bernzweig, J., Karbon, M., Poulin, R., & Hanish, L. (1993). The relations of emotionality and regulation to preschoolers' social skills and sociometric status. *Child Development, 64(5)*, 1418-1438.
- Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality and Social Psychology, 78(1)*, 136-157.
- Eisenberg, N., & Morris, A. S. (2002). Children's emotion-related regulation. In: *Advances in child development and behavior*, Vol. 30. Kail, R. V., San Diego, CA, US: Academic Press, pp. 189-229.
- Eisenberg, N., & Spinrad, T. L. (2004). Emotion-related regulation: Sharpening the definition. *Child Development, 75(2)*, 334-339.
- Fergusson, D. M. & Lynskey, M. T. (1998). Conduct problems in childhood and psychosocial outcomes in young adulthood: A prospective study. *Journal of Emotional and Behavioral Disorders, 6(1)*, 2-18.
- Farrington, D. P. (2004). Conduct disorder, aggression, and delinquency. In: R. M. Lerner, L. Steinberg, & N. J. Hoboken (Eds), *Handbook of adolescent psychology* (2nd ed.). US: John Wiley & Sons Inc, pp. 627-664.

- Finnegan, R., A., Hodges, E. V., & Perry, D. G. (1996). Preoccupied and avoidant coping during middle childhood. *Child Development, 67*(4), 1318-1328.
- Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology, 4*(2), Special issue: Adult attachment, 132-154.
- Garcia Coll, C., Akerman, A., & Cicchetti, D. (2000). Cultural influences on developmental processes and outcomes: Implications for the study of development and psychopathology. *Development and Psychopathology, 12*(3), 333-356.
- Gerhardt, S. (2004). *Why love matters: How affection shapes a baby's brain*. Philadelphia, PA, US: Routledge/Taylor & Francis Group.
- Gilbert, P. (2005). Evolution and depression: issues and implications. *Psychological Medicine, 35*, 1-11.
- Gilks, W. R., Richardson, S., and Spiegelhalter, D. J. (ed.) (1995). *Markov chain Monte Carlo in practice*. Chapman and Hall, New York.
- Gottman, J. M., Katz, L., Hooven, C. (1996). Parental meta-emotion philosophy and the emotional life of families: Theoretical models and preliminary data. *Journal of Family Psychology, 10*(3), 243-268.
- Greenberg, M. T. (1999). Attachment and psychopathology in childhood. In: *Handbook of attachment. Theory, research, and clinical applications*. Cassidy, J., & Shaver, P. R., New York, NY, US: Guilford Press, pp. 469-496.
- Greenberg, M. T., Speltz, M. L., & DeKlyen, M. (1993). The role of attachment in the early development of disruptive behavior problems. *Development and Psychopathology, 5*(1 -2), 191-213.
- Griffin, D. W., & Bartholomew, K. (1994a). The metaphysics of measurement: The case of adult attachment. In K. Bartholomew & D. Perlman (Eds.), *Advances in personal relationships: Vol. 5. Attachment processes in adulthood* (17-52). London: Jessica Kingsley.
- Griffin, D. W., & Bartholomew, K. (1994b). Models of self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology, 67*, 430-445.
- Gross, J. J. (2001). Emotion regulation in adulthood: Timing is everything. *Current Directions in Psychological Science, 10*(6), 214-219.

- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362.
- Guttman-Steinmetz, S., & Crowell, J. A. (2006). Attachment and externalizing disorders: A developmental psychopathology perspective. *Journal of the American Academy of Child and Adolescent Psychiatry, 45* (4), 440-451.
- Harrell, F. E. (2001). *Regression modeling strategies: With applications to linear models, logistic regression, and survival analysis*. Springer Series in Statistics. New York: Springer.
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511-524.
- Hazan, C., & Shaver, P. R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5*(1), 1-22.
- Henderson, A., Bartholomew, K., Trinke, S. J., & Kwong, M. (2005). When loving means hurting: An exploration of attachment and intimate abuse in a community sample. *Journal of Family Violence, 20*(4), 219-230.
- Hoff, K. E., Reese-Weber, M., Schneider, W. J., & Stagg, J. W. (2009). The association between high status positions and aggressive behavior in early adolescence. *Journal of School Psychology, 47*, 395-426.
- Jeličić, H., Phelps, E., & Lerner, R. M. (2009). Use of missing data methods in longitudinal studies: The persistence of bad practices in developmental psychology. *Developmental Psychology, 45*(4), 1195-1199.
- Karavasilis, L., Doyle, A.B., & Markiewicz, D. (2003). Associations between parenting style and attachment to mother in middle childhood and adolescence. *International Journal of Behavioral Development, 27*(2), 153-164.
- Karriker-Jaffe, K. J., Foshee, V. A., Ennett, S. T., & Suchindran, C. (2008). The development of aggression during adolescence: Sex differences in trajectories of physical and social aggression among youth in rural areas. *Journal of Abnormal Child Psychology, 36*(8), 1227-1236.
- Keiley, M. K. (2002). The development and implementation of an affect regulation and attachment intervention for incarcerated adolescents and their parents. *The Family Journal: Counselling and Therapy for Couples and Families, 10*(2), 177-189.



- Kobak, R., Zajac, K., & Smith, C. (2009). Adolescent attachment and trajectories of hostile-impulsive behavior: Implications for the development of personality disorders. *Development and Psychopathology, 21*(3), 839-851.
- Leadbeater, B. J., Kuperminc, G. P., Blatt, S. J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology, 35*, 1268–1282.
- Lee, Z., Penney, S. R., Moretti, M. M., & Bartel, P. A. (2005). *Examining Subtypes of Aggression: A Comparison of the PCL:YV and SAVRY*. Society for the Scientific Study of Psychopathy, Vancouver, BC.
- Little, T.D., Jones, S.M., Henrich, C.C., Hawley, P.H. (2003). Disentangling the 'whys' from the 'whats' of aggressive behavior. *International Journal of Behavioral Development, 27*, 122-133.
- Loeber, R. & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology, 48*, 371-410.
- Lopez, F. G., & Brennan, K. A. (2000). Dynamic processes underlying adult attachment organization: Toward an attachment theoretical perspective on the healthy and effective self. *Journal of Counseling Psychology, 47*(3), 283-300.
- Lyons-Ruth, K. (1996). Attachment relationships among children with aggressive behavior problems: The role of disorganized early attachment patterns. *Journal of Consulting and Clinical Psychology, 64*(1), 64-73.
- McArdle, J. J. (1994). Structural factor analysis experiments with incomplete data. *Multivariate Behavioral Research, 29*, 409 – 454.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A taxonomy. *Psychological Review, 100*, 674-701.
- Moffitt, T. E. (2006). Life-course-persistent versus adolescence-limited antisocial behavior. In D. Cicchetti, & D. J. Cohen (Eds.), *Developmental psychopathology: Vol 3. Risk, disorder, and adaptation* (2nd ed., pp. 570-598). Hoboken, NJ: Wiley.
- Maccoby, E. E. (2004). Aggression in the context of gender development. In: M. Putallaz & K. L. Bierman, (Eds.), *Aggression, antisocial behavior, and violence among girls: A developmental perspective*. ( pp. 3-22). New York, NY, US: Guilford Publications.

- Mansfield, A.K., Addis, M. E., Cordova, J. V., & Dowd, L. (2009). Emotional skillfulness as a key mediator of aggression. *Journal of Aggression, Maltreatment & Trauma, 18*(3), 221 -247.
- Marušić, I., Kamenov, Ž., & Jelić, M. (2006). Personality and attachment to romantic partners. *Review of Psychology, 13*(1), 9-18.
- Mennin, D. S., Heimberg, R. G., Turk, C. L., & Fresco, D. M. (2005). Preliminary evidence for an emotion dysregulation model of generalized anxiety disorder. *Behaviour Research and Therapy, 43*(10), 1281-1310.
- Mikulincer, M., & Florian, V. (2004). Attachment style and affect regulation: Implications for coping with stress and mental health. In: *Applied Social Psychology*. Brewer, M. B., & Hewstone, M., Malden, MA, US: Blackwell Publishing, pp. 28-49.
- Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion, 27*(2), 77-102.
- Moretti, M.M. (2003). Affect regulation checklist. Unpublished research measure. Simon Fraser University, Burnaby, British Columbia, Canada.
- Moretti, M. M., Braber, K., & Obsuth, I. (2009). *Connect: An attachment focused treatment group for parents and caregivers – A principle based manual*. Adolescent Version. ©Simon Fraser University.
- Moretti, M. M. & Higgins, E. T. (1999). Own versus other standpoints in self-regulation: Developmental antecedents and functional consequences. *Review of General Psychology, 3*(3), 188-223.
- Moretti, M. M. & Obsuth, I. (in press). Attachment and Aggression: From Paradox to Principles of Intervention to Reduce Risk of Violence in Teens. In M. Kerr, H. Stattin, R. C. M. E. Engles, G. Overbeek, & A-K. Andershed (Eds.), *Understanding Girls' Problem Behaviour*. London: John Wiley & Sons.
- Moretti, M. M., & Obsuth, I. (2009). Effectiveness of an attachment-focused manualized intervention for parents of teens at risk for aggressive behaviour: The Connect Program. *Journal of Adolescents. Special Issue: Intervention and Prevention with Adolescents, 1* -11.
- Nelson, D. A., Mitchell, C., & Yang, C. (2008). Intent attributions and aggression: A study of children and their parents. *Journal of Abnormal Child Psychology, 36*(6), 793-806.

- Obsuth, I., Moretti, M.M., & Odgers, C. (2005). *Insecure attachment and aggression in high-risk adolescent girls and boys*. Paper presented at the XIIIth European Conference on Developmental Psychology, La Laguna, Tenerife, Spain
- Obsuth, I., Moretti, M.M., & Steiger, A. (2009). *The role of rejection sensitivity in the relations between attachment and aggression in high risk boys and girls*. Paper presented in a Symposium at the Biennial Meeting of the Society for Research in Child Development, Denver, CO.
- Orcutt, H. K., Garcia, M., & Pickett, S. M. (2005). Female-perpetrated intimate partner violence and romantic attachment style in a college student sample. *Violence and Victims, 20*(3), 287-302.
- Ostrov, J. M., & Keating, C. F. (2004). Gender differences in preschool aggression during free play and structured interactions: An observational study. *Social Development, 13*(2), 255 -277.
- Österman, K., Björkqvist, K., Lagerspetz, K. M. J., Kaukiainen, A., Landau, S. F., Frączek, A., & Caprara, G. V. (1998). Cross-cultural evidence of female indirect aggression. *Aggressive Behavior, 24*(1), 1-8.
- Pietromonaco, P. R., & Feldman Barrett, L. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of General Psychology, 4*, 155-175.
- Pine, D. S., Alegria, M., Cook, E., Costello, E. J., Dahl, R., Koretz, D., Merikangas, K. R., Reiss, A. L., & Vitiello, B. (2002). Advances in developmental sciences and DSM-IV. In: *A research agenda for DSM--V*. Kupfer, D. J., First, M. B., & Regier, D., Washington, DC, US: American Psychiatric Association, pp. 85-122.
- Pope, A. W. & Bierman, K. L. (1999). Predicting adolescent peer problems and antisocial activities: The relative roles of aggression and dysregulation. *Developmental Psychology, 35*(2), 335-346.
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. Hoboken, New Jersey: John Wiley & Sons.
- Rydell, A-M., Berlin, L., & Bohlin, G. (2003). Emotionality, emotion regulation, and adaptation among 5- to 8-year-old children. *Emotion, 3*(1), 30-47.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*(2), 147-177.
- Scharfe, E. (2002). Reliability and validity of an interview assessment of attachment representations in a clinical sample of adolescents. *Journal of Adolescent Research, 17*(5), 532-551.

- Scharfe, E., & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships, 1*, 23-43.
- Shaver, P. R., & Mikulincer, M. (2002). Dialogue on adult attachment: Diversity and integration. *Attachment & Human Development, 4*(2), Special issue: The psychodynamics of adult attachments--Bridging the gap between disparate research traditions, 243-257.
- Shaw, S. K., & Dallos, R. (2005). Attachment and adolescent depression: The impact of early attachment experiences. *Attachment & Human Development, 7*(4), 409-424.
- Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. *Developmental Psychology, 33*(6), 906-916.
- Shields, A., & Cicchetti, D. (1998). Reactive aggression among maltreated children: The contributions of attention and emotion dysregulation. *Journal of Clinical Child Psychology, 27*(4), 381-395.
- Shields, A., & Cicchetti, D. (2001). Parental maltreatment and emotion dysregulation as risk factors for bullying and victimization in middle childhood. *Journal of Clinical Child Psychology, 30*(3), 349-363.
- Silk, J. S., Shaw, D. S., Forbes, E. E., Lane, T.L., Kovacs, M. (2006). Maternal depression and child internalizing: The moderating role of child emotion regulation. *Journal of Clinical Child and Adolescent Psychology, 35*(1), 116-126.
- Simons, K. J., Paternite, C. E., & Shore, C. (2001). Quality of parent/adolescent attachment and aggression in young adolescents. *Journal of Early Adolescence, 21*(2), 182-203.
- Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & Human Development, 7*(4), 349-367.
- Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and the Family, 41*, 75-88.
- Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The Revised Conflict Tactics Scales (CTS2): Development and preliminary psychometric data. *Journal of Family Issues, 17*(3), 283-316.
- Swanson, D. P., Spencer, M. B., Harpalani, V., Dupree, D., Noll, E., Ginzburg, S., & Seaton, G. (2003). Psychosocial development in racially and ethnically diverse youth: Conceptual and methodological challenges in the 21st century. *Development and Psychopathology, 15*(3), 743-771.

- Swearer, S. M. (2008). Relational aggression: Not just a female issue. *Journal of School Psychology, 46*, 611-616.
- Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review, 107*, 411-429.
- Thompson, R. A. (1991). Construction and reconstruction of early attachments: Taking perspective on attachment theory and research. In D.P. Keating & H. Rosen (Eds.), *Constructivist perspectives on developmental psychopathology and atypical development*. (pp. 41-67). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Thompson, R. A. (2001). Childhood anxiety disorders from the perspective of emotion regulation and attachment. In: M. W. Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety*. (pp. 160-182). New York, NY, US: Oxford University Press.
- Thompson, R. A. (1993). Socioemotional development: Enduring issues and new challenges. *Developmental Review, 13(4)*, Special issue: Setting a path for the coming decade: Some goals and challenges, 372-402.
- Underwood, M.K. (2003). *Social aggression in girls*. New York: Guilford.
- Vaillancourt, T., Brendgen, M., Boivin, M., & Tremblay, R. E. (2003). A longitudinal confirmatory factor analysis of indirect and physical aggression: Evidence of two factors over time? *Child Development, 74(6)*, 1628-1638.
- vanZeijl, J., Mesman, J., van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Juffer, F., Stolk, M. N., Koot, H. M., & Alink, L. R. A. (2006). Attachment-based intervention for enhancing sensitive discipline in mothers of 1- to 3-year-old children at risk for externalizing behaviour problems. A randomized control trial. *Journal of Consulting and Clinical Psychology, 74(6)*, 994-1005.
- Velderman, M., Bakerman-Kranenburg, M. J., Juffer, F., & van IJzendoorn, M. H. (2006). Effects of attachment-based interventions on maternal sensitivity and infant attachment: Differential susceptibility of highly reactive infants. *Journal of Family Psychology, 20(2)*, 266-274.
- Widaman, K. F. (2006). Missing data: What to do with or without them. *Monographs of the Society for Research in Child Development, 71(3)*, 42-64.

Zahn-Waxler, C., Crick, N. R., Shirlcliff, E. A., & Woods, K. E. (2006). The origins and development of psychopathology in females and males. In D. Cicchetti, D. J. Cohen, Donald J. (Eds.), *Developmental psychopathology*, Vol 1: Theory and method (2nd ed.). (pp. 76-138). Hoboken, NJ, US: John Wiley & Sons Inc.

# **APPENDICES**

*Appendix A – Consent Forms*

*Appendix B - Measures*

## *Appendix A*

### **SIMON FRASER UNIVERSITY INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT Maples Adolescent Treatment Centre**

We are conducting a research study through Simon Fraser University looking at things that affect the lives of teens, the problems they face, and how they develop over time. We do not believe that you will face any risks by participating in our study. Some of the questions in this study are personal, however, and they may or may not make you feel upset. If you do become really upset, we will make sure that there is someone for you to talk to about this and who will help you.

#### What Participating in this Project involves:

1. Your participation in this study will involve completing questionnaires and interviews in three separate 1 to 2 hour sessions. You have the option of completing these questionnaires and interviews after you finish your regular psychology and education testing.
2. If you decide to participate, information from the interviews and questionnaires completed by you and your caregiver for the Care Plan, and information contained in your file at this facility may be used in the study.
3. Some information from your participation in the study may be shared with staff for the purposes of your Care Plan if it is viewed as in your best interests. However, after your Care Plan is completed, all information used for research will have your name removed, and it will not be used in any way that could lead to you being personally identified. Information will only be used by trained researchers and trainees.
4. Agreeing to participate in the project gives us permission to look in government databases that contain information on your medical, educational and forensic history, and services that have been provided to you. It also involves giving us permission to look at this information as you get older so we can see what services you receive and whether they are helpful.
5. We may also contact you over the next five years to collect similar information, and at that time, you can decide whether or not you wish to participate further.
6. You will receive a gift certificate in the amount of \$30.00 once you have completed your participation in this study.

#### Your Participation is Voluntary:

We want you to know that you can choose not to answer any questions and you can choose to stop participating at any time. **Deciding to be, or not to be, a participant in this study is completely up to you and does not affect your Care Plan.**



How Confidential is the Information You Provide:

Your name and any other identifying information will be removed from all interview forms and/or questionnaires after your Care Plan is completed. For the purposes of this study, we need to tape-record the interviews. The tapes will be kept in a secure place, and will only be listened to by research assistants on the project who have signed a confidentiality agreement.

**Information you share with us will be kept confidential by the researchers to the extent of the law.** There are two things that we can't keep secret and will have to notify authorities: 1) if you say that you plan to cause serious physical harm to yourself or anyone else, and/or 2) if you say that you are being abused or are at risk of being abused. The Court may require us to reveal other information that you share.

If you want to know the results of this study when it's done, you can write to:

Dr. Marlene Moretti, Psychology Department,  
Simon Fraser University, Burnaby, BC, V5A 1S6  
(604) 291-3604

If you wish to file a concern regarding the study, you can write to the person named above, or to Dr. D. Weeks, Chair of the Psychology Department at Simon Fraser University, (604) 291-3354.

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I agree to participate by completing interviews and questionnaires and I agree to be contacted to further participate over the next five years. Also, I know my caregiver may complete some similar questionnaires and interviews. Information from the interviews, questionnaires, files from this institution and files from my medical and school records may be used in the study. I understand that the information may be shared with other researchers, but my name and other identifying information will not be included and my identity will be protected. All information will be kept confidential to the extent permitted by law.

Name  
(please print): \_\_\_\_\_ Witness: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**SIMON FRASER UNIVERSITY**  
**INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT**  
**Youth Forensic Settings**

We are conducting a research study through Simon Fraser University looking at things that affect the lives of teens, the problems they face, and how they develop over time. We do not believe that you will face any risks by participating in our study. Some of the questions in this study are personal, however, and they may or may not make you feel upset. If you do become really upset, we will make sure that there is someone for you to talk to about this and who will help you.

What Participating in this Project involves:

1. Your participation in this study will involve completing questionnaires and interviews in three separate 1 to 2 hour sessions.
2. If you decide to participate, information from the interviews and questionnaires completed by you, and information contained in your file at this facility may be used in the study.
3. Agreeing to participate in the project gives us permission to look in government databases that contain information on your medical, educational and forensic history, and services that have been provided to you. It also involves giving us permission to look at this information as you get older so we can see what services you receive and whether they are helpful.
4. We may also contact you over the next five years to collect similar information, and at that time, you can decide whether or not you wish to participate further.
5. You will receive \_\_\_\_\_ once you have completed your participation in this study.

Your Participation is Voluntary:

We want you to know that you can choose not to answer any questions and you can choose to stop participating at any time. **Deciding to be, or not to be, a participant in this study is completely up to you and will not affect any services that you receive.**

How Confidential is the Information You Provide:

Your name and any other identifying information will not be recorded on interview forms or on the questionnaires that you complete. For the purposes of this study, we need to tape-record the interviews. The tapes will be kept in a secure place, and will only be listened to by research assistants on the project who have signed a confidentiality agreement.

**Information you share with us will be kept confidential by the researchers to the extent of the law.** There are two things that we can't keep secret and will have to notify authorities: 1) if you say that you plan to cause serious physical harm to yourself or anyone else, and/or 2) if you say that you are being abused or are at risk of being abused. The Court may require us to reveal other information that you share.

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I agree to participate by completing interviews and questionnaires and I agree to be contacted to further participate over the next five years. Also, I know my caregiver may complete some similar questionnaires and interviews. Information from the interviews, questionnaires, files from this institution and files from my medical and school records may be used in the study. I understand that the information may be shared with other researchers, but my name and other identifying information will not be included and my identity will be protected. All information will be kept confidential to the extent permitted by law.

Name  
(please print): \_\_\_\_\_ Witness: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **Appendix B**

### *The Family Attachment Interview (FAI)*

#### *Selected Questions and Themes:*

#### **SECTION A: RELATIONSHIPS WITH PARENTS AND SIGNIFICANT CAREGIVERS**

- a. Who do you live with now? How long have you lived there? Do you have any sisters/brothers? If so, how old are they? Do they live with you?
- b. Tell me what your relationship with ... is like.
- c. Now try to remember when you were a little, like when you were in Grade 1 or 2. Has your relationship with "X" changed for better or worse over time?

#### **SECTION B: SEPARATIONS**

In the past, have you ever had to be away from your parent (caregiver) for a while, like more than just overnight? Why?

#### **SECTION C: PARENT AS SAFE HAVEN**

When you get upset about something, for example if you feel really sad:

- *What do you do?*

How about when you were little? Can you remember feeling upset, sad or afraid?

- *Can you remember what you would do?*

#### **SECTION D: FAMILY RULES, NEGOTIATION, AND CONSEQUENCES**

I want to ask you what the rules are like in your house and what happens when you don't follow them.

**SECTION E:** Do you feel that your parents love you? How do you know this?

**SECTION F:** Do you feel that your parents respect and value your opinions and values?

**SECTION G:** Has anyone close to you ever died?

#### **SECTION H: MALTREATMENT EXPERIENCES**

**SECTION I:** How do you think the things that have happened to you in your family, with your parents, have influenced you?

**SECTION J:** How do you see yourself as a person now? What do you think you'll be like in another five or ten years from now?

*The Affect Regulation Checklist*  
(ARC; Moretti, 2003)

*Affect Control: 1, 2, 3, 4*

**Circle the answer that best describes you (circle ONE answer for each question):**

<b>Question:</b>	<b>A LOT like me</b>	<b>A LITTLE like me</b>	<b>NOT like me</b>
1. I have a hard time controlling my feelings.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. It's very hard for me to calm down when I get upset.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. My feelings just take over me and I can't do anything about it.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. When I get upset, it takes a long time for me to get over it.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Thinking about why I have different feelings helps me to learn about myself.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
6. Thinking about why I act in certain ways helps me to understand myself.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. The time I spend thinking about what's happened to me in my life helps me to understand myself.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. If I think about my feelings, it just makes everything worse.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
9. I try hard not to think about my feelings.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. It's best to keep feelings in control and not to think about them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. I keep my feelings to myself.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
12. I try to do other things to keep my mind off how I feel.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

*Form-Function Aggression Measure  
(FFAM; Little, Jones, Heinrich, & Hawley, 2003)*

*Overt Aggression: items 1, 2, 3, 11, 12, 15, 16, 17, 18, 19, 20, 21.*

*Relational Aggression: items 4, 5, 6, 7, 8, 9, 10, 13, 14, 22, 23, 24, 25.*

**Please rate how well each of the following statements describes you.**

<b>I'm the kind of person who:</b>	<b>Not at all True</b>	<b>Some-what True</b>	<b>Mostly True</b>	<b>Com-pletely True</b>
1. often fights with others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2. hits, kicks, or punches others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
3. puts others down	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
4. tells my friends to stop liking someone	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
5. keeps others from being in my group of friends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
6. says mean things about others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
7. ignores others or stops talking to them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
8. gossips or spreads rumors	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<b>I often:</b>				
9. tell my friends to stop liking someone to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
10. keep others from being in my group of friends to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
11. threaten others to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
12. hit, kick, or punch others to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
<b>To get what I want, I often:</b>				
13. ignore or stop talking to others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
14. gossip or spread rumors about others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
15. put others down	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
16. say mean things to others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
17. hurt others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

18. When I'm hurt by someone, I often fight back	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
19. When I'm threatened by someone, I often threaten back	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
20. If others have angered me, I often hit, kick or punch them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
21. If others make me mad or upset, I often hurt them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
22. If others upset or hurt me, I often tell my friends to stop liking them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
23. If others have hurt me, I often keep them from being in my group of friends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
24. When I am upset with others, I often ignore or stop talking to them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
25. When I am mad at others, I often gossip or spread rumors about them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4