

AN INVESTIGATION OF ANGER AMONG ADOLESCENTS:
AN ATTACHMENT PERSPECTIVE

by

CHIAKI KONISHI

B.Ed., The Chiba University, 1990
M.Ed., The University of Massachusetts, Amherst, 1996
M.A., The University of British Columbia, 2003

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

(Human Development, Learning and Culture)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

December 2009

© Chiaki Konishi, 2009

Abstract

The present study investigated the relationship between attachment and anger among adolescents, examining a hypothesis initially proposed by Bowlby (1973) regarding the effects of adolescents' attachments to parents on anger experience. Extending Bowlby's hypothesis with another critical anger component, anger expression, a theoretically-refined model was developed and tested. Participants included 776 students (379 boys, 397 girls) in grades 8-12. As predicted by attachment theory, results of structural equation modeling analyses indicated that adolescents' attachment anxiety and attachment avoidance toward both mother and father figures were positively related to the adolescents' greater levels of anger intensity. In turn, the increases in the intensity of anger feelings were associated with increases in both anger-in (internalizing) and anger-out (externalizing) expressions. In addition, there was a direct effect of attachment anxiety on anger-in expression but no direct effects of attachment anxiety and avoidance on anger-out expression. This study highlights the importance of differentiating anger dimensions and the critical role of anger intensity as a mediator of the relationship between insecure attachment and anger expressions. Implications of the findings are further discussed.

TABLE OF CONTENTS

Abstract	ii
Table of Contents	iii
List of Tables	vi
List of Figures	viii
Acknowledgements	ix
Introduction	1
Literature Review	4
<i>Attachment Theory</i>	4
<i>Internal working models and traditions of attachment research</i>	5
<i>Measuring attachment: Underlying dimensions of attachment</i>	12
<i>Anger and an Attachment Perspective</i>	17
<i>Dimensions and Impact of Anger to be Considered</i>	22
Statement of the Problem	26
Method	32
<i>Participants</i>	32
<i>Procedures</i>	33
<i>Measures</i>	33
<i>Demographic information</i>	33
<i>Attachment</i>	33
<i>Anger</i>	34
Results	37

<i>Data Preparation and Screening</i>	37
<i>Missing data</i>	37
<i>Tests of assumptions</i>	38
<i>Assessment of unidimensionality among study variables</i>	44
<i>General sex differences on study variables</i>	47
<i>Tests of Hypotheses</i>	50
<i>Analyses of Mother Figure Attachment with Entire Sample</i>	51
<i>Model test</i>	51
<i>Tests of mediation</i>	52
<i>Analyses of Father Figure Attachment with Entire Sample</i>	61
<i>Model test</i>	61
<i>Tests of mediation</i>	61
<i>Analyses of Mother Figure Attachment by Sex</i>	62
<i>Model test</i>	62
<i>Tests of mediation</i>	63
<i>Analyses of Father Figure Attachment by Sex</i>	65
<i>Model test</i>	65
<i>Tests of mediation</i>	68
<i>Relative impacts of attachment dimensions and figures</i>	69
<i>Discussion</i>	82
<i>Summary and Discussion of Findings</i>	82
<i>Implications of Findings</i>	89
<i>Limitations</i>	92

References	95
Appendices	108
Appendix A-1: Parental Consent	108
Appendix A-2: Student Consent	110
Appendix B: Ethics Approval	112
Appendix C-1: Demographic Information Questionnaire	113
Appendix C-2: Comprehensive Adolescent-Parent Attachment Inventory	114
Appendix C-3: State-Trait Anger Expression Inventory	119
Appendix D: Scree Plots for Exploratory Factor Analyses	120
Appendix E: Correlation Matrices for Scale Items	125

List of Tables

Table 1. Distribution of Participants by Grade Level and Sex	32
Table 2. Sample Sizes for Data Analyses	38
Table 3. Results of Normality, and Descriptive Statistics for Study Variables	40
Table 4. Intercorrelations Among Study Variables	42
Table 5. Results of Factor Analyses for Study Variables	46
Table 6. Mean (Standard Deviation) of Predictor and Outcome Scores by Sex	49
Table 7. Fit Indices and Standardized Path Coefficients for Models	55
Table 8. Direct, Indirect, and Total Effects of Study Variables on Endogenous Variables ..	56
Table 9. Fit Indices and Standardized Path Coefficients for Models of Father Figure Attachment for Girls	67
Table 10. Results of Multicollinearity Diagnosis for Predictor Variables	72
Table 11. Intercorrelations Among Study Variables	73
Table 12. Summary of Test for Moderation Effects of Sex on the Prediction of Intensity of Anger (N = 761)	74
Table 13. Summary of Test for Moderation Effects of Sex on the Prediction of Anger-In (N = 761)	75
Table 14. Summary of Test for Moderation Effects of Sex on the Prediction of Anger-Out (N = 761)	76
Table 15. Summary of Regression Analysis for Variables Predicting Intensity of Anger (N = 761)	79

Table 16. Summary of Regression Analysis for Variables Predicting

Anger-In (N = 761) 80

Table 17. Summary of Regression Analysis for Variables Predicting

Anger-Out (N = 761) 81

List of Figures

Figure 1. Bartholomew's (1990) model of adult attachment.	10
Figure 2. A diagram of anxiety and avoidance in relation to Main and Solomon's (1990) infant attachment types (reproduced from Brennan, Clark, & Shaver, 1998).	15
Figure 3. A model of attachment and anger.	31
Figure 4. An attachment- anger model of mother figure with entire sample.	58
Figure 5. An attachment- anger model of father figure with entire sample.	58
Figure 6. An attachment- anger model of mother figure with boys only.	59
Figure 7. An attachment- anger model of mother figure with girls only.	59
Figure 8. An attachment- anger model of father figure with boys only.	60
Figure 9. An attachment- anger model of father figure with girls only.	60

Acknowledgements

Through the process of my dissertation writing, I have come to re-realize how lucky I have been, being supported by a number of people in my life. First, my committee members; Dr. Sheila Marshall, I was always stimulated by your challenging and thoughtful feedback. I also enjoyed the unique metaphors you often used to describe or explain terms (for example, a cookie dough to explain the negative aspect of the internal consistency coefficient alphas). They greatly helped me for conceptual understanding. Dr. Bruno Zumbo, you have provided me with a learning system in which I become curious and motivated to apply various methodological strategies to better explain our world. Despite the fact that I was often chasing you around to inquire about statistical questions, you never declined my appointments, rather, you were generously approachable. Critically, Dr. Shelley Hymel, my research supervisor, certainly you have become my attachment figure in my graduate-study life. You have taught me to always “think more.” You also never gave up on me. Even when I was feeling down, almost loosing my enthusiastic energy in the research process, you kept encouraging me to move forward.

Second, my friends, Jessica Flores, Marc Sasso, Anne Tomlinson, Yuki Tani, Nat Rocke Henderson, Rina Bonanno, and Sarah Hickinbottom, you have been sincerely supportive in many ways, being my mentors with a cup or many cups of coffee and tea, and potato chips.

Third, I deeply thank the students who participated in this research and the administrators, teachers, staff, and parents, who enthusiastically supported this research project.

Lastly, I express my immense appreciation to my family members, Ikuko, Hideo, and Masao Konishi, in Japan. Because of you, I was able to experience such valuable research and life endeavors at the University of British Columbia, studying abroad. I promise to share with you, hopefully very soon, the wonderful experiences that I have obtained here!

Introduction

Problems emanating from adolescents' undercontrolled anger and aggression are among the most shared and serious concerns of parents, teachers, and educators (McGee, Silva, & Williams, 1983; McWhirter, McWhirter, McWhirter, & McWhirter, 2003; Underwood, 2003). Indeed, clinical and health literatures suggest that anger is one of the most difficult emotions for adolescents to deal with, and it potentially contributes to many of their physical and mental health problems (Biaggio & Godwin, 1987; Blumberg & Izard, 1985; Chaplin, 2006; Farmer, 2002; Moreno, Fuhrman, & Selby, 1993; Pipher, 1994; Riley, Treiber, & Woods, 1989; Robbins & Tanck, 1997; Seidlitz, Fujita, & Duberstain, 2000). Specifically, anger has been associated with maladaptive psychological outcomes, including externalizing (Bosworth, Espelage, & Simon, 1999; Conger, Neppl, Kim, & Scaramella, 2003; Cornell, Peterson, & Richards, 1999; Helfritz & Stanford, 2006; Swan, Gambone, Fields, Sullivan, & Snow, 2005) and internalizing problems (Blumberg & Izard, 1985; Bridewell & Chang, 1997; Cautin & Overholser, 2001; Chaplin, 2006; Clay, Anderson & Dixon, 1993; Golman & Haaga, 1995; Kopper & Epperson, 1996; Newman, Gray, & Fuqua, 1999; Riley et al., 1989; Robbins & Tanck, 1997; Sperberg & Stabb, 1998; Venable, Carlson, & Wilson, 2001; Zeman, Shipman, & Suveg, 2002). Yet, despite pervasive concern regarding the negative consequences of anger for both affected individuals and society as a whole, there has been notably little attention paid to anger in the fields of social science, including the area of educational psychology. This neglect of research on anger may be due to the fact that emotions (e.g., anger) are too ethereal and complex to study empirically as compared to behaviors (e.g., violent behavior) (Underwood, 2003). Since the mid 1990s, however, research on anger in the field of social science has begun to make progress (Lemerise & Dodge, 2008), providing the evidence of associations between anger and various negative

outcomes, including bullying behavior (Bosworth, Espelage, & Simon, 1999), gang involvement (Lemus & Johnson, 2008), substance abuse (Field, 2002; Ryan, Miller-Loessi, & Nieri, 2007), low academic performance (Field, 2002), date aggression (Kinsfogel & Grych, 2004), and peer rejection (Hubbard, 2001). Responding to the prevalent concern regarding the negative consequences of anger, the present study considered anger as a critical element of social-emotional functioning and sought to identify factors contributing to the negative impact of anger among adolescents as predicted from an attachment perspective.

From the perspective of attachment theory, Bowlby (1973) claimed that initial attachments to caregivers provide the foundation for the individual to create *internal working models* about how relationships operate. These are internalized beliefs or expectations about oneself and others in relationships. Bowlby further argued that these internal working models can play a critical role in the experience of anger. He hypothesized that fearing or/and resisting abandonment or rejection would result in an individual with an insecure style of attachment who could become suspicious and hostile, sometimes reacting with anger whenever the psychological distance from her or his attachment figure increases. Empirical support for this hypothesized link between attachment and anger has been provided (Calamari & Pini, 2003; Kobak, Cole, Ferenz-Gillies, & Fleming, 1993; Kobak & Sceery, 1988; Meesters & Muris, 2002; Mikulincer, 1998; Muris, Meesters, Morren, & Moorman, 2004; Troisi & D'Argenio, 2004). However, these studies are limited either in the way they assess attachment or in the way they evaluate anger. The aim of the present study was to adequately examine the Bowlby's hypothesis of the attachment-anger relationship empirically.

This dissertation begins with a background of attachment theory and relevant research showing its associations with anger. This is followed by a review of relevant dimensions of anger

as a critical element of social-emotional functioning. Subsequently, a proposed model of attachment and anger, and hypotheses are presented along with specific research questions. Following the description of the problem statement, methodological procedures are presented, further followed by results of the present investigation. Finally, a summary and discussion of the findings, including educational implications and limitations of the present study are presented.

Literature Review

Attachment Theory

A child is busy constructing working models of how the physical world may be expected to behave, how his mother and other significant persons may be expected to behave, how he himself may be expected to behave, and how each interacts with all the others. Within the framework of these working models he evaluates his situation and makes his plans. (Bowlby, 1969/1997, p. 354)

Nearly half a century ago, John Bowlby (1967/1997) introduced attachment theory, with a significant focus on infants who are regarded as active participants in the attachment process. Bowlby argued that an infant is actively engaged in maintaining secure proximity to her or his caregiver(s). From her or his interactions with the caregiver, the infant learns whether or not the system is working well to maintain proximity to the caregiver. This sense of security provides the infant with some perception of control over her or his situation. A caregiver's availability and responsiveness to her or his child determines the child's sense of overall self-worth and the trustworthiness of other(s) immediately and in future relationships.

Stimulated by Bowlby's work, Mary Ainsworth and her colleagues examined different patterns of attachment in infants and children (Ainsworth, Bleher, Waters, & Wall, 1978). To this end, Ainsworth designed the "strange situation" procedure in order to systematically observe on the basis of infants' or children's responses to separation from and reunion with caregivers. This structured procedure involved a specified series of episodes between infant, mother, and "other": (a) an experimenter introduces a mother and her infant or child to a playroom, (b) a stranger enters and the mother leaves the room, (c) the mother returns to the room, (d) a second

separation leaves the baby or child completely alone, and (e) finally, the stranger and then the mother return to the room. After examining hours of the videotaped infants' or children's reactions to these episodes, Ainsworth identified three attachment styles: (a) secure, (b) ambivalent/resistant, and (c) avoidant.

Children who experienced their primary caregivers as consistently available and responsive to their signals of distress were identified as having a fundamentally secure pattern of attachment. When distressed, a secure infant or child actively seeks contact with her or his mother. In contrast, children who experienced their caregiver as inconsistently available and inappropriately responsive were identified as having an ambivalent pattern of attachment. An ambivalent infant or child cannot be certain of her or his caregiver's availability or responsiveness, and therefore the infant continues to react with expressions of both attachment and anger. Children who experienced their parents as consistently rejecting of their needs were identified as having an avoidant pattern of attachment. An avoidant infant or child shows avoidance and detachment, even in the presence of her or his caregiver, presumably for fear of rejection and punishment. Following Ainsworth's initial effort to find ways of measuring attachment quality, Main and Solomon (1990) revised Ainsworth's study and proposed the addition of a fourth attachment style, "disorganized attachment". A disorganized infant or child displays a combination of the ambivalent and the avoidant patterns when reunited with her or his mother after a short separation (i.e., "cannot classify" coding category).

Internal working models and traditions of attachment research. Bowlby (1969/1997, 1973) believed that an infant's feelings of security contributed to healthy later development, whereas infants with insecure attachment were predicted to have less healthy developmental outcomes. To provide an explanation for these potential effects of early attachment styles on

later development, Bowlby proposed the concept of “internal working models.” For example, if a caregiver consistently gives help and comfort when needed, the child will develop a working model of the attachment figure as loving and responsive, and of herself or himself as a person worthy of such support. Conversely, if an attachment figure frequently rejects or ignores the child’s bids for comfort in stressful situations, the child may develop not only an internal working model of the caregiver as rejecting or unresponsive but also one of herself or himself as not worthy of help and comfort (Bowlby, 1973).

Bretherton (1985) later elaborated on these models, expounding on the conceptual understanding of the idea with her extensively constructive review of Bowlby’s attachment theory. Specifically, Bretherton extended Bowlby’s hypothesis that an infant’s continuing interaction with a caregiver would foster the development of an internal working model in an infant’s sense of self and other, arguing that, once established, this internal working model would be stable over time and become an apparatus utilized to interpret events and to determine future actions. And, indeed, the stability of attachment has been empirically documented in several studies (Gloger-Tippelt, Gomille, Koenig, & Vetter, 2002; Hamilton, 2000; Main & Cassidy, 1988; Wartner, Grossmann, Fremmer-Bombik, & Suess, 1994; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). From infancy to middle childhood, for example, 82% - 85% of attachment styles have been found to remain the same (Gloger-Tippelt et al., 2002; Main & Cassidy, 1988; Wartner et al., 1994). Even across the longer period between infancy and adolescence, the stability of attachment styles has been shown to be high. For example, Hamilton (2000) reported a stability rate of 77% from the age of 12 months to the age of 17 years and Waters and colleagues (2000) reported a stability rate of 72% from the age of 12 months to the

age of 21 years. This notion led to further investigations exploring adults' representations of childhood attachment relationships.

Main and her colleagues (Hesse, 1999; Main, Kaplan, & Cassidy, 1985) developed the Adult Attachment Interview (AAI) which is a semi-structured interview focusing on attachment-relevant experiences in childhood. The AAI focuses on the dynamics of internal working models that are revealed by the way a person talks about childhood relationships. Based on these interviews, individuals can be classified into four distinct attachment groups: (a) secure/autonomous, (b) dismissing, (c) preoccupied, and (d) unresolved/disorganized (i.e., "cannot classify" interview coding category). These were designed to parallel the four childhood attachment patterns described earlier: (a) secure, (b) avoidant, (c) ambivalent, and (d) disorganized, respectively.

The AAI is also intended to predict the quality of the caregiver's interaction with her or his own child and the security of the child's attachment, as indicated by the Ainsworth Strange Situation. van IJzendoorn (1995) provided supportive evidence for this link based on his meta-analytic examination, including 22 studies (i.e., 14 studies for study 1, 8 studies for study 2), comparing secure versus insecure representations. Specifically, secure attachment during early childhood, as assessed through this retrospective interview, was found to be associated with responsiveness to their children and secure attachment of their children. Retrospective reports of insecure attachments were more likely to be associated with less responsiveness to their children and insecure attachment of their children.

With an independent research tradition, Hazan and Shaver (1987) began their studies on adolescent and adult romantic attachment, conceptualizing that orientations to romantic or close relationships might be an outgrowth of previous attachment experiences with parents. Adopting

Ainsworth's original three patterns of childhood attachment: secure, avoidant, and anxious/ambivalent, Hazan and Shaver developed a self-report questionnaire comprising paragraph-long descriptions of each of the three attachment patterns to assess working models of attachment in adulthood. Respondents are asked to choose a paragraph that describes best their pattern of attachment to romantic relationships.

Bartholomew (1990) reviewed the attachment research in adolescence and adulthood in both of these traditions, one focused on adults' representations of their childhood relationships with parents (Hesse, 1999; Main et al., 1985) and the other focused on romantic or close relationships (Hazan & Shaver, 1987), and she concluded with an expanded model of attachment in adolescence and adulthood (Bartholomew, 1990; Bartholomew & Horowitz, 1991). Through her careful review of both traditions, Bartholomew noted two distinct forms of avoidant attachment: *dismissing-avoidance* characterized with "a defensive maintenance of self-sufficiency and dismissal of attachment needs" and *fearful-avoidance* characterized with "a conscious fear of anticipated rejection by others" (Bartholomew & Shaver, 1998, p. 27), which were previously overlooked by researchers and authors. Bartholomew (1990) pointed out that the interview method by the AAI tended to primarily identify individuals who deny attachment needs whereas the self-report method by Hazan and Shaver tended to primarily identify individuals who fear intimacy although the two approaches definitely identify overlapping avoidant groups. Until Bartholomew reviewed both traditions together, the distinct avoidant attachment styles were not of interest.

To systematically address these issues described above, subsequently Bartholomew (Bartholomew, 1990; Bartholomew & Horowitz, 1991) proposed a 2 by 2, or four-group model of attachment in adolescence and adulthood, returning to Bowlby's (1973) notion of internal

working models of self and others. Based on the viewpoint of attachment continuity (i.e., the continuity of an attachment style thought to be maintained over time), Bartholomew proposed that an individual's thoughts, feelings, and behaviors in current close relationships are governed by attachment to their primary caregivers during childhood. She further argued that models of self could be dichotomized as positive (the self is seen as worthy of love and attention) or negative (the self is seen as unworthy). Similarly, models of others could be dichotomized as positive (others are seen as available and caring) or negative (others are seen as unreliable or rejecting). The working models of self and others jointly define four attachment styles – “secure”, “preoccupied”, “dismissing”, and “fearful”. As indicated earlier, three of these styles – secure, preoccupied, and dismissing – conceptually correspond to the AAI classifications: secure/autonomous, dismissing, and preoccupied, respectively. And three of these styles – secure, preoccupied, and fearful – correspond conceptually to Hazan and Shaver's secure, anxious/ambivalent, and avoidant categories, respectively.

The correspondence between Bartholomew's measure and the AAI, and the correspondence between Bartholomew's and the Hazan and Shaver's measure have also been empirically supported. Specifically, a chi-square study with 30 bereaved women showed that the classifications obtained from the two measure, Bartholomew's categories and the AAI's classifications, were significantly associated, $\chi^2(6) = 24.80, p < .001$ (Bartholomew & Shaver, 1998). Another study (Brennan, Shaver, & Tobey, 1991) of 840 college students indicated that the classifications obtained from the Bartholomew's and the Hazan and Shaver's measures were significantly related, $\chi^2(6) = 370.31, p < .001$.

According to Bartholomew (Bartholomew, 1990; Bartholomew & Horowitz, 1991), a secure individual has a sense of love-worthiness and an expectation that other people are

generally accepting and responsive. A preoccupied individual possesses a sense of unworthiness combined with a positive evaluation of others that would lead the individual to strive for self-acceptance by gaining the acceptance of valued others. A dismissing individual has a sense of worthiness combined with a negative disposition toward others. This individual protects herself or himself against disappointment by avoiding close relationships and maintaining a sense of independence and invulnerability. Finally, a fearful individual has a sense of unworthiness combined with an expectation that other people will be negatively disposed (i.e., untrustworthy and rejecting). By avoiding close involvement with others, this individual protects herself or himself against anticipated rejection by others. Figure 1 provides a useful visual overview of the Bartholomew's conceptual model.

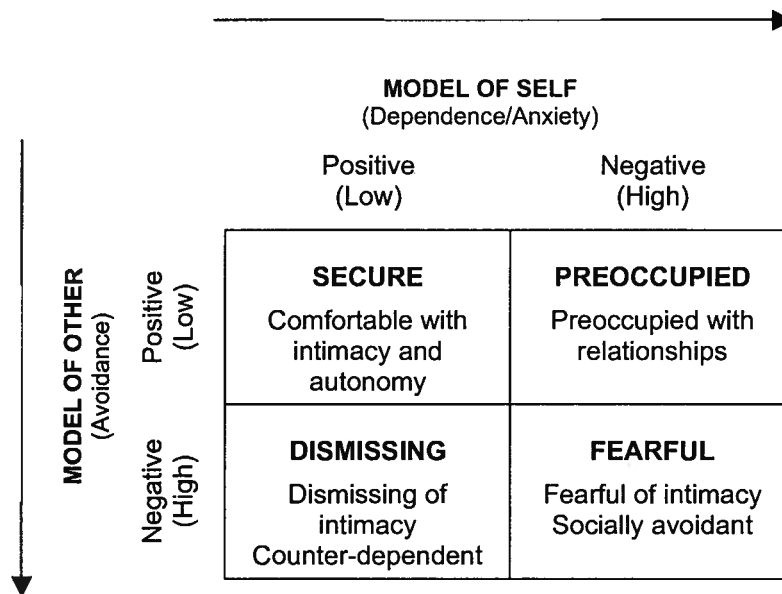


Figure 1. Bartholomew's (1990) model of adult attachment

To test this model, Bartholomew (Bartholomew & Horowitz, 1991) constructed a measure of attachment style in adolescence and adulthood which reflects the basic styles of attachment that developmental researchers had observed in infants and children. Her measure is composed of three sub-measures: a self-report measure of experiences in close relationships in general by revising the Hazan and Shaver's measure, and two interviews – one on childhood relationships along the lines of the AAI and the other on peer relationships (friendships and romantic relationships (Bartholomew & Horowitz, 1991). All three sub-measures rest on the four-prototype attachment model – secure, preoccupied, dismissing, and fearful. Subsequent research (Bartholomew & Horowitz, 1991; Bartholomew & Shaver, 1998) confirmed Bartholomew's initial proposition, demonstrating that individuals' experiences in their current close relationships as well as their representations of childhood relationships with their parents were consistent with their reported attachment style. That is, individuals who were identified as secure in their current close relationships (friendships and romantic relationships) were more likely to be identified as secure in their relationships with their parents. Preoccupied individuals in their current close relationships were more likely to be preoccupied in their relationships with their parents, dismissing individuals in close relationships were more likely to be dismissing in their relationships with their parents, and finally fearful individuals in current close relationships were more likely to be fearful in their relationships with their parents.

In summary, derived from the Bowlby's idea of internal working models of attachment, two independent traditions of attachment research in adolescence and adulthood emerged: one by Main and colleagues (1985) and the other by Hazan and Shaver (1987). By carefully reviewing the attachment research in both traditions, Bartholomew (1990) systematized Bowlby's internal

working models of self and others, proposing a four-prototype model of attachment in adolescence and adulthood defined in terms of positivity of self and positivity of others. Following this influential revision of attachment model by Bartholomew, some attachment researchers (e.g., Brennan, Clark, & Shaver, 1998; Moretti, McKay, & Holland, 2000) have been continuing to improve the measurement of attachment in adolescence and adulthood. In the next section, important dimensions underlying attachment, which are currently suggested when assessing attachment in adolescence and adulthood, are discussed.

Measuring attachment: Underlying dimensions of attachment. Grounded in Bowlby's attachment theory, as reviewed in the preceding sections, researchers have created measures to assess attachment in different developmental stages. Following Ainsworth's (1978) study, attachment patterns in infancy and childhood have been primarily measured by observational techniques. Adopting the AAI, representations of childhood experiences with parents have been often assessed using interview methods (Bartholomew & Horowitz, 1991; Main et al., 1985) for adult populations. Theoretical models of attachment have been refined and still continue to be improved in consideration of effective assessment of attachment. Thanks to Bartholomew's critical revision of theoretical models of attachment (Bartholomew, 1990; Bartholomew & Horowitz, 1991), as described earlier, we are now able to understand attachment systematically in the working models of self and others.

Recent theory suggests that a dimensional approach to understanding attachment (e.g., continuums of anxiety and avoidance) as opposed to a typological approach (e.g., secure, preoccupied, dismissing, fearful) may be a better way to define and measure attachment relationships (Brennan et al., 1998, Fraley & Waller, 1998). Encouraged by Bartholomew's work, further refinement of underlying the structure of attachment has been made by Brennan

and colleagues (Brennan et al., 1998). Brennan et al. (1998) suggest that the most established typologies of attachment be recast as a two-dimensional model: *anxiety* and *avoidance*. Specifically, Brennan et al. claim that the Ainsworth's three major attachment patterns could be conceptualized as regions in the dimensions of anxiety (i.e., crying, failing to explore confidently in the absence of mother, and angry protest directed at mother during reunions after what was probably experienced as abandonment) and avoidance (i.e., discomfort with closeness and dependency). In fact, Ainsworth and her colleagues indicated their acknowledgement of the two underlying dimensions of attachment in their book (Ainsworth et al., 1978), although they did not specifically "name" them, such as anxiety and avoidance. The Main and Solomon's (1990) now familiar model of infant-attachment styles could also be conceptualized as a product of the two underlying dimensions of anxiety and avoidance (see Figure 2).

Importantly, Bartholomew's model of attachment could also be explained in the two-dimensional structure of anxiety and avoidance. Indeed, Bartholomew (Bartholomew, 1990; Bartholomew & Horowitz, 1991) has theorized that her two dimensions ("model of self" and "model of other") are also conceptualized in terms of social response styles, that is, "dependence" (or "anxiety") on the horizontal axis and "avoidance" of intimacy on the vertical axis (see labels in parentheses in Figure 1). The degree to which the self is viewed as unworthy of love and support (i.e., dependence/anxiety) or significant others are viewed as rejecting or unavailable (i.e., avoidance) determines one's expectations and behaviors in close relationships (Bartholomew, 1990; Bartholomew & Horowitz, 1991). In other words, a negative model of self is closely associated with anxiety about abandonment, and a negative model of others is closely associated with avoidant behavior (Bartholomew & Shaver, 1998; Brennan et al., 1998).

Along the lines of the two-dimensional (i.e., anxiety and avoidance) approach, Brenann et al. (1998) conducted a large-sample study, seeking to produce a conceptually as well as psychometrically valid self-report attachment measure in romantic relationships. Specifically, by reviewing the attachment literature and extant measures of attachment, including some from unpublished conference papers, Brenann et al. (1998) compiled 60 attachment subscales and 323 relevant items of attachment. After administering the 323-item survey questionnaire to 1,086 undergraduate students, Brenann et al. conducted a factor analysis to identify underlying factors. Results of factor analysis yielded two essentially independent factors that corresponded to the anxiety and avoidance dimensions. Out of the 323 items of the questionnaire, Brenann et al. further developed two refined 18-item scales: one to measure the dimension of anxiety and the other to measure avoidance (i.e., Experiences in Close Relationships questionnaire; ECR, Brenann, Clark, & Shaver, 1998). Each of the two scales has demonstrated high reliability (Cronbach's $\alpha = .89$ for anxiety, .91 for avoidance; Brenann et al., 1998). Construct validity of these scales are supported by evidence that the anxiety scale is highly correlated with other scales measuring anxiety and preoccupation with attachment and fear of rejection, and the avoidance scale is highly correlated with other scales measuring avoidance and discomfort with closeness (Brenann et al., 1998). In addition, the convergence between the ECR measure and the Bartholomew's self-report measure (i.e., the four-clustered categories: secure, dismissing, preoccupied, and fearful) were examined, by clustering participants into four groups. Participants who scored low on both anxiety and avoidance scales were identified as secure individuals. Participants who scored low on anxiety and high on avoidance were clustered to the dismissing group. Those who scored high on anxiety and low on avoidance were identified preoccupied individuals, while those who scored high on both anxiety and avoidance were categorized as

fearful individuals. A chi-square test between the two assessments (i.e., the ECR and the Bartholomew's) was highly significant, indicating considerable similarity between the two measurement schemes (Brenann et al., 1998).

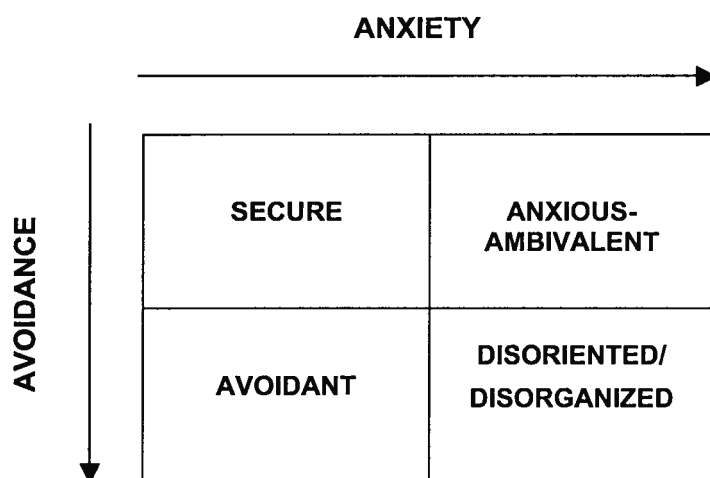


Figure 2. A diagram of anxiety and avoidance in relation to Main and Solomon's (1990) infant attachment types (reproduced from Brennan, Clark, & Shaver, 1998).

Although the ECR measure developed by Brennan and her colleagues were originally designed to assess elements of adult romantic attachment, it is possible to expect that much of the item content, with some modifications, could be used for measuring adolescents' attachment to their caregivers (Moretti et al., 2000) for the following reasons. First, the content of the measure was thoroughly constructed with the two dimensions, anxiety and avoidance, which were derived from extant measures of attachment in romantic relationships grounded in Bowlby's and Ainsworth's attachment theory originating from child-mother relationships. As described earlier in this section, Ainsworth and her colleagues (Ainsworth et al., 1978), indeed,

had already identified the two dimensions (i.e., anxiety and avoidance) underlying children's attachment to their mothers in their work although they did not call the two dimensions with the specific names. Second, the ECR measure has been found to be conceptually as well as empirically associated with Bartholomew's attachment model which was carefully constructed, returning to the Bowlby's original internal working models of self and others. It is also important to remember that the correspondence between the Bartholomew's measure and the AAI, which is designed to tap representations of childhood attachment with caregivers, has been empirically supported as shown earlier.

Responding to limitations of available adolescent attachment measures and a need to create one for adolescent populations, Moretti and her colleagues adapted the ECR questionnaire to develop an adolescent-parent attachment measure, the Comprehensive Adolescent-Parent Attachment Inventory (CAPAI; Moretti et al., 2000). The new measure, consisting the two 18-item subscales of anxiety and avoidance, was created with minor modifications of the ECR questionnaire, adjusted for reading level and appropriateness of age and context (for example, "I feel comfortable sharing my private thoughts and feelings with my *partner*" was revised to "I feel comfortable sharing my private thoughts and feelings with my *parent*"). A comprehensive examination of the psychometric properties of the inventory (i.e., the CAPAI) has been conducted with a clinical sample of adolescents (age range: 11 year to 17 year-old) to investigate the reliability and validity of the measure (Steiger, 2003). Results indicated good reliability of the measure, $\alpha = .89$ for anxiety, .91 for avoidance. Analyses of structural validity produced clear two-factor solutions. Further, analyses of convergent validity revealed that each of these two dimensions was correlated with targeted variables. Given that the CAPAI taps the two-dimensional model and given statistical support for the validity of the measure, this self-report

measure (i.e., the CAPAI) was used in the present study to assess adolescents' attachment to their caregivers in terms of the two dimensions, anxiety and avoidance.

In summary, the two-dimensional approach of understanding attachment may have the advantage of being derived from nearly every other extant attachment measure in close relationships, including the Bartholomew's measure, as well as capturing the essence of Bowlby's and Ainsworth's attachment theory. In addition, a multi-item dimensional approach as opposed to a typological approach is recommended for statistical reasons. Frarely and Waller (1998) contend that when classifying people on the basis of their scores, you are necessarily decreasing the precision of measurement and lowering the statistical power.

Of interest in the present study was an examination of attachment precursors of anger. As initially proposed by Bowlby (1973), child-parent attachment has implications for how individuals experience emotions such as anger. The hypothesized link between attachment and anger is addressed in the next section.

Anger and an Attachment Perspective

Bowlby (1973) contended that attachment working models play a critical role in the experience of anger. When experiences lead to the expectation that caregivers will be loving and responsive, children develop a secure attachment style; that is, they acquire a model of the self as loved and valued and a model of the other as warm and loving. In contrast, when children have experiences that lead them to expect caregivers to be rejecting and unreliable, they are likely to develop an insecure attachment style. These children hold a model of the self as unloved and rejected and/or a model of the others as unloving and rejecting. It has been suggested that an insecure attachment style contributes to the unhealthy socio-emotional development including anger (Bowlby, 1969/1997, 1973, 1988).

Bowlby's original hypothesis was that dysfunctional anger is a predictable correlate of insecure attachment. According to Bowlby, anger becomes dysfunctional when an individual becomes so intensely and/or persistently angry, crossing "the threshold of intensity" (Bowlby, 1973, p. 249), although it is unclear what his "threshold" might be. According to Bowlby (1973), the intense anger is initially directed toward an attachment figure as a result of being unloved, rejected, and/or neglected by the attachment figure, and then the tendency for anger becomes repressed and then directed at others. Bowlby (1988) argued that the state of long-term and committed relationships, including relationships with parents, has a great impact on an individual's emotional life, "the underlying tone of how the individual feels" (p. 80). If the relationship goes well, a sense of security is established; if the relationship is threatened and the threats remain consistent, distorted emotional responses such as intense levels of anger are developed (Bowlby, 1973, 1988). If an individual's attachment figure actively rejects her or him, the individual is likely to develop a pattern of responses in which avoidance of the attachment figure competes with the individual's desire for proximity and care, and in which angry feelings and behavior are apt to become prominent (Bowlby, 1988).

Bowlby (1973) stressed that threats of being rejected and abandoned by the attachment figure are especially likely to contribute to experience of anger, often of intense degree. In particular, repeated threats of abandonment and rejection are expected to lead to the experience of furiously angry feelings, and this anger, which is used to dissuade the attachment figure from carrying out the threat, can become dysfunctional (Bowlby, 1973, 1988).

To date, there are seven studies that have addressed Bowlby's hypothesis regarding anger and attachment. Using the self-report measure developed by Hazan and Shaver (1987) for assessing romantic attachment (i.e., secure, anxious/ambivalent, and avoidant), four studies

(Calamari & Pini, 2003; Meesters & Muris, 2002; Mikulincer, 1998; Muris et al., 2004) have demonstrated that attachment style is a predictor of anger. Among these, Mikulincer (1998) studied a sample of university students in Israel and found that avoidant individuals reported higher levels of hostility than secure and anxious/ambivalent individuals. In addition, Mikulincer reported that anxious/ambivalent individuals scored higher in anger arousal and anger-in (internalized anger) expression and scored lower in anger control than secure and avoidant individuals. In this study, a self-report measure was used to assess relevant dimensions of anger expression (i.e., anger-in and anger-out), hostility, anger arousal, and a semistructured interview was used to measure anger control.

In the Netherlands, two studies (Meesters & Muris, 2002; Muris et al., 2004) of adults and adolescents, utilizing the Hazan and Shaver's romantic attachment measure, have shown that insecure attachment was associated with greater anger. Meesters and Muris used a self-report measure to assess general anger and hostility. Given the relatively small number of anxious/ambivalent and avoidant adults, the groups of the anxious/ambivalent and avoidant adults were combined as a single insecure-attachment group in this study. Results of the study indicated that insecurely attached adults reported higher levels of anger and hostility. In another study, Muris and colleagues (Muris et al., 2004) examined the levels of anger, hostility, and trait-anger, reported by secure, anxious/ambivalent, and avoidant attachment groups based on the Hazan and Shaver's romantic/close-relationship attachment scale among secondary school students. Results of this study revealed that anxiously/ambivalently and avoidantly attached adolescents displayed greater levels of anger and hostility than securely attached adolescents, but no significant differences in anger and hostility levels were found between anxiously/ambivalently and avoidantly attached groups. Further, Muris and colleagues found that

anxiously/ambivalently and avoidantly attached adolescents reported higher levels of trait anger than securely attached adolescents.

With female college students in Italy, Calamari and Pini (2003) demonstrated that the avoidant attachment style as assessed by the Hazan and Shaver's romantic-attachment measure was positively related to anger-in expression as assessed by a self-report measure.

Besides these four studies using the Hazan and Shaver's attachment measure in romantic/close relationships, one study (Troisi & D'Argenio, 2004) in Italy explored the attachment-anger link by utilizing the Bartholomew's four-group attachment (i.e., secure, preoccupied, dismissing, and fearful) measure. In their study of male adults with clinically depressive symptoms, Troisi and D'Argenio found that individuals with either the preoccupied or the fearful style of attachment reported significantly greater levels of trait anger as assessed by a self-report measure than those with either the secure or the dismissing style of attachment. No significant differences between preoccupied and fearful individuals and between secure and dismissing individuals were found.

Taken together, these five studies (Calamari & Pini, 2003; Meesters & Muris, 2002; Mikulincer, 1998; Muris et al., 2004; Troisi & D'Argenio, 2004) all demonstrated significant associations between attachment styles and various components of anger. Across the studies, individuals with insecure attachment reported higher levels of anger. However, these studies do not provide direct support for Bowlby's hypothesis which was based on attachment to parents, not attachment in romantic or close relationships.

Two studies (Kobak et al., 1993; Kobak & Sceery, 1988) have explored the relationship between attachment to parents and anger, using the Adult Attachment Interview (AAI; Main et al., 1985), which was designed to assess representations of childhood attachment with parents

(please see the previous sections of this paper for details of the AAI). In a study of college students, Kobak and Sceery (1988) assessed participants' level of hostility, by asking their peers to indicate the degree to which the subject could be characterized as displaying hostile behavior (e.g., "Has hostility toward others," "Expresses hostile feelings directly"). Results of this study indicated that individuals with dismissing attachment were rated higher on hostility by peers than secure and preoccupied individuals. No differences were found between individuals with secure attachment and those with preoccupied attachment. Among adolescents, Kobak and colleagues (Kobak et al., 1993) found that insecure adolescents displayed more anger during interactions with mothers than did secure adolescents. An observation method was used to assess participants' anger through their verbal communications (e.g., levels of contempt), nonverbal behaviors (e.g., sighing), and overt attacking behaviors (e.g., raising voice levels), during their interactions with their mothers.

These two studies by Kobak and colleagues are the most relevant to providing empirical evidence supporting Bowlby's original hypothesis. The present study extended these studies by looking at current attachment with parents among adolescents. Research on ongoing attachment in adolescence has been ignored. This ignorance is seemingly due to the way attachment research emerged and developed, moving from examination of attachment in infancy to attachment in adult-romantic relationships, skipping the period of adolescence. Indeed, some researchers (Allen, 2008; Allen & Land, 1999; Thompson, 1997, 1999) have suggested the importance of assessing ongoing attachment to parents in adolescence. Extending previous research, the present study examined the link between attachment to parents in adolescence with interest in identifying important components of anger to examine Bowlby's original hypothesis. Previous studies investigating the anger-attachment link have examined a number of different dimensions of

anger, including peer perceptions of hostile behavior (Kobak & Sceery, 1988), observations of hostile and angry behavior (Kobak et al., 1993), self-reports of hostility (Meesters & Muris, 2002; Mikulincer, 1998; Muris et al., 2004;), self-reports of proneness (Calamari & Pini, 2003; Troisi & D'Argenio, 2004), and self-reports of anger expression (Calamari & Pini, 2003; Mikulincer, 1998). Returning to Bowlby's original hypothesis, the present study examined the links between current parental attachment and reported *intensity* of anger. In addition, the present study explored the links between current parental attachment and another potentially important dimension of anger, anger *expression*, given research (described previously) demonstrating the critical impact of anger expression on individual's health. In the following section, these dimensions (i.e., intensity and expression of anger) as well as impact of anger are further discussed.

Dimensions and Impact of Anger to be Considered

Research especially in the clinical and health fields has documented significant associations between anger and health problems. In particular, the relationship between anger and depression has rich history in psychodynamic theory which holds that anger is a response to increased tension, discomfort, or frustration and serves as a means of release from this tension (Freud, 1917/1963; Rubin, 1969; Singer, 1995). However, anger is often perceived as a negative emotion and/or is blocked or suppressed for a variety of reasons. Defense mechanisms such as denial, projection, displacement, and rationalization are used by some to suppress anger. According to the psychodynamic view, suppression of anger can result in physical and psychological conditions, including depression. Consistent with the tenets of psychodynamic theory, several studies have demonstrated a positive relationship between inwardly directed anger and depression (Blumberg & Godwin, 1987; Bridewell & Chang, 1997; Cautin &

Overholser, 2001; Chaplin, 2006; Clay et al, 1993; Golman & Haaga, 1995; Kopper & Epperson, 1996; Newman et al., 1999; Riley et al., 1989; Robbins & Tanck, 1997; Sperberg & Stabb, 1998; Venable et al., 2001; Zeman et al., 2002). That is, the more individuals suppress their expression of felt anger, the greater their risk for depression. Recently, the association of suppressed or inwardly directed anger with other health problems have been reported. Female adolescents reporting greater levels of eating disorder symptoms were more likely to inhibit anger feelings (Zaitsoff, Geller, & Srikameswaren, 2002). As well, increased levels of suppressed anger were found in college students with obsessive-compulsive disorder (Whiteside & Abramowitz, 2005). Furthermore, adolescent psychiatric inpatients with a tendency to internalize anger were at risk for suicide attempts (Cautin & Overholser, 2001).

Outwardly directed anger, as opposed to suppressed or inwardly directed anger, is also associated with health problems. Research (Bridewell & Chang, 1997; Cautin & Overholser, 2001; Kopper & Epperson, 1996; Riley et al., 1989; Sperberg & Stabb, 1998) has demonstrated a positive relationship between outwardly directed anger and health problems. Higher levels of outwardly directed anger have been found among individuals with posttraumatic stress disorder (Riley et al., 1989). Adolescents reporting greater levels of externalizing anger were more likely to abuse alcohol (Cautin & Overholser, 2001). Similar to individuals reporting higher levels of inwardly directed anger, individuals demonstrating higher levels of outwardly directed anger were also at risk for depression (Bridewell & Chang, 1997; Kopper & Epperson, 1996; Sperberg & Stabb, 1998).

Given the negative impact of greater levels of anger inwardly directed and outwardly directed on individuals' health, it becomes important to understand the factors that contribute to both a boost and reduction in anger expression. Bowlby's initial hypothesis concerned the

relationship between attachment to parents and *intensity* of anger. This hypothesized link was addressed in the present study in a sample of adolescents. In addition, the present study extended the examination of the Bowlby's hypothesis by looking at potential impact of another dimension of anger, the *expression* of anger (i.e., inwardly directed anger and outwardly directed anger), in addition to the dimension of anger, *intensity* of anger felt. Although all individuals may experience feelings of anger, the way in which such feelings are expressed may vary considerably. Indeed, Spielberger (1999) has pointed out the importance of considering both, intensity and expression of anger, distinguishing these two dimensions, in examining their associations with other relevant health problems.

Spielberger (1988, 1999) has defined anger as an emotional state consisting of feelings that vary in intensity (levels) *and* expression. Originally, Spielberger developed a self-report measure, the State-Trait Anger Scale, to assess the intensity or frequency of anger experienced (STAS; Spielberger, Jacobs, Russell, & Crane, 1983). Using the STAS, the intensity of anger among male hypertensive patients with those of a control group of general patients having no history of hypertension was compared (Spielberger et al., 1983; Spielberger, Johnson, Russell, Crane, Jacobs, & Worden, 1985). Results showed that the hypertensive group reported experiencing more intense anger than the control group. However, the hypertensive individuals appeared to suppress these feelings in interpersonal situations, resulting in less overt aggressive behavior. For Spielberger, these observations underscored the importance of assessing the extent to which individuals express (or suppress) their anger feelings, in addition to assessing the intensity of anger feelings (Spielberger et al., 1985).

Later, Spielberger (1988, 1999) identified two distinguishable dimensions regarding the expression of anger: (a) anger inwardly suppressed (anger-in) and (b) anger expressed outwardly

toward others (anger-out). Individuals high in the anger-in dimension may experience intense anger, but suppress rather than express these feelings. In contrast, people high on anger-out frequently display their anger via aggressive verbal or physical behavior. Spielberger developed the State-Trait Anger Expression Inventory (STAXI-2) to measure each of these components of anger. The intensity of angry feelings is assessed as the disposition to experience anger by the trait-anger scale of the STAXI-2. The tendency or frequency of suppressing angry feelings (i.e., anger-in) is measured by the anger expression-in scale, and the frequency of expressing anger outwardly (i.e., anger-out) is assessed by the anger expression-out scale of the STAXI-2.

The trait-anger scale, the anger-in scale, and the anger-out scale of the STAXI-2 were used in the present study. The reliability and validity of the STAXI-2 have been demonstrated in previous research (Spielberg, 1999). Detailed evidence supporting the psychometrical and conceptual structure of the scale is described in the method section.

In the theoretical literature, sex differences in anger expression have been contended (Fischer, Smith, Leonard, Fugua, Campbell, & Masters, 1993; Sharkin, 1993). That is, women are believed to be more likely to mask or suppress their feelings of anger than men. However, empirical studies do not support this hypothesis, providing no evidence of significant sex differences in anger expression at least in adult populations (Chaplin, 2006; Kopper & Epperson, 1996; Newman et al., 1999). One study (Cox, Stabb, & Hulgus, 2000) examining a child and adolescent population, however, has demonstrated significant sex differences in anger expression. In their study, with a sample of school children from grades 5-9, Cox and colleagues found that girls scored significantly higher on anger-in than boys regardless of age or grade grouping. Accordingly, it is important to further examine potential sex differences in the present study with a sample of adolescents.

Statement of the Problem

In light of the theoretical and empirical literature reviewed thus far, it was not clear that the Bowlby's original hypothesis regarding the relationship between attachment to parents and anger has as yet been adequately tested empirically. Moreover, given recent advances, both theoretical and methodological, regarding the assessment of both attachment and anger, a more refined test of the hypothesis was conceivable. Based on the literature extant, a model illustrating the relationship between attachment to parents and anger was proposed and provided a basis for the present investigation.

The theoretically hypothesized model is illustrated in Figure 3. Consistent with the Bowlby's original hypotheses, this model predicted that adolescents' attachment to parents would influence the intensity of anger felt generally. Further, the present study extended Bowlby's hypothesis, considering another important component of anger, anger expression, in addition to the intensity of anger. Of particular interest in the present study was an investigation of how two distinct dimensions of anger, intensity and expression, were related to current attachment to parents in a sample of adolescents. Even though all individuals might experience feelings of anger, the way that such feelings are expressed might differ notably. It was expected that high levels of both attachment anxiety and avoidance would contribute to greater levels of anger feelings (i.e., the intensity of felt anger) which, in turn, would elevate the levels of both anger-in (i.e., suppressing anger) and anger-out expressions. Furthermore, it was expected that there would be a direct effect of attachment anxiety on anger-in expression and a direct effect of attachment avoidance on both anger-out and anger-in expressions, in addition to the mediated relationship between attachment and anger expression through the intensity of anger. Specific hypotheses are further described below, along with research questions in the present study.

Question 1: Is there a relationship between attachment dimensions and anger experience and expression? If so, how are they related?

Hypothesis 1: Dimensions of insecure attachment (i.e., attachment anxiety and attachment avoidance) were expected to be positively related to increases in feelings or intensity of anger among adolescents which, in turn, would be associated with increases in anger-in and anger-out expressions (i.e., mediational relationships). This hypothesis was primarily based on Bowlby's original hypothesis that attachment experience with parents would predict intensity of anger. Two studies (Kobak et al., 1993; Kobak & Sceery, 1988) have provided support for this hypothesis, using the AAI, tapping retrospective perceptions of early attachment to parents. The present study extended these studies by looking at current attachment to parents during adolescence. Anger expression was considered as another important dimension of anger in the present study based on the Spielberger's (1988, 1999) argument that it is important to distinguish anger expression from anger experience/intensity. Given evidence of the negative impact of both anger-in and anger-out expression on health (Blumberg & Godwin, 1987; Bridewell & Chang, 1997; Cautin & Overholser, 2001; Chaplin, 2006; Clay et al., 2001; Golman & Haaga, 1995; Kopper & Epperson, 1996; Newman et al., 1999; Riley et al., 1989; Robbins & Tanck, 1997; Sperberg & Stabb, 1998; Venable et al., 2001; Zeman et al., 2002; Zaitsoff et al., 2002; Whiteside & Abramowitz, 2005), the importance of measuring the extent to which individuals suppress or express their anger feelings has become increasingly apparent, in addition to assessing the intensity

of anger feelings. Anger intensity, defined as the experience of anger as an emotional state by Spielberger (1999), was treated as a mediator preceding anger expression in the present study. This hypothesized mediation was derived from the emotion literature suggesting that emotional expressions are the manifestations of internal emotional states (Lewis, 2008; Lewis & Michalson, 1983). Accordingly, in the present study, felt anger was considered a necessary prerequisite for the expression of anger, a hypothesis tested by a mediational model. In the present study, it was expected that the increased levels of angry feelings (i.e., intensity of anger) would be predicted by attachment anxiety and that attachment avoidance would contribute to increased levels of both anger-in and anger-out expressions.

In addition, an exploratory examination of attachment anxiety x attachment avoidance interaction effects on anger experience was conducted. Considering the employment of the two-dimensional scale of attachment (i.e., anxiety and avoidance) in the present study, it was expected that, in addition to finding a main effect of each attachment dimension (i.e., anxious and avoidant), an interaction between the two dimensions was also expected.

Furthermore, both attachment anxiety and attachment avoidance were expected to be positively associated with anger-in. However, anger-out was expected to only be linked to attachment avoidance. This hypothesis was drawn from the findings of previous studies demonstrating that suppressed anger or anger-in is associated with both anxious/ambivalent attachment in romantic relationships (Mikulincer, 1998) and avoidant attachment (Calamari & Pini,

2003), and the finding by Kobak and Sceery (1988) regarding the association between dismissing (or avoidant) attachment to parents and anger rated by peers, implying a type of anger-out expression.

Question 2: Are there sex differences in the attachment-anger link?

Hypothesis 2: Given the evidence of one study (Cox et al., 2000) with a sample of students in grades 5-9 that girls scored higher on anger-in expression than boys, sex differences were considered in the present study. Of interest was whether the present study would replicate the Cox et al.'s finding (i.e., girls score higher on anger-in than boys) and whether the links between attachment to parents and anger intensity and expression might vary for male and female adolescents although no specific hypothesis were made in this regard, given the limited evidence to date regarding sex differences in the hypothesized relationship between attachment and anger.

Question 3: Does the relationship between attachment and anger differ between attachment figures, mother and father?

Hypothesis 3: Previous studies (Kobak et al., 1993; Kobak & Sceery, 1988) showing the significant relationship between attachment and anger did not investigate differences between mother and father figures in terms of the attachment-anger link. The attachment classifications assessed by the AAI in Koback and colleagues' studies (Kobak et al., 1993; Kobak & Sceery, 1988) do not inform us about which attachment figure was examined. When employing the AAI, the attachment to mother and attachment to father are usually coalesced to produce an attachment classification for an individual. However, it may be worthwhile

to note the Bowlby' (1967/1997) concept of "monotropy" that a child has an innate need to attach to one primary attachment figure, usually the mother, with regard to the exploration of mother-father differences. Even though Bowlby never ruled out the possible presence of other attachment figures for a child, he did clearly indicated that there was a primary bond which was much more important than others, usually the child's natural or biological mother (Bowlby, 1967/1997, 1988). In most cases, the biological mother who has the greatest biological investment in the child could be most influential in the development of the child (Bowlby, 1967/1997, Cassidy, 2008). If Bowlby's hypothesis is correct, attachment to the mother figure would have greater influence on the experience of anger than attachment to the father figure in the present study. Accordingly, independent contributions of attachment to both mother and father figures were examined in the present study.

In addition, far less is known about the putative influence of child-father attachment, given that the relevant parent in most previous attachment studies has been solely the mother (Cassidy, 2008; van IJzendoorn & De Wolff, 1997). van IJzendoorn and De Wolff (1997) argue that "although we do not want to speculate about the question of whether the absent father is a social or a scientific construction, ... the dearth of studies on the role of the father in infants' development of attachment should unfortunately be considered a matter of fact instead of (sexist) opinion" (p. 604). No specific hypothesis was proposed concerning differences between mother and father figures, because of insufficient prior empirical research linking these variables.

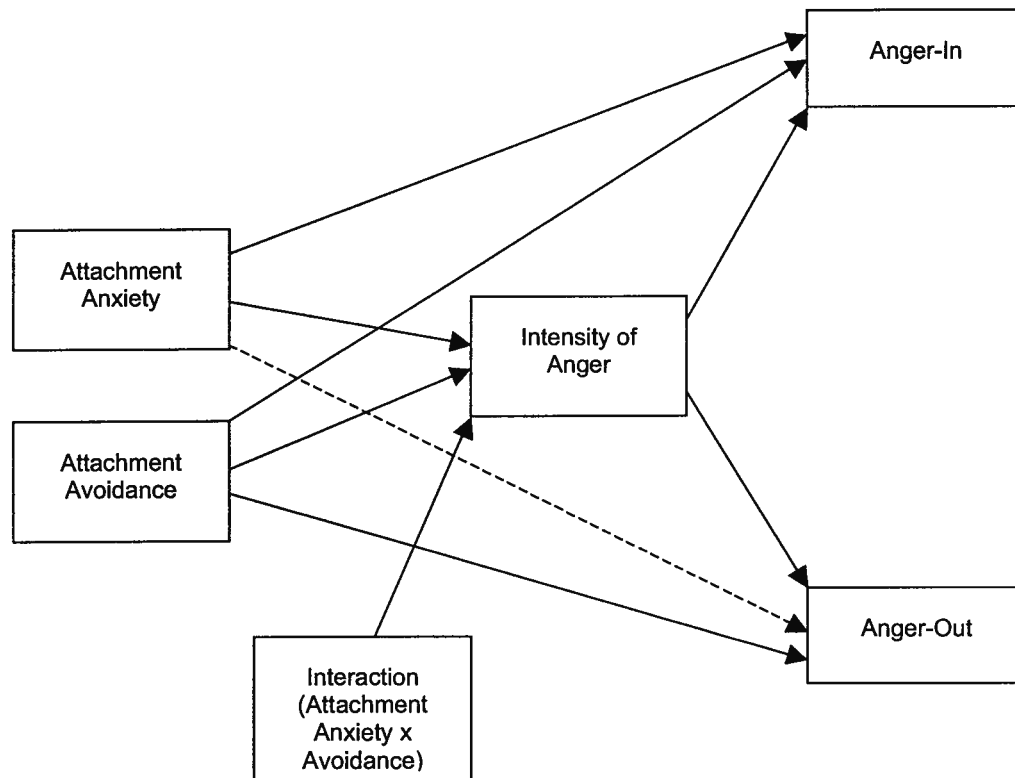


Figure 3. A model of attachment and anger.

Note. The arrowed-solid lines denote significant paths hypothesized in the present study, whereas the dashed line denotes a non-significant path hypothesized.

Method

Participants

Students in grades 8-12 from four secondary schools in the southern British Columbia, Canada, were recruited for participation in the present study. Of these students, participants included 776 students (379 boys, 397 girls), ranging in age 13 to 19 years ($M = 15.2$, $SD = 1.58$), who had received parental consent and who themselves agreed to participate. The overall participation rate was 78%. Students from a variety of ethnic backgrounds were included: 53.6% Asian Canadian, 20% European Canadian, 7.5% South-Asian Canadian, 2.4% Middle-Eastern Canadian, 1.4% Latino Canadian, 0.8% First Nations, 0.8% African/Caribbean Canadian, 10.2% Mixed, and 3.4% "Other" (non-specified). The distribution of the participants by grade level and sex is presented in Table 1.

Table 1

Distribution of Participants by Grade Level and Sex

		Sex		
		Boys (<i>n</i>)	Girls (<i>n</i>)	Total
Grade	8	113	97	210
	9	46	46	92
	10	67	73	140
	11	91	88	179
	12	62	93	155
Total		379	397	776

Procedures

Students in eighth- through twelfth-grade classrooms were asked to take home a letter to their parents explaining the purpose and nature of research, acknowledging that students' responses would be considered confidential, and asking parents for permission for their son or daughter to participate in the research. Students who received parental permission (see Appendix A-1) and who themselves agreed to participate (see Appendix A-2 for the student assent form) were involved in a single group-testing session (30-50 minutes) during which a self-report survey was administered in each classroom by at least two trained proctors (the author and trained graduate students). Teachers remained in the classroom to oversee student discipline but were otherwise uninvolved. Prior to the administration of the survey, the study was reviewed and approved by the Behavioural Research Ethics Board at the University of British Columbia and the participating school districts (see Appendix B for approval).

Measures

Demographic information. This measure gathers demographic background information, including (a) sex, (b) birth date and age, (c) grade, and (d) ethnic background (see Appendix C-1).

Attachment. To assess students' ongoing attachment to their caregivers, the Comprehensive Adolescent-Parent Attachment Inventory (CAPAI; Moretti et al., 2000) was used (see Appendix C-2). As described previously, this attachment measure is a 36-item, self-report measure designed to assess adolescents' attachment on the basis of the two-dimensional structure, attachment anxiety and attachment avoidance. Attachment anxiety refers to the feelings of insecurity about not feeling close to parents accompanied by a low level of self-

sufficiency, while attachment avoidance is related to the devaluing and dismissing need for a close relationship with a parent (McKay & Moretti, 2001). Participants were asked to respond to questions about their relationships with their mother and father figures on a 7-point Likert-type scale (1 = *disagree strongly* to 7 = *agree strongly*). An example of an item included in this inventory is as follows: “I feel comfortable depending on my mother.” Participants’ responses to items in each of the two-dimension subscales of the CAPAI (18 items for each dimension-subscale) were averaged to create an overall (i.e., mean) index for each attachment dimension, with higher scores reflecting greater levels of attachment anxiety or attachment avoidance.

Each of the two-dimension subscales, attachment anxiety and avoidance, has demonstrated high internal consistency in a similar age (ages: 11-17) clinical sample (Cronbach’s alpha = .89 for anxiety, .91 for avoidance; Steiger, 2003). Convergent validity for this measure has been supported by comparing attachment ratings to concurrent measures of psychopathology such as internalizing symptoms, externalizing symptoms, anxiety, and depression, which have been theoretically linked with each other.

In the original CAPAI, respondents are asked to indicate the parent or caregiver who they feel has “played the most important part in raising” them and answer in terms of their relationships with that person. Of interest in the present study was an exploration of which attachment figure, mother or father, might have a stronger impact on the hypothesized attachment-anger link. Accordingly, in the present study, the CAPAI survey was adapted to assess adolescents’ relationships with their mothers (or mother figures) and fathers (or father figures) separately.

Anger. To measure different facets of students’ anger (i.e., the intensity of anger felt and anger-expression), trait-anger, anger-in, and anger-out scales of a self-report measure, the State-

Trait Anger Expression Inventory 2 (STAXI-2; Spielberger, 1999), were used (see Appendix C-3). The trait-anger scale consisting of 10 items is designed to measure the intensity of angry feelings as the disposition to experience anger (e.g., “I am quick-tempered”). The anger expression-in (i.e., anger-in) scale is an 8-item measure that assesses the tendency or frequency of suppressing anger feelings (e.g., “I keep things in”). The anger expression-out (i.e., anger-out) scale consisting 8 items measures the frequency of expressing anger outwardly (e.g., “I express my anger”)¹. Participants were asked to rate dimensions of their anger on a 4-point Likert-type scale (1 = *almost never* to 4 = *almost always*). Students’ responses to relevant items were average to create overall indices of anger across the intensity of anger felt, anger-in expression, and anger-out expression. Higher scores reflected greater levels of anger in each case.

The reliability and validity of the STAXI-2 have been demonstrated in previous research (Spielberg, 1999). With a sample of college students (age range: 16-19), the internal consistency reliabilities of the scales (i.e., trait anger, anger-in and anger-out) are satisfactory: .89 for males and .88 for females in trait anger, .74 for males and .79 for females in anger-in, .78 for males and .76 for females in anger-out (Spielberger, 1999). The concurrent validity of the trait-anger scale of the original STAXI (note: items of the STAXI and STAXI-2 for this scale are identical) has been evaluated and supported by evidence that the scale is significantly correlated with other anger measures, the Buss-Durkee Hostility Inventory (BDHI) and the hostility scale of the Minnesota Multiphasic Personality Inventory (MMPI) in samples of college students and Navy recruits (Spielberger, 1999). The convergent and divergent validity of the anger-in and anger-out scales has been supported by comparing the scales to other measures of anger expression

¹ These anger scale items have been reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, FL, 33549, from the STAXI-2 by Charles D. Spielberger, Ph.D., Copyright 1979, 1986, 1988, 1995, 1998, 1999, by Psychological Assessment Resources, Inc. Further reproduction is prohibited without permission from PAR, Inc.

(Spielberger, 1999; Spielberger et al., 1985). Specifically, with a sample of high school students, students were grouped as either “anger-in” or “anger-out” based on the students’ responses to vignettes which described anger-provoking situations developed by Harburg and colleagues (Harburg, Blakelock, & Roeper, 1979). Subsequently, differences in the anger-in and anger-out scores of the original STAXI (note: items of the STAXI and STAXI-2 for these scales are identical) were evaluated based on the classifications of anger-in and anger-out groups identified by the Harburg’s measure. Results indicated that the anger-in group classified by the Harburg measure had significantly higher scores on the anger-in scale of STAXI-2 and significantly lower scores on the STAXI-2 anger-out scale, whereas the anger-out group of the Harburg measure had significantly higher scores on the STAXI-2 anger-out scale and significantly lower scores on the STAXI-2 anger-in scale. Given the evidence supporting the psychometrical and conceptual structure of the anger scales, the trait-anger scale, the anger-in scale, and the anger-out scale from the STAXI-2 were employed in the present study to assess the relevant dimensions of anger.

Results

Data Preparation and Screening

Missing data. There were 15 cases reporting no responses (2% of the total sample)² in the attachment variables (i.e., anxiety and avoidance). Of the 15 cases, one case (girl) had no responses on mother-figure attachment questions and 14 cases (10 boys, 4 girls) reported no responses on father-figure attachment items. In the present study, the following six data sets were created to examine the hypotheses of the present study: (a) mother figure attachment with the entire sample, (b) father figure attachment with the entire sample, (c) mother figure attachment with boys only, (d) mother figure attachment with only girls, (e) father figure attachment with only boys, and (f) father figure attachment with only girls. One case having no responses on mother-figure attachment questions was eliminated from analyses on the mother-figure attachment, and the 14 cases with no responses on father-figure attachment items were dropped from analyses on the father-figure attachment. The final sample sizes for the six data sets are presented in Table 2.

² No further missing data values were found in the present data after careful inspection of missing data, including the detection of possible spontaneous response patterns (e.g., circling the same number of the questionnaire items for all answers). The low rate of the missing data in this study was obtained as a result of the use of thorough reminders by trained proctors' to participants not to miss a question during the survey time.

Table 2

Sample Sizes for Data Analyses

Data Set	Final sample size (<i>n</i>)	Note
Mother figure attachment: Entire	775	One case with no responses on mother-figure attachment items was dropped from the original entire sample size, 776.
Father figure attachment: Entire	762	14 cases with no responses on father-figure attachment items were dropped from the original entire sample size, 776.
Mother figure attachment: Boys	379	None of cases was dropped from the original sample size for boys, 379.
Mother figure attachment: Girls	396	One case (one girl) with no responses on mother-figure attachment items was dropped from the original sample size for girls, 397.
Father figure attachment: Boys	369	10 cases (10 boys) with no responses on father-figure attachment items were dropped from the original sample size for boys, 379.
Father figure attachment: Girls	393	4 cases (4 girls) with no responses on father-figure attachment items were dropped from the original sample size for girls, 397.

Tests of assumptions. Priority to the examination of the primary hypotheses in the present study, normality, linearity, and outliers of all variables were evaluated. Normality of the variables was assessed through visual examination of histograms and indices of skewness and kurtosis. Values for skewness and kurtosis were considered to indicate a normal distribution if they were $< |2|$ (Miles & Shevlin, 2001). As seen in Table 3, none of the skewness and kurtosis values for the observed variables exceeded the cut-off point (i.e., $|2|$), indicating a normal distribution for each of the observed variables. Normality of the variables was also visually confirmed with frequency histograms.

Linearity was diagnosed from bivariate scatterplots between pairs of variables. None of the plots appeared to suggest a non-linear relationship in any of the cases, supporting the assumption of linearity.

Outliers were inspected with standardized scores (i.e., z scores) for univariate outliers and with Mahalanobis distance statistics for multivariate outliers. Cases with z scores in excess of $|4.0|$ are potential univariate outliers (Hair, Black, Babin, Anderson, & Tatham, 2006). There were no univariate outliers found in the present data sets. With regard to multivariate outliers, Mahalanobis distance statistics at $p < .001$ were calculated as χ^2 with degrees of freedom equal to the number of variables, in this case, six. Then, any case with a Mahalanobis distance greater than $\chi^2(6) = 22.46$ is a multivariate outlier. Four cases were identified as multivariate outliers with the data set of entire sample of mother figure attachment ($N = 775$). Three cases with the data set of entire sample of father figure attachment ($N = 762$), three cases with the data set of mother figure attachment for only boys ($n = 379$), one case with the data set of mother figure attachment for only girls ($n = 396$), and two cases with the data set of father figure attachment for only boys ($n = 369$), were also identified as multivariate outliers. Subsequently, these cases were examined, and none of them appeared to be outside of the range of expected values and their overall patterns of scores across all of the variables made conceptual sense. Hence, none of these cases were removed from the analyses.

Table 3

Results of Normality, and Descriptive Statistics for Study Variables

Variable	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Mother figure attachment: Entire (<i>N</i> = 775)				
Attachment anxiety	2.56	0.84	0.60	0.22
Attachment avoidance	3.21	1.18	0.25	-0.59
Intensity of anger	1.97	0.57	0.69	0.34
Anger-in	2.20	0.54	0.25	-0.37
Anger-out	2.02	0.51	0.58	0.12
Father figure attachment: Entire (<i>N</i> = 762)				
Attachment anxiety	2.59	0.93	0.46	-0.26
Attachment avoidance	3.73	1.32	0.05	-0.74
Intensity of anger	1.98	0.57	0.68	0.33
Anger-in	2.20	0.54	0.25	-0.36
Anger-out	2.02	0.51	0.59	0.12
Mother figure attachment: Boys (<i>n</i> = 379)				
Attachment anxiety	2.44	0.79	0.60	0.20
Attachment Avoidance	3.33	1.10	0.19	-0.56
Intensity of anger	1.99	0.57	0.56	0.22
Anger-in	2.19	0.55	0.30	-0.31
Anger-out	2.04	0.50	0.58	0.31
Mother figure attachment: Girls (<i>n</i> = 396)				
Attachment anxiety	2.68	0.87	0.56	0.16
Attachment avoidance	3.10	1.24	0.34	-0.60
Intensity of anger	1.95	0.57	0.82	0.52
Anger-in	2.20	0.54	0.21	0.21
Anger-out	2.00	0.51	0.60	-0.02

Father figure attachment: Boys ($n = 369$)

Attachment anxiety	2.45	0.90	0.55	-0.15
Attachment avoidance	3.68	1.26	0.05	-0.59
Intensity of anger	2.00	0.58	0.56	0.20
Anger-in	2.20	0.55	0.30	-0.31
Anger-out	2.04	0.50	0.59	0.32

Father figure attachment: Girls ($n = 393$)

Attachment anxiety	2.71	0.94	0.38	-0.29
Attachment avoidance	3.77	1.38	0.04	-0.87
Intensity of anger	1.96	0.57	0.81	0.50
Anger-in	2.20	0.54	0.21	-0.40
Anger-out	2.00	0.51	0.59	-0.03

Bivariate correlations were calculated to assess the interrelations among all variables. As seen in Table 4, small but significant positive correlations were observed between attachment anxiety and attachment avoidance subscales in all data sets, except the data set of father figure attachment for boys, suggesting the two distinct dimensions (i.e., attachment anxiety and attachment avoidant) but they are under the same umbrella of a broad construct – *attachment*. Small to moderate correlations in the expected directions were found among the anger subscales, as shown in Table 4. Overall, these patterns of the correlations were consistent with theoretically expected relationships.

Table 4

Intercorrelations Among Study Variables

Variable	1	2	3	4	5
Mother figure attachment: Entire (N = 775)					
1. Attachment anxiety	1.00				
2. Attachment avoidance	.13**	1.00			
3. Intensity of anger	.24**	.24**	1.00		
4. Anger-in	.21**	.30**	.44**	1.00	
5. Anger-out	.16**	.19**	.67**	.29**	1.00
Father figure attachment: Entire (N = 762)					
1. Attachment anxiety	1.00				
2. Attachment avoidance	.12**	1.00			
3. Intensity of anger	.18**	.24**	1.00		
4. Anger-in	.20**	.28**	.45**	1.00	
5. Anger-out	.12**	.11**	.67**	.30**	1.00
Mother figure attachment: Boys (n = 379)					
1. Attachment anxiety	1.00				
2. Attachment avoidance	.15**	1.00			
3. Intensity of anger	.19**	.18**	1.00		
4. Anger-in	.25**	.31**	.40**	1.00	
5. Anger-out	.13*	.10*	.65**	.22**	1.00
Mother figure attachment: Girls (n = 396)					
1. Attachment anxiety	1.00				
2. Attachment avoidance	.14**	1.00			
3. Intensity of anger	.31**	.29**	1.00		
4. Anger-in	.19**	.30**	.48**	1.00	
5. Anger-out	.20**	.26**	.69**	.36**	1.00

Father figure attachment: Boys ($n = 369$)

1. Attachment anxiety	1.00				
2. Attachment avoidance	.09	1.00			
3. Intensity of anger	.18**	.21**	1.00		
4. Anger-in	.25**	.28**	.41**	1.00	
5. Anger-out	.13*	.12*	.65**	.23**	1.00

Father figure attachment: Girls ($n = 393$)

1. Attachment anxiety	1.00				
2. Attachment avoidance	.15**	1.00			
3. Intensity of anger	.19**	.26**	1.00		
4. Anger-in	.15**	.27**	.49**	1.00	
5. Anger-out	.13**	.11*	.69**	.37**	1.00

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

Assessment of unidimensionality among study variables. Next, an exploratory factor analysis was conducted, using the Mplus 5.1 program (Muthén & Muthén, 2007), on each variable used in the present structural equation modeling analyses, in order to examine the dimensionality of each measurement instrument (i.e., variable). In other words, each variable was examined to determine whether it was unidimensional. Considering the categorical nature of the measurements used in the present study (i.e., Likert-type scales), polychoric correlations and the Weighted Least Squares (WLS) estimation method were used in the exploratory factor analyses. Following the Ford et al.'s (Ford, MacCallum, & Tait, 1986) and other authors' (Conway & Huffcut, 2003; Fabrigar, Wegener, MacCallum, & Strahan, 1999; Floyd, Widaman, 1995; Gorsuch, 1997) recommendations, the oblique (i.e., promax) rotation was used. Oblique rotation allows factors to be correlated, whereas orthogonal rotation produces factors that are statistically uncorrelated, which is highly unlikely in real world assessments.

To determine whether essential unidimensionality was observed, denoting the presence of a reasonably dominant common factor along with secondary minor dimensions (Nandakumar, 1993; Nandakumar & Ackerman, 2004; Staout, 1987; 1990), the following criteria were utilized: (a) the ratio of the first to the second eigenvalue (> 3.0) (Morizot, Ainsworth, & Reise, 2007), (b) factor loadings ($> .30$) (Nunnally & Bernstein, 1994), (c) the comparative fit index (CFI; $> .90$) (Hu & Bentler, 1999), and (d) the root-mean-square error of approximation (RMSEA; good fit: $< .05$; mediocre fit: $.08 - .10$) (Browne & Cudeck, 1993; Hu & Bentler, 1999). Cases that did not meet any of these criteria were considered for alteration. Factor analyses were conducted for the entire sample and for boys and girls separately. Accordingly, primary analyses examining the hypothesis of the present study were performed on the following six separate data sets: (a)

mother figure attachment with the entire sample, (b) father figure attachment with the entire sample, (c) mother figure attachment with boys only, (d) mother figure attachment with only girls, (e) father figure attachment with only boys, and (f) father figure attachment with only girls.

As seen in Table 5, results showed that there were three cases which did not meet any of those criteria described above: (a) the anger-in variable in mother figure attachment with only girls, (b) the anger-in variable in father figure attachment with only girls, (c) the attachment anxiety variable in father figure attachment with only girls. Although attempts were made to identify better measurement structures by removing items which did not obtain factor loadings higher than .30, none of these attempts resulted in substantially better unidimensionality. In addition, those items attempted to be removed (i.e., I1, X9 and X18³ in Table 5) are still theoretically and conceptually relevant to the constructs of the variables. Furthermore, based on visual evaluations with scree plots showing eigenvalues and overall intercorrelations among the scale items, all of the variables were considered within acceptable range of unidimensionality (see Appendix D for scree plots and Appendix E for item intercorrelations). Therefore, no alternations were made to the variables in this study. However, given that the three variables were marginally within acceptable range of unidimensionality, results for girls should be interpreted with caution.

³ The first letter of these items indicates the scale it belongs to (i.e., X = attachment anxiety, V = attachment avoidance, T = intensity of anger, I = anger-in, O = anger-out). The number next to the letter denotes the item number in the scale.

Table 5

Results of Factor Analyses for Study Variables

	Eigenvalue ratio	Factor loadings	CFI	RMSEA	Reliability ⁴ (α)
Mother figure attachment: Entire (N = 775)					
Attachment anxiety (item X9)	3.05	.26* - .76	.86	.14	.84
Attachment avoidance	5.87	.47 - .82	.95	.17	.93
Intensity of anger	3.43	.57 - .85	.91	.18	.84
Anger-in	2.18	.32 - .77	.84	.16	.71
Anger-out (item O2)	3.07	.27* - .73	.96	.08	.73
Father figure attachment: Entire (N = 762)					
Attachment Anxiety (item X18)	3.53	.22* - .80	.89	.16	.86
Attachment avoidance	6.10	.43 - .84	.95	.21	.94
Intensity of anger	3.41	.56 - .84	.91	.18	.84
Anger-in	2.17	.33 - .77	.83	.17	.71
Anger-out (item O2)	3.06	.27* - .68	.96	.08	.73
Mother figure attachment: Boys (n = 379)					
Attachment anxiety	3.30	.31 - .71	.89	.13	.83
Attachment avoidance	4.87	.38 - .83	.94	.17	.92
Intensity of anger	3.12	.57 - .82	.90	.19	.84
Anger-in	2.56	.37 - .76	.87	.15	.73
Anger-out (item O2)	2.62	.20* - .71	.94	.09	.71
Mother figure attachment: Girls (n = 396)					
Attachment anxiety (item X9)	3.01	.17* - .83	.86	.15	.84

⁴ Internal consistency of each instrument or variable (i.e., Cronbach's coefficient alphas) was presented in Table 4 as a reference only. Although the coefficient alphas have been most commonly used as the index of unidimensionality in previous research, they need to be distinguished from a function of unidimensionality (Hattie, 1985). Unidimensionality can be defined as the existence of one major latent trait underlying data, and it may not necessarily be internally consistent (Hattie, 1985).

Attachment avoidance	6.44	.55 - .84	.96	.18	.94
Intensity of anger	3.79	.57 - .86	.93	.17	.85
Anger-in (item I1)	1.96	.24* - .77	.82	.17	.69
Anger-out	3.52	.34 - .75	.98	.07	.75
Father figure attachment: Boys (<i>n</i> = 369)					
Attachment anxiety (item X18)	4.80	.19* - .83	.94	.13	.87
Attachment avoidance	4.94	.36 - .80	.94	.21	.94
Intensity of anger	3.08	.57 - .82	.89	.20	.84
Anger-in	2.53	.39 - .75	.86	.16	.73
Anger-out (item O2)	2.64	.21* - .70	.94	.09	.71
Father figure attachment: Girls (<i>n</i> = 393)					
Attachment anxiety (item X18)	2.86	.23* - .79	.85	.19	.85
Attachment avoidance	7.36	.49 - .87	.96	.19	.95
Intensity of anger	3.80	.60 - .86	.93	.17	.85
Anger-in (item I1)	1.96	.23* - .77	.82	.17	.69
Anger-out	3.49	.34 - .75	.97	.07	.70

Note. * denotes weak factor loadings (i.e., < |.30|). Each of the scales/variables with * possessed only one item with weak factor loading.

General sex differences on study variables. Although sex differences were not anticipated, a series of *t* tests were conducted to assess general sex differences on each of the predictor and outcome variables. As shown in Table 6, the tests for attachment anxiety to both mother and father and attachment avoidance to mother were statistically significant, but there were no significant differences between boys and girls for attachment avoidance to father, intensity of anger, nor for anger-in, or anger-out expressions. Girls scored higher for attachment anxiety to both mother and father, whereas boys scored higher for attachment avoidance to mother. Thus, girls were more likely than boys to be concerned about rejection and abandonment by both mother and father figures, whereas boys were more likely than girls to be uncomfortable

with close relationships with their mothers and were more likely to strive to maintain a sense of independence. However, it is important to note that the effect sizes associated with these gender differences, as assessed by η^2 , were all weak, ranging from .000 to .021 in magnitude (Cohen, 1988, suggests that $\eta^2 = .0099$ refers to small effect, whereas $\eta^2 = .0588$ refers to medium effect, and $\eta^2 = .1379$ refers to large effect).

Table 6

Mean (Standard Deviation) of Predictor and Outcome Scores by Sex

Variable	Sex		t-test	df	η^2
	Boys (n = 369)	Girls (n = 392)			
Attachment anxiety to mother Scale range: 1 (low) to 7 (high)	2.45 (0.79)	2.69 (0.87)	4.00***	759	0.021
Attachment avoidance to mother Scale range: 1 (low) to 7 (high)	3.34 (1.09)	3.11 (1.24)	-2.79**	759	0.010
Attachment anxiety to father Scale range: 1 (low) to 7 (high)	2.45 (0.90)	2.71 (0.93)	3.82***	759	0.018
Attachment avoidance to father Scale range: 1 (low) to 7 (high)	3.68 (1.26)	3.77 (1.38)	0.93	759	0.001
Intensity of anger Scale range: 1 (low) to 4 (high)	2.00 (0.58)	2.00 (0.57)	-1.01	759	0.001
Anger-in Scale range: 1 (low) to 4 (high)	2.20 (0.55)	2.20 (0.54)	0.07	759	0.000
Anger-out Scale range: 1 (low) to 4 (high)	2.04 (0.50)	2.00 (0.51)	-1.09	759	0.002

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

Tests of Hypotheses

Separate structural equating modeling (SEM) analyses were conducted, using the Mplus 5.1 program (Muthén & Muthén, 2007), to examine the hypotheses of the present study for the following six data sets: (a) mother figure attachment with the entire sample, (b) father figure attachment with the entire sample, (c) mother figure attachment with boys only, (d) mother figure attachment with only girls, (e) father figure attachment with only boys, and (f) father figure attachment with only girls. SEM allows us to determine the extent to which the theoretical model hypothesized is supported by sample data. The hypothesized model of the relationship between attachment and anger dimensions was estimated for each data set, specifying that all variables were theoretically underlying continuous variables. Given that the observed variables were distributed reasonably multivariate normal, maximum likelihood (ML) estimation was used in the SEM analyses, which assumes multivariate normal data.

Model fit was evaluated with the comparative fit index (CFI), and root-mean-square error of approximation (RMSEA), along with standardized path coefficients for all of the proposed paths. Results for the model-fit indices were presented in Table 6. Results for chi-square (χ^2) were also presented in that table, although the fit index was not used in the actual evaluation because of its sensitivity to the size of the sample and correlations (Gerbing & Anderson, 1993). A reason for reporting the index in that table was that the formulas of most if not all other indices include χ^2 , implying that it was a key ingredient (Kline, 2005). The CFI assesses the relative improvement in fit of the model compared with a baseline model, ranging from 0 to 1.0 (Bentler, 1990). Larger CFI values indicate a better fit and values greater than .90 are considered a good fit (Hu & Bentler, 1999). The RMSEA assesses the approximate fit of a model; how well the model would fit the population covariance matrix if it were available (Browne & Cudeck, 1993).

RMSEA values less than .05 suggest a good fit and values ranging from .08 to .10 indicate a reasonable or mediocre fit, and those greater than .10 indicate a poor fit (Browne & Cudeck, 1993; Hu & Bentler, 1999). Further, the mediator role of intensity of anger in the proposed model was examined by testing direct and indirect effects in the structural model. Results of the fit indices are presented in Table 7 and results of the direct and indirect effects are presented in Table 8. Path diagrams of the model results are also presented (see Figures 4 – 9).

Analyses of Mother Figure Attachment with Entire Sample

Model test. As seen in Table 7, the model was a reasonable fit to the data for the mother figure attachment with the entire sample, CFI = .99, RMSEA = .07. Standardized path coefficients were significant for all hypothesized paths, except for the path from attachment avoidance to anger-out and the path from the attachment anxiety x attachment avoidance interaction⁵ to intensity of anger. The coefficient for the path from attachment anxiety to anger-out was not significant, as predicted. As hypothesized, adolescents' attachment anxiety and avoidance toward mother figures were positively related to the adolescents' high level of anger feelings (i.e., intensity of anger) which, in turn, was associated with increases in anger-in and anger-out expressions, with direct effects of attachment anxiety and attachment avoidance on anger-in but no direct effects of attachment anxiety and avoidance on anger-out. The relationships between both attachment anxiety and attachment avoidance and intensity of anger were significant, and in turn the relationships between intensity of anger and both anger-in and anger-out expressions were significant. The significance of these two segments of the paths from attachment anxiety and attachment avoidance to anger-in and anger-out expressions indicates

⁵ The continuous predictor variables were first centered by saving their standardized scores as new variables, and then product terms (i.e., interaction terms) were created between the predictor variables (i.e., attachment anxiety and attachment avoidance).

mediation. Accordingly, the mediational structure was further examined with the significance tests for indirect effects.

Tests of mediation. The significance test statistic was created, dividing the indirect effect by its standard error and the resulting ratio was then compared to the standard normal distribution to test its significance (i.e., $z = a*b/\text{standard error of } a*b$; a represents a direct effect between an independent and a mediator, b represents a direct effect between the mediator and a dependent variable) (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). First, the two segments of the indirect paths from attachment anxiety to anger-in expression through intensity of anger were examined. The indirect effect of attachment anxiety on anger-in through intensity of anger was statistically significant ($\beta = .08, z = 5.69, p < .001$), providing evidence of mediation. Moreover, to examine whether the mediation was *partial* or *full*, the direct effect between attachment anxiety (i.e., the independent variable) and anger-in expression (i.e., the dependent variable) was evaluated. If the direct effect is significant, then the mediation is partial. If the direct effect is not significant, then the mediation is full. As seen in Tables 7 and 8, the direct effect between attachment anxiety and anger-in was significant, $\beta = .10, p < .01$, indicating partial mediation.

Next, the mediational relationship between attachment anxiety and anger-out through intensity of anger was examined in the same manner as described for the relationship between attachment anxiety and anger-in. The indirect effect of attachment anxiety on anger-out through intensity of anger was statistically significant, $\beta = .15, z = 6.35, p < .001$, providing evidence of mediation. To examine whether the mediation was *partial* or *full*, a direct path between attachment anxiety (i.e., the independent variable) and anger-out expression (i.e., the dependent

variable) was evaluated. As seen in Tables 7 and 8, there was no significance found on the direct path, $\beta = -.01$, *ns*, indicating full mediation.

Equivalently, the indirect effect of attachment avoidance on anger-in through intensity of anger was statistically significant, $\beta = .08$, $z = 5.33$, $p < .001$, supporting mediation. Also, there was the statistically significant direct path between attachment avoidance and anger-in, $\beta = .20$, $p < .001$, suggesting partial mediation (see Tables 7 and 8).

When examining the mediational relationship between attachment avoidance and anger-out through intensity of anger, there was a significant indirect effect of attachment avoidance on anger-out through intensity of anger, $\beta = .14$, $z = 5.84$, $p < .001$, but no significant direct path between attachment avoidance and anger-out, $\beta = .03$, *ns*, suggesting full mediation (see Tables 7 and 8).

In sum, these results showed the important role of intensity of anger as a mediator between maternal attachment and anger expression among adolescents. Adolescents reporting high levels of attachment anxiety experienced a higher level of anger feelings (i.e., intensity of anger) and that intensity of anger, in turn, increased their anger-in expression. Adolescents reporting greater levels of attachment avoidance were also more likely to experience a greater level of anger feelings, and the experience of anger intensity, in turn, enhanced anger-in expression. A similar pattern was found on the paths from attachment anxiety and attachment avoidance to anger-out. However, the latter pattern of results – statistically significant indirect effects but not direct effects (i.e., full mediation) – represents a stronger demonstration for the mediator effect, assuming correct directionality specification. Hence, intensity of anger has shown its critical role as a mediator on the path from insecure maternal attachment (i.e., anxiety and avoidance) to both anger-in and anger-out expressions, but the magnitude of the anger-

intensity role as a mediator was stronger on the path from insecure attachment to anger-out expression than that to anger-in.

Table 7

Fit Indices and Standardized Path Coefficients for Models

	1. Mother figure attachment: Entire	2. Father figure attachment: Entire	3. Mother figure attachment: Boys	4. Mother figure attachment: Girls	5. Father figure attachment: Boys	6. Father figure attachment: Girls
Fit Indices						
χ^2	9.08	13.98	13.00	0.94	10.66	4.84
<i>df</i>	2	2	2	2	2	2
CFI	.99	.98	.97	1.00	.97	.99
RMSEA	.07	.08	.08	.00	.08	.06
Paths						
Anxiety --> Anger intensity	.22***	.16***	.17***	.28***	.16***	.17***
Anxiety --> Anger-in	.10**	.11***	.15***	.03	.18***	.04
Anxiety --> Anger-out	-.01	.01	.01	-.02	.02	.00
Avoidance --> Anger intensity	.20***	.21***	.15***	.24***	.19***	.22***
Avoidance --> Anger-in	.20***	.17***	.23***	.17***	.20***	.15***
Avoidance --> Anger-out	.03	-.05	-.01	.07	-.02	-.08
Anxiety x Avoidance --> Anger intensity	-.04	-.08	.00	-.08	-.02	-.13**
Anger intensity --> Anger-in	.37***	.39***	.33***	.42***	.34***	.44***
Anger intensity --> Anger-out	.67***	.69***	.65***	.68***	.65***	.72***

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

Table 8

Direct, Indirect, and Total Effects of Study Variables on Endogenous Variables

Variable	1. Mother figure attachment: Entire (N = 775)			2. Father figure attachment: Entire (N = 762)			3. Mother figure attachment: Boys (n = 379)		
	Anger intensity	Anger- in	Anger- out	Anger intensity	Anger- in	Anger- out	Anger intensity	Anger- in	Anger- out
Anxiety									
Direct effect	.22***	.10**	-.01	.16***	.11***	.01	.17***	.15***	.01
Indirect effect	--	.08***	.15***	--	.06***	.11***	--	.06**	.11***
Total effect	.22***	.18***	.14***	.16***	.17***	.12***	.17***	.21***	.12**
Avoidance									
Direct effect	.20***	.20***	.03	.21***	.17***	-.05	.15***	.23***	-.01
Indirect effect	--	.08***	.14***	--	.08***	.14***	--	.05**	.10**
Total effect	.20***	.28***	.17***	.21***	.25***	.09**	.15***	.28***	.09
Anger intensity									
Direct effect	--	.37***	.67***	--	.39***	.69***	--	.33***	.65***
Indirect effect	--	--	--	--	--	--	--	--	--
Total effect	--	.37***	.67***	--	.39***	.69***	--	.33***	.65***

Note. All effects in this table were standardized values.

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

Table 8 (Continued)

Variable	4. Mother figure attachment: Girls (<i>n</i> = 396)			5. Father figure attachment: Boys (<i>n</i> = 369)			6. Father figure attachment: Girls (<i>n</i> = 393)		
	Anger intensity	Anger-in	Anger-out	Anger intensity	Anger-in	Anger-out	Anger intensity	Anger-in	Anger-out
Anxiety									
Direct effect	.28***	.03	-.02	.16***	.18***	.02	.17***	.04	.01
Indirect effect	--	.12***	.19***	--	.05**	.10**	--	.08***	.12***
Total effect	.28***	.15**	.17***	.16***	.23***	.12*	.17***	.12*	.13***
Avoidance									
Direct effect	.24***	.17***	.07	.19***	.20***	-.02	.22***	.15***	-.08
Indirect effect	--	.10***	.16***	--	.07***	.13***	--	.10***	.16***
Total effect	.24***	.27***	.23***	.19***	.27***	.11*	.22***	.25***	.08
Anger intensity									
Direct effect	--	.42***	.68***	--	.34***	.65***	--	.44***	.72***
Indirect effect	--	--	--	--	--	--	--	--	--
Total effect	--	.42***	.68***	--	.34***	.65***	--	.44***	.72***

Note. All effects in this table were standardized values.

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

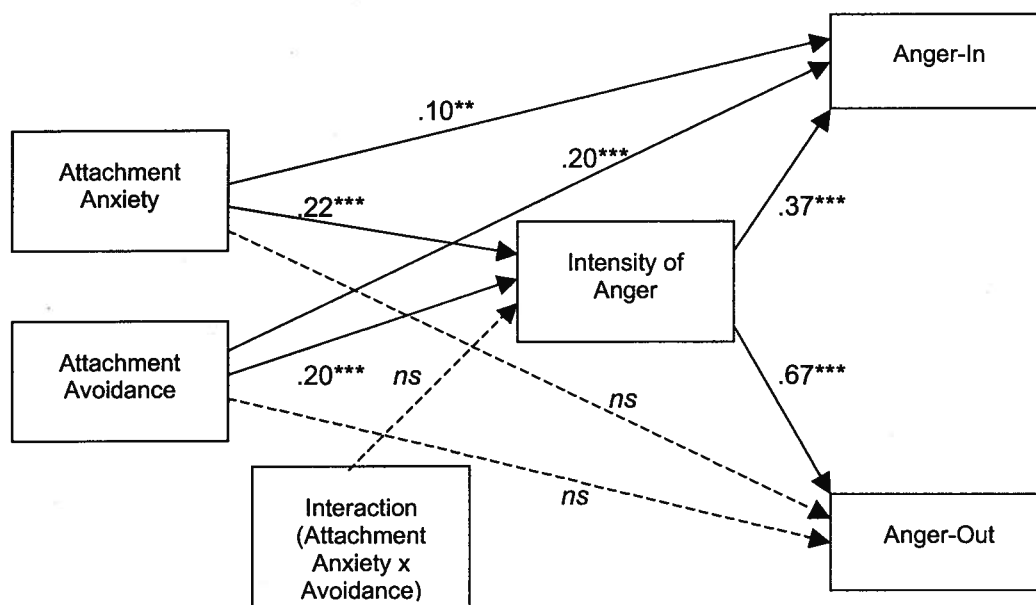


Figure 4. An attachment-anger model of mother figure with entire sample:

CFI = .99, RMSEA = .07.

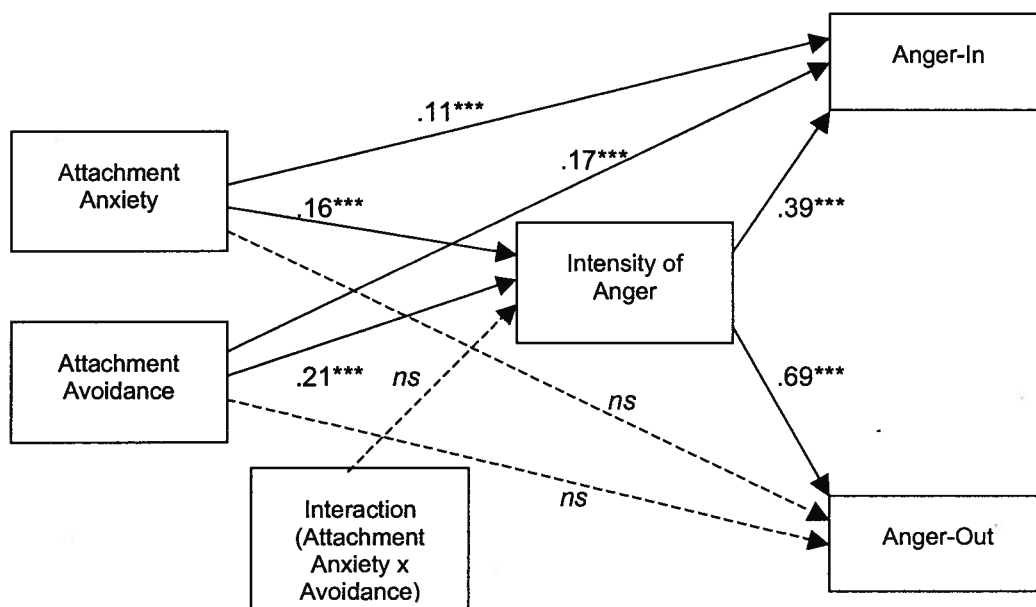


Figure 5. An attachment-anger model of father figure with entire sample:

CFI = .98, RMSEA = .08.

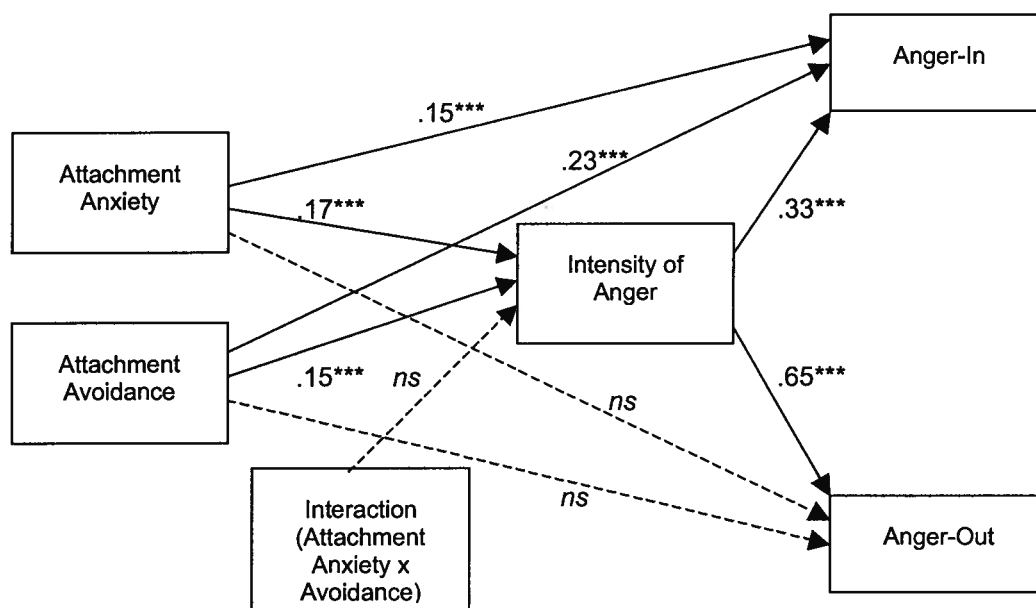


Figure 6. An attachment-anger model of mother figure with boys only:

CFI = .97, RMSEA = .08.

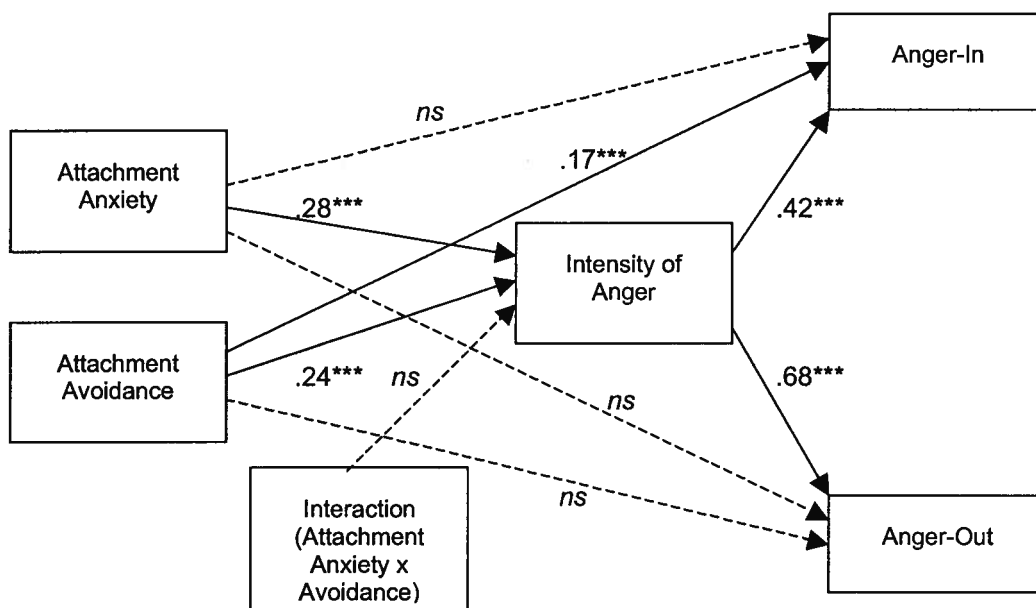


Figure 7. An attachment-anger model of mother figure with girls only:

CFI = 1.00, RMSEA = .00.

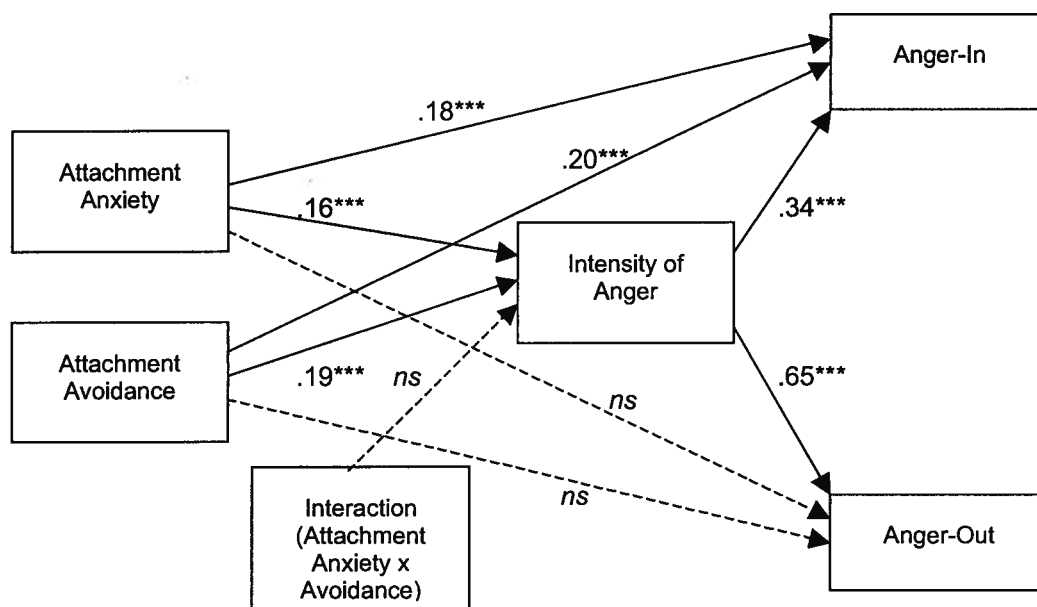


Figure 8. An attachment-anger model of father figure with boys only:

CFI = .97, RMSEA = .08.

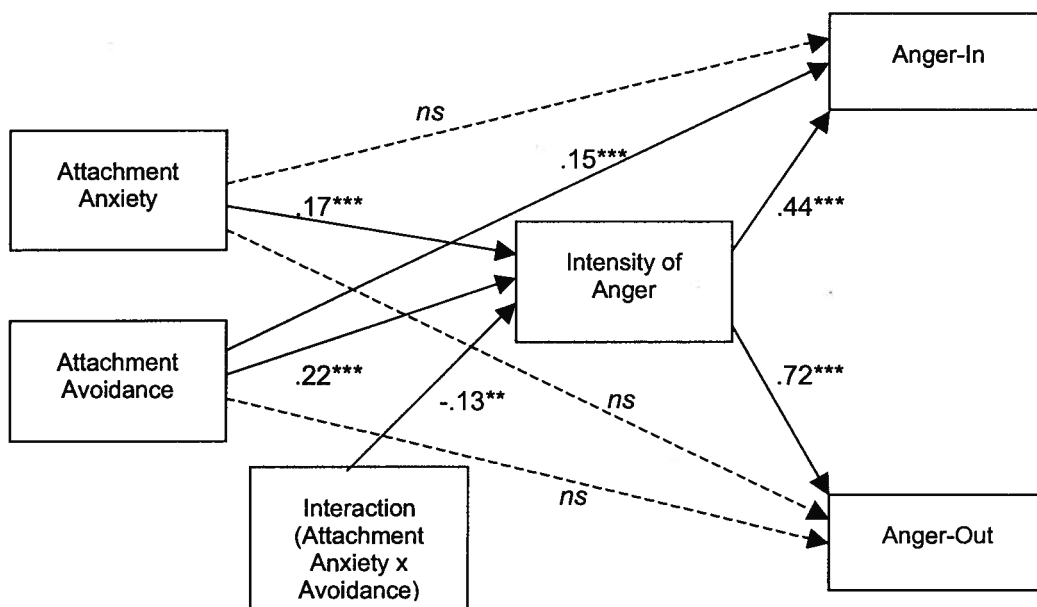


Figure 9. An attachment-anger model of father figure with girls only:

CFI = .99, RMSEA = .06.

Analyses of Father Figure Attachment with Entire Sample

Model test. A pattern similar to that shown for mother figure attachment with entire sample was found for father figure. The model was a reasonable fit to the data of father figure attachment with entire sample, CFI = .98, RMSEA = .08. Standardized path coefficients were significant for all hypothesized paths, except for the path from attachment avoidance to anger-out and the path from attachment anxiety x attachment avoidance interaction to intensity of anger. There was no significance of the path from attachment anxiety to anger-out, as expected. Consistent with the results for mother figure, adolescents' insecure attachment (i.e., attachment anxiety and avoidance) toward father was positively related to the adolescents' greater level of anger feelings (i.e., intensity of anger) which, in turn, was associated with increases in anger-in and anger-out expressions, with a direct effect of attachment anxiety on anger-in but no direct effects of attachment anxiety and avoidance on anger-out. The relationships between both attachment anxiety and attachment avoidance and intensity of anger were significant, and in turn the relationships between intensity of anger and both anger-in and anger-out expressions were significant, suggesting mediation effects. Hence, the mediational structure was further examined with the significance tests for indirect effects.

Tests of mediation. In terms of the two segments of the indirect paths from attachment anxiety to anger-in expression through intensity of anger, the indirect effect of attachment anxiety on anger-in through intensity of anger was statistically significant ($\beta = .06$, $z = 4.28$, $p < .001$), providing evidence of mediation. The direct effect between attachment anxiety and anger-in was significant, $\beta = .11$, $p < .001$, indicating partial mediation.

With regard to the mediational relationship between attachment anxiety and anger-out through intensity of anger, the indirect effect of attachment anxiety on anger-out through

intensity of anger was statistically significant, $\beta = .11$, $z = 4.50$, $p < .001$, providing evidence of mediation. The direct path from attachment anxiety to anger-out was not significant, $\beta = .01$, *ns*, indicating the full mediation.

Regarding the indirect effect of attachment avoidance on anger-in through intensity of anger, the mediated effect was statistically significant, $\beta = .08$, $z = 5.38$, $p < .001$, supporting mediation. Also, there was the statistically significant direct path between attachment avoidance and anger-in, $\beta = .17$, $p < .001$, suggesting partial mediation (see Tables 7 and 8).

When examining the mediational relationship between attachment avoidance and anger-out through intensity of anger, there was a significant indirect effect of attachment avoidance on anger-out through intensity of anger, $\beta = .14$, $z = 5.76$, $p < .001$, but no significant direct path between attachment avoidance and anger-out, $\beta = -.05$, *ns*, suggesting full mediation (see Tables 7 and 8).

In summary, these results were consistent with the results for mother figure, supporting the important role of intensity of anger as a mediator between adolescents' attachment to father figure and anger expression. Specifically, intensity of anger has shown its critical role as a mediator on the path from adolescents' paternal insecure attachment (i.e., both anxiety and avoidance) to both anger-in and anger-out expressions. However, the magnitude of the anger-intensity role as a mediator was stronger on the path from insecure attachment to anger-out expression than that to anger-in.

Analyses of Mother Figure Attachment by Sex

Model test. Separate SEM analyses, to investigate sex differences, were conducted for boys and girls in relation to their attachment to mother figure. Results for boys were consistent with those for the entire sample data described earlier. The model was a reasonable fit to the data

of mother figure attachment for boys, CFI = .97, RMSEA = .08. Consistent with the results for the entire sample data, boys' insecure attachment (i.e., anxiety and avoidance) toward mother figure was positively related to the boys' greater level of anger feelings (i.e., intensity of anger) which, in turn, was associated with increases in anger-in and anger-out expressions, suggesting mediation effects (see path coefficients in Table 7). There was a direct effect of attachment anxiety on anger-in but no direct effects of attachment anxiety and avoidance on anger-out. Overall, results for girls were similar to those for boys and the entire sample although the model fit to the data of girls was somewhat better than that of boys, CFI = 1.00, RMSEA = .00. There was, however, one noteworthy difference in results for girls, that is, that a significant direct effect of attachment anxiety on anger-in was not found (Table 7).

Tests of mediation. Results for further examination with the significance tests for indirect effects for boys were consistent with results for entire sample. When examining the two segments of the indirect paths from attachment anxiety to anger-in expression through intensity of anger for boys, the indirect effect of attachment anxiety on anger-in through intensity of anger was statistically significant ($\beta = .06$, $z = 3.02$, $p < .01$), providing evidence of mediation. The direct effect between attachment anxiety and anger-in was significant, $\beta = .15$, $p < .001$, indicating partial mediation.

With regards to the mediational relationship between attachment anxiety and anger-out through intensity of anger for boys, the indirect effect of attachment anxiety on anger-out through intensity of anger was statistically significant, $\beta = .11$, $z = 3.25$, $p < .001$, providing evidence of mediation. The direct path from attachment anxiety to anger-out was not significant, $\beta = .01$, *ns*, indicating full mediation.

In terms of the indirect effect of attachment avoidance on anger-in through intensity of anger for boys, the mediated effect was statistically significant, $\beta = .05$, $z = 2.76$, $p < .01$, supporting mediation. Also, there was the statistically significant direct path between attachment avoidance and anger-in, $\beta = .23$, $p < .001$, suggesting partial mediation (see Tables 7 and 8).

Finally, when examining the mediational relationship between attachment avoidance and anger-out through intensity of anger for boys, there was a significant indirect effect of attachment avoidance on anger-out through intensity of anger, $\beta = .10$, $z = 2.92$, $p < .001$, but no significant direct path between attachment avoidance and anger-out, $\beta = -.01$, *ns*, suggesting full mediation (see Tables 7 and 8).

These mediated effects for boys were consistent with results for girls, except that the mediation between attachment anxiety and anger-in was full for girls instead of partial, representing the stronger demonstration for the mediator effect as compared to that for boys. This stronger mediator effect for girls corresponds with the non-significance of the direct path between attachment anxiety and anger-in presented earlier for girls. The statistical values for coefficients (i.e., β s) and significance tests (i.e., z s) for girls were as follows: (a) $\beta = .12$, $z = 5.11$, $p < .001$ for the indirect effect and $\beta = .03$, *ns* for the direct effect between attachment anxiety and anger-in (i.e., full mediation); (b) $\beta = .19$, $z = 5.84$, $p < .001$ for the indirect effect and $\beta = -.02$, *ns* for the direct effect between attachment anxiety and anger-out (i.e., full mediation); (c) $\beta = .10$, $z = 4.55$, $p < .001$ for the indirect effect and $\beta = .17$, $p < .001$ for the direct effect between attachment avoidance and anger-in (i.e., partial mediation); and (d) $\beta = .16$, $z = 5.03$, $p < .001$ for the indirect effect and $\beta = .07$, *ns* for the direct effect between attachment avoidance and anger-out (i.e., full mediation).

In summary, the mediated effects were overall similar for boys and girls, both demonstrating a critical role of anger intensity as a mediator. Consistent with the results for entire sample, intensity of anger has performed a critical mediator role between adolescents' maternal insecure attachment (i.e., both anxiety and avoidance) and both anger-in and anger-out expressions, though the magnitude of the anger-intensity role as a mediator, again, was stronger on the path from insecure attachment to anger-out expression than that to anger-in. However, there was a notable difference for boys and girls, in that intensity of anger demonstrated a stronger mediator effect on the path from attachment anxiety to anger-in for girls than for boys.

Analyses of Father Figure Attachment by Sex

Model test. Separate SEM analyses were conducted for boys and girls to examine sex differences in the hypothesized model in relation to their attachment to father figure. Results for boys were, again, consistent with those for the entire sample data described earlier. The model was a reasonable fit to the data of father figure attachment for boys, CFI = .97, RMSEA = .08. Consistent with the results for the entire sample data, boys' insecure attachment (i.e., anxious and avoidant) toward father figure was positively related to the boys' higher level of anger feelings (i.e., intensity of anger) which, in turn, was associated with increases in anger-in and anger-out expressions, suggesting mediation effects (see path coefficients in Table 7). There was a direct effect of attachment anxiety on anger-in but, again, no direct effects of attachment anxiety and avoidance on anger-out. This pattern was consistent with the results described for entire sample and boys with maternal attachment.

Overall, results for girls were similar to those for boys and the entire sample although the model fit to the data of girls was, again, somewhat better than that of boys, CFI = .99, RMSEA = .06. Notable differences in results for girls were that: (a) there was no significant direct effect of

attachment anxiety on anger-in, consistent with the results in mother figure attachment for girls presented earlier, and (b) a negative and significant direct effect of the interaction, attachment anxiety x attachment avoidance, was found (see Table 7), suggesting a buffering effect of either attachment anxiety or attachment avoidance on the relationship between either of those attachment dimensions and intensity of anger. As a follow-up to the significant interaction, a simple main-effects-like analysis was conducted, wherein the models were fit for adolescents who reported low versus high levels of attachment anxiety or avoidance, base on the median split (Steiger, 2003). Results of this follow-up analysis showed that, for adolescents who reported high levels of attachment avoidance⁶, the effect of attachment anxiety was no longer significant for increases in the intensity of anger. The comparisons of the main effect of attachment anxiety for low and high attachment avoidance are presented Table 9.

⁶ In the present study, the low and high attachment groups were created based on attachment avoidance. Alternatively, in lieu of the attachment avoidance, attachment anxiety can be used to create low and high groups of attachment anxiety.

Table 9

Fit Indices and Standardized Path Coefficients for Models of Father Figure Attachment for Girls

	Low attachment avoidance to father (<i>n</i> = 188)	High attachment avoidance to father (<i>n</i> = 205)
Fit Indices		
χ^2	0.79	0.41
CFI	1.00	1.00
RMSEA	.00	.00
Paths		
Anxiety --> Anger intensity	.31***	.05
Anxiety --> Anger-in	.11 (<i>p</i> = .07)	-.03
Avoidance --> Anger intensity	.06	.15*
Avoidance --> Anger-in	.08	.12 (<i>p</i> = .07)
Avoidance --> Anger-out	.04	-.06
Anger intensity --> Anger-in	.52***	.36***
Anger intensity --> Anger-out	.70***	.70***

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

Tests of mediation. Results of analyses for indirect effects for boys were consistent with results for entire sample. When examining the two segments of the indirect paths from attachment anxiety to anger-in expression through intensity of anger for boys, the indirect effect of attachment anxiety on anger-in through intensity of anger was statistically significant ($\beta = .05$, $z = 2.93$, $p < .001$), confirming evidence of mediation. The direct effect between attachment anxiety and anger-in was significant, $\beta = .18$, $p < .001$, indicating partial mediation.

When testing the mediational relationship between attachment anxiety and anger-out through intensity of anger for boys, the indirect effect of attachment anxiety on anger-out through intensity of anger was statistically significant, $\beta = .10$, $z = 3.13$, $p < .01$, providing evidence of mediation. The direct path from attachment anxiety to anger-out was not significant, $\beta = .02$, *ns*, suggesting full mediation.

In terms of the indirect effect of attachment avoidance on anger-in through intensity of anger for boys, the mediated effect was statistically significant, $\beta = .07$, $z = 3.78$, $p < .001$, supporting mediation. Also, there was the statistically significant direct path between attachment avoidance and anger-in, $\beta = .20$, $p < .001$, indicating partial mediation (see Tables 7 and 8).

Finally, when examining the mediational relationship between attachment avoidance and anger-out through intensity of anger for boys, there was a significant indirect effect of attachment avoidance on anger-out through intensity of anger, $\beta = .13$, $z = 3.68$, $p < .001$, but no significant direct path between attachment avoidance and anger-out, $\beta = -.02$, *ns*, indicating full mediation (see Tables 7 and 8).

These mediated effects for boys were consistent with results for girls, except that the mediation between attachment anxiety and anger-in was, again, was found to be full for girls instead of partial, representing the stronger demonstration for the mediator effect as compared to

that for boys. The statistics values for coefficients (i.e., β s) and significance tests (i.e., z s) for girls were as follows: (a) $\beta = .08$, $z = 3.40$, $p < .001$ for the indirect effect and $\beta = .04$, ns for the direct effect between attachment anxiety and anger-in (i.e., full mediation); (b) $\beta = .12$, $z = 3.56$, $p < .001$ for the indirect effect and $\beta = .01$, ns for the direct effect between attachment anxiety and anger-out (i.e., full mediation); (c) $\beta = .10$, $z = 4.28$, $p < .001$ for the indirect effect and $\beta = .15$, $p < .001$ for the direct effect between attachment avoidance and anger-in (i.e., partial mediation); and (d) $\beta = .16$, $z = 4.51$, $p < .001$ for the indirect effect and $\beta = -.08$, ns for the direct effect between attachment avoidance and anger-out (i.e., full mediation).

To sum up, overall the mediated effects were similar for boys and girls, with intensity of anger playing an important mediator in both cases. The results for the entire sample were consistent in that intensity of anger was a critical mediator for the path between adolescents' paternal insecure attachment (i.e., both anxiety and avoidance) and both anger-in and anger-out expressions. The level of the anger-intensity role as a mediator, again, was stronger on the path from insecure attachment to anger-out expression than that to anger-in. However, there was a noteworthy difference for boys and girls. Intensity of anger demonstrated a greater mediator effect on the path from attachment anxiety to anger-in for girls than for boys. This result was consistent with the result for maternal attachment.

Relative Impact of Attachment Dimensions and Figures

Given that the theoretically-derived model, based on Bowlby's hypothesis, was successfully supported by analyses in the present study in a relatively large sample of adolescents, the following analyses were conducted in order to investigate the relative impact of the attachment dimensions and figures on anger (i.e., Which attachment dimension has more impact on increases in anger, attachment anxiety or attachment avoidance? Which attachment

figure has more impact on increases in anger?). To achieve the objective, regression analyses were conducted and values of Pratt index were calculated.

Prior to the primary regression analyses, multicollinearity among predictors (i.e., attachment anxiety to mother, attachment avoidance to mother, attachment anxiety to father, attachment avoidance to father, and intensity of anger) was diagnosed with tolerance and the variance inflation factor (VIF) statistic indices. Following Kline (2005) and Miles and Shevlin's (2001) recommendations, the cut-off point of .10 for tolerance and 4 for VIF were used. That is, a value of tolerance < .10 and a value of VIF > 4 indicate a problem of multicollinearity. As seen in Table 10, none of the predictor variables was at risk of multicollinearity. Results of bivariate correlations among relevant variables are also presented in Table 11.

In addition, to examine whether sex of adolescents moderates the relationship between attachment dimensions and anger, a hierarchical regression test was conducted, regressing each of the anger variables (i.e., intensity of anger, anger-in, anger-out) on the centered attachment variables (i.e., attachment anxiety to mother, attachment avoidance to mother, attachment anxiety to father, and attachment avoidance to father), and sex of adolescents in the first step and adding all the two-way product terms of each of the attachment variables by sex in step two. The results of the regression analyses are presented in Tables 12 - 14. First, for intensity of anger, the first step accounted for 12% of the variance in intensity of anger. However, the change in $R^2 = .01$ for the second step was not significant ($p = .15$), indicating that sex did not moderate the relationship between the attachment variables and intensity of anger (Table 12). The same pattern was observed for anger-in (see Table 13) and anger-out (see Table 14) variables. Given no significant sex differences, the following primary analyses for this section were performed only on the entire sample. Although the change in R^2 for the second step was not significant, there was a

significant interaction between attachment avoidance to mother and sex of adolescents in relation to anger-out expression, $\beta = -.31, p < .05$ (see Table 14). Further investigation of the significant interaction is beyond the scope of the present study. However, it should be noted that this significant interaction suggests a moderation effect of sex on the relationship between attachment avoidance to mother and anger-out expression.

Table 10

Results of Multicollinearity Diagnosis for Predictor Variables

Variable	Tolerance	VIF
Entire sample (N = 761)		
Attachment anxiety to mother	.53	1.90
Attachment avoidance to mother	.75	1.33
Attachment anxiety to father	.55	1.83
Attachment avoidance to father	.74	1.35
Intensity of Anger	.89	1.13
Boys (n = 369)		
Attachment anxiety to mother	.41	2.46
Attachment avoidance to mother	.63	1.53
Attachment anxiety to father	.42	2.38
Attachment avoidance to father	.60	1.66
Intensity of Anger	.93	1.08
Girls (n = 392)		
Attachment anxiety to mother	.61	1.63
Attachment avoidance to mother	.80	1.26
Attachment anxiety to father	.64	1.56
Attachment avoidance to father	.82	1.23
Intensity of Anger	.83	1.21

Table 11

Intercorrelations Among Study Variables

Variable	1	2	3	4			5
Entire sample (<i>N</i> = 761)							
1. Attachment anxiety to mother	1.00						
2. Attachment avoidance to mother	.13**	1.00					
3. Attachment anxiety to father	.67**	.13**	1.00				
4. Attachment avoidance to father	.19**	.48**	.12**	1.00			
5. Intensity of anger	.24**	.23**	.18**	.24**	1.00		
6. Anger-in	.21**	.30**	.19**	.28**	.45**	1.00	
7. Anger-out	.16**	.19**	.12**	.11**	.67**	.30**	1.00
Boys (<i>n</i> = 369)							
1. Attachment anxiety to mother	1.00						
2. Attachment avoidance to mother	.14**	1.00					
3. Attachment anxiety to father	.75**	.10	1.00				
4. Attachment avoidance to father	.21**	.60**	.09	1.00			
5. Intensity of anger	.18**	.17**	.17**	.21**	1.00		
6. Anger-in	.25**	.31**	.25**	.28**	.41**	1.00	
7. Anger-out	.13*	.09	.13*	.12*	.65**	.23**	1.00
Girls (<i>n</i> = 392)							
1. Attachment anxiety to mother	1.00						
2. Attachment avoidance to mother	.14**	1.00					
3. Attachment anxiety to father	.59**	.19**	1.00				
4. Attachment avoidance to father	.16**	.40**	.14**	1.00			
5. Intensity of anger	.30**	.29**	.19**	.26**	1.00		
6. Anger-in	.19**	.30**	.14**	.27**	.49**	1.00	
7. Anger-out	.20**	.26**	.13*	.11*	.69**	.37**	1.00

p* < .05, *p* < .01.

Table 12

Summary of Test for Moderation Effects of Sex on the Prediction of Intensity of Anger (N = 761)

Variable	B	SE B	β
Step 1			
Attachment anxiety to mother	0.11	0.03	.19***
Attachment avoidance to mother	0.08	0.02	.14***
Attachment anxiety to father	0.01	0.03	.02
Attachment avoidance to father	0.08	0.02	.13***
Sex of adolescents	0.07	0.04	.06
Step 2			
Attachment anxiety to mother	0.26	0.08	.45***
Attachment avoidance to mother	0.18	0.07	.31**
Attachment anxiety to father	-0.09	0.08	-.16
Attachment avoidance to father	0.07	0.07	.11
Sex of adolescents	0.07	0.04	.06
(Attachment anxiety to mother) x (Sex of adolescents)	-0.11	0.06	-.29
(Attachment avoidance to mother) x (Sex of adolescents)	-0.07	0.05	-.19
(Attachment anxiety to father) x (Sex of adolescents)	0.08	0.06	.22
(Attachment avoidance to father) x (Sex of adolescents)	0.01	0.05	.04

Note. $R^2 = .12$, $F(5, 755) = 19.73$, $p < .001$ for Step 1; $\Delta R^2 = .01$, $\Delta F(4, 751) = 1.71$, $p = .15$ for Step 2.

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

Table 13

Summary of Test for Moderation Effects of Sex on the Prediction of Anger-In (N = 761)

Variable	B	SE B	β
Step 1			
Attachment anxiety to mother	0.06	0.03	.11**
Attachment avoidance to mother	0.11	0.02	.21***
Attachment anxiety to father	0.04	0.03	.08
Attachment avoidance to father	0.08	0.02	.15***
Sex of adolescents	0.01	0.04	.01
Step 2			
Attachment anxiety to mother	0.10	0.08	.18
Attachment avoidance to mother	0.10	0.06	.18
Attachment anxiety to father	-0.10	0.08	-.18
Attachment avoidance to father	0.10	0.06	.18
Sex of adolescents	0.01	0.04	.01
(Attachment anxiety to mother) x (Sex of adolescents)	-0.03	0.05	-.09
(Attachment avoidance to mother) x (Sex of adolescents)	0.01	0.04	.03
(Attachment anxiety to father) x (Sex of adolescents)	0.10	0.05	.28
(Attachment avoidance to father) x (Sex of adolescents)	-0.01	0.04	-.13

Note. $R^2 = .14$, $F(5, 755) = 25.04$, $p < .001$ for Step 1; $\Delta R^2 = .01$, $\Delta F(4, 751) = 1.15$, $p = .33$ for Step 2.

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

Table 14

Summary of Test for Moderation Effects of Sex on the Prediction of Anger-Out (N = 761)

Variable	B	SE B	β
Step 1			
Attachment anxiety to mother	0.07	0.03	.13**
Attachment avoidance to mother	0.08	0.02	.16***
Attachment anxiety to father	0.01	0.02	.02
Attachment avoidance to father	0.01	0.02	.01
Sex of adolescents	0.05	0.04	.04
Step 2			
Attachment anxiety to mother	0.15	0.07	.30*
Attachment avoidance to mother	0.23	0.06	.45***
Attachment anxiety to father	-0.07	0.07	-.13
Attachment avoidance to father	-0.06	0.06	-.11
Sex of adolescents	0.05	0.04	.05
(Attachment anxiety to mother) x (Sex of adolescents)	-0.07	0.05	-.19
(Attachment avoidance to mother) x (Sex of adolescents)	-0.11	0.04	-.31*
(Attachment anxiety to father) x (Sex of adolescents)	0.06	0.05	.17
(Attachment avoidance to father) x (Sex of adolescents)	0.05	0.04	.15

Note. $R^2 = .06$, $F(5, 755) = 9.02$, $p < .001$ for Step 1; $\Delta R^2 = .01$, $\Delta F(4, 751) = 1.84$, $p = .12$ for Step 2.

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

To assess the relative impact of attachment dimensions and figures on anger, relative-importance values for predictor variables were calculated, using the Pratt index (Thomas, Hughes, & Zumbo, 1998; Thomas & Zumbo, 1996) in regression analyses. The Pratt index informs us of the contribution of every predictor variable studied to the overall R^2 , ordering the predictor variables in terms of the fraction of the R^2 which is attributed to each predictor variable in a model. This value is the product of the bivariate correlation and the beta weight divided by the R^2 (i.e., $r*\beta/R^2$). Results are presented in Tables 15 – 17.

As seen in Table 15, attachment anxiety to mother (i.e., Pratt index value = .40) was most influential for contributing to increases in the intensity of anger, followed by attachment avoidance to mother (Pratt = .30), attachment avoidance to father (Pratt = .27), respectively. When looking at the relative contribution based on attachment figures, mother figure contributed more to increases in the intensity of anger than father figure, Pratt = .70 for mother figure; Pratt = .29 for father figures. When we assessed the contribution based on attachment dimensions, attachment avoidance was more influential than attachment anxiety contributing to high levels of anger feelings, Pratt = .57 for avoidance; Pratt = .42 for anxiety.

For anger-in (see Table 16), attachment avoidance to mother (Pratt = .45) was the most dominant variable, followed by attachment avoidance to father (Pratt = .28), attachment anxiety to mother (Pratt = .16), and attachment anxiety to father (Pratt = .10), respectively. Mother figure was more influential than father figure (Pratt = .61 for mother; Pratt = .38 for father), and attachment avoidance contributed more than attachment anxiety (Pratt = .73 for attachment avoidance; Pratt = .26 for attachment anxiety). When the variable of anger intensity was included in the model, it was found that the intensity of anger was the strongest variable, but the order of the relative contribution for the rest of the variables (i.e., attachment anxiety to mother,

attachment avoidance to mother, attachment anxiety to father, and attachment avoidance to father) was consistent with those when the intensity of anger was excluded from the model. The reduced levels of the Pratt index values for the attachment variables after adding the variable of the anger intensity might be correspondent with the results of the mediational role of anger intensity found from the SEM analyses presented in the previous sections.

In terms of anger-out (see Table 17), attachment avoidance to mother (Pratt = .59) was most contributable, followed by attachment anxiety (Pratt = .37), attachment anxiety to father (Pratt = .03), attachment avoidance to father (Pratt = .01). Mother was considerably a stronger figure than father (Pratt = .96 for mother; Pratt = .04 for father), and attachment avoidance was more contributable than attachment anxiety (Pratt = .60 for mother; Pratt = .40 for father). When the variable of anger intensity was added to the model, the intensity of anger was, again, the strongest, reducing the levels of the Pratt index values of the attachment variables.

In summary, mother figure contributed more than father figure to increasing levels of adolescents' anger feelings and anger-in and anger-out expressions. Among adolescents, attachment avoidance was also consistently more influential for contributing to increases in anger intensity and expression across all anger variables than attachment anxiety.

Table 15

Summary of Regression Analysis for Variables Predicting Intensity of Anger (N = 761)

Variable	B	SE B	β	Correlation	Pratt
Model					
Attachment anxiety to mother	0.13	0.03	.19***	.24	.40
Attachment avoidance to mother	0.07	0.02	.15***	.23	.30
Attachment anxiety to father	0.01	0.03	.02	.17	.02
Attachment avoidance to father	0.06	0.02	.13***	.23	.27

Note. $R^2 = .11$, $F(4, 756) = 23.91$, $p < .001$, for the model.

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

Table 16

Summary of Regression Analysis for Variables Predicting Anger-In (N = 761)

Variable	B	SE B	β	Correlation	Pratt
Model A					
Attachment anxiety to mother	0.07	0.03	.11*	.21	.16
Attachment avoidance to mother	0.10	0.02	.21***	.30	.45
Attachment anxiety to father	0.04	0.02	.08	.19	.10
Attachment avoidance to father	0.06	0.01	.15***	.27	.28
Model B					
Attachment anxiety to mother	0.02	0.03	.04	.21	.03
Attachment avoidance to mother	0.07	0.02	.16***	.30	.18
Attachment anxiety to father	0.04	0.02	.07	.19	.05
Attachment avoidance to father	0.04	0.01	.10**	.27	.10
Intensity of Anger	0.34	0.03	.36***	.45	.63

Note. Model A: $R^2 = .14$, $F(4, 756) = 31.33$, $p < .001$; Model B: $R^2 = .26$, $F(5, 755) = 53.31$, $p < .001$

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

Table 17

Summary of Regression Analysis for Variables Predicting Anger-Out (N = 761)

Variable	B	SE B	β	Correlation	Pratt
Model A					
Attachment anxiety to mother	0.08	0.03	.13**	.16	.37
Attachment avoidance to mother	0.07	0.02	.17***	.19	.59
Attachment anxiety to father	0.01	0.03	.01	.12	.03
Attachment avoidance to father	0.00	0.01	.01	.11	.01
Model B					
Attachment anxiety to mother	0.00	0.02	.00	.16	.00
Attachment avoidance to mother	0.03	0.01	.07*	.19	.03
Attachment anxiety to father	0.00	0.02	.00	.12	.00
Attachment avoidance to father	-0.03	0.01	-.08**	.11	-.02 ⁷
Intensity of Anger	0.60	0.02	.67***	.67	.97

Note. Model A: $R^2 = .05$, $F(4, 756) = 10.89$, $p < .001$; Model B: $R^2 = .46$, $F(5, 755) = 129.07$, $p < .001$

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

⁷ The small negative value of the Pratt index essentially indicates zero (Thomas, Hughes, & Zumbo, 1998).

Discussion

Summary and Discussion of Findings

This study examined the relationship between attachment and anger among adolescents as predicted from an attachment perspective, addressing a long-standing, but as yet untested prediction that attachment to caregivers has implications for how individuals experience and express anger. Specifically, the purpose of this study was to investigate: (a) the nature of the relationship between attachment dimensions and anger experience and expression, (b) whether there are sex differences in the attachment-anger link; and (c) whether the relationship between attachment and anger differs between attachment figures, mother and father. This work addressed these research questions by providing evidence from a large sample of adolescents, with a theoretically and methodologically refined test of the hypothesis. Specifically, the present study tested a model of anger which was carefully structured based on an attachment perspective as originally hypothesized by John Bowlby (1973).

This study utilized a micro-approach to investigate a critical component of social-emotional development, anger, in relation to attachment. A macro-approach which is often considered “ecological”, as opposed to a micro-approach, has been increasingly popular in investigating children and adolescents’ social-emotional well-being. Among researchers macro approaches are often used to investigate protective and risk factors, examining how individual, family, school and/or community factors are likely to contribute to outcome variables. Although macro approaches are useful for drawing a broader picture of protective and risk factors surrounding children and adolescents, exclusive reliance on macro approaches may lead to overlooking a crucial local factor or situation. Both micro- and macro-approaches are valuable and necessary and should be embraced within a dynamic and nested *ecological approach*.

Confirming Bowlby's (1973) original hypothesis, the findings from the present study demonstrated that adolescents' attachment to their caregivers predicts both anger experience and expression. Unlike previous research (Kobak et al., 1993; Kobak & Sceery, 1988), in the present study, anger experience/feeling and anger expression were differentiated as critical dimensions of anger. This careful approach to investigating how different dimensions of anger are predicted by different dimensions of attachment resulted in discovering a critical role of experience/feelings of anger (i.e., intensity of anger) as a mediator on the path from attachment to anger expression.

Specifically, the present study found that adolescents having high levels of attachment anxiety and attachment avoidance reported experiencing a greater amount of anger feelings, and the increases in the intensity of their felt anger, in turn, elevated the level of both anger-in and anger-out expressions. This remarkable finding of mediation might help to explain why previous studies (Calamari & Pini, 2003; Mikulincer, 1998) have shown mixed results for the attachment-anger relationship. Whereas results of Mikulincer's study indicated that *ambivalently/anxiously* attached college students were more likely to express anger inwardly than were students with secure attachment, Calamari and Pini found that adults with *avoidant* attachment were more likely to express anger inwardly than were those with secure attachment. By solely relying on regression analyses, these researchers failed to integrate another important element of anger, experience/feelings of anger (i.e., intensity of anger), into their research model of attachment and anger. Contrary to the regression approach, structural equation modeling (SEM) allowed us to examine relationships among multiple independent and dependent constructs simultaneously and sequentially, in contrast to regression models which perform analyses of only one layer of linkages between independent and dependent variables at a time.

Despite the overall finding of the mediational-structured relationship between insecure attachment and anger, there was a notable difference found between the path from insecure attachment to anger-in versus anger-out expression as a function of anger intensity. Adolescents who reported high levels of attachment anxiety as well as those who reported high levels of attachment avoidance more likely to report expressing anger inwardly and this was partially mediated by levels of intensity of their anger. Adolescents who reported greater levels of anxious attachment as well as adolescents who reported greater levels of avoidant attachment also reported greater tendency to express their anger outwardly, and this relationship was fully mediated by their level of anger intensity. In other words, experiencing greater levels of anger is a necessary factor to direct anxious and avoidant adolescents toward a higher level of outwardly-expressed anger.

Although it was hypothesized that there would be a *direct effect* of attachment avoidance on anger-out expression given Kobak and Sceery's (1988) finding of an association between dismissing (or avoidant) attachment and hostility-type of anger rated by peers, this direct effect of attachment avoidance on anger-out expression was *not* found in the present study. One possible explanation for these discrepant findings is that Kobak and Sceery used a very general measure of anger that tapped hostility more than anger per se and failed to consider different dimensions of anger. Anger represents feelings, whereas hostility often refers to negative attitudes and destructive and punitive behavior (Spielberger, 1999). Bowlby's hypothesis (1969/1997, 1973) of an attachment-anger link concerned the experience/feelings of anger, not hostility, although these concepts overlap to an extent. Furthermore, Kobak and Sceery utilized a peer rating assessment of anger that may be less sensitive to inner process of anger. It might be

relatively easy for peers to observe other's outwardly-expressed anger, but it would be difficult for them to identify someone's inner feelings of anger.

The present results, demonstrating the attachment-anger link mediated by anger intensity, were consistently observed in both attachment figures, mother and father. The relevant parent in previous attachment studies has been solely the mother, and far less is known about the putative influence of child-father attachment, with no known empirical studies to date examining the relationship between child-father attachment and anger. In the present study, the theoretically constructed model was a reasonable fit to the data for both mother and father figures, indicated by model-fit indices. The mediational structure of the model was also supported for father figure attachment; that is, adolescents who were more insecurely attached to father (i.e., reporting high levels of attachment anxiety and high levels of attachment avoidance) were more likely to experience a higher intensity of anger feelings which, in turn, increased the level of expressing their anger in aggressive behavior. This was also true for suppressed anger (inwardly-expressed anger).

Overall, results were consistent across attachment figures (mother, father) when analyzed separately. Specifically, for both mothers and fathers, the present results indicated partial mediation for the path from attachment anxiety and attachment avoidance to anger-in and full mediation for the path from attachment anxiety and attachment avoidance to anger-out. This consistent finding for mother and father figures underscores the importance of both parents in the attachment process. Conventional emphasis has paid more attention to mother figure in the literature in terms of their impact on their children's well-being. Subsequent findings indicating that attachment to both mother and father figures does have an impact on how adolescents

experience and deal with their anger expands on the attachment literature by adding the critical influence of father figure on adolescents' anger process.

With regard to sex differences in the attachment-anger relationship, a reasonable to good model fit and a similar overall mediational structure was found in the present study for girls and boys with respect to both mother and father figures, consistent with the results observed in the entire sample. There was, however, one interesting difference between boys and girls. Whereas the mediation between attachment anxiety and anger-in was partial for boys, consistent with the results from the entire sample, the mediation for girls was full. This was true for both mother and father figures. This full mediation for girls apparently resulted from non-significant direct effect of attachment anxiety on anger-in expression and suggests that a more intense angry feelings is a necessary factor to direct girls reporting high levels of attachment anxiety toward a propensity to suppress their anger. In other words, without experiencing more intense angry feelings, there is no relationship between attachment anxiety and anger-in among girls. Simply having attachment anxiety to their caregivers does not lead to a greater amount of anger suppression (anger-in) for girls.

In previous studies of adult populations, sex differences in assessed anger have not been consistently found; some have reported significant sex differences (Ben-Zur & Zeidner, 1988) while others have not (Bartz et al., 1996; Kopper, 1993; Newman et al., 1999). As well, there is no empirical research providing convincing evidence of sex differences in anger expression, at least in adult populations, although authors in the theoretical literature appear to contend sex differences in anger expression (i.e., women are more likely to mask or suppress their feelings of anger than men; Chaplin, 2006; Fischer et al., 1993; Kopper & Epperson, 1996; Newman et al., 1999; Sharkin, 1993). One study (Cox et al., 2000) in a child and adolescent population,

however, has demonstrated significant sex differences in anger expression. In their study, with school children from grades 5-9, Cox et al. found that girls reported higher levels of anger-in expression than boys. However, in the present study, with an adolescent population (i.e., an older population than the population examined in Cox et al.'s study), significant sex differences were not found on anger-in as well as anger-out expression. This different result between the present study and Cox et al.'s study may reflect a developmental difference that "boys lag behind girls" (Jacobs, Phelps, & Rohrs, 1989, p. 64). Research (Jacobs et al., 1989; Chaplin, Cole, & Zahn-Waxler, 2005; Brody & Hall, 2008) has suggested that boys learn to be less expressive of emotions, including anger, as they develop, catching up with girls. Considering this developmental point, the male adolescents who participated in the present study might be more likely to have learned being less expressive of anger feelings than the younger participants in Cox et al.'s study. As a result, there was no longer sex difference in the present study. To date, there are no studies examining sex differences in the relationship between attachment and anger. Further research is needed to replicate this finding.

Finally, with regard to sex differences in the present study, there was a significant interaction between attachment anxiety and attachment avoidance with fathers on the intensity of anger for girls not for boys or for the entire sample. This difference for girls might have been derived from the results of the exploratory factor analyses of the attachment anxiety variable for girls. That is, the variable of attachment anxiety was marginally within acceptable range of unidimensionality for the data set of father figure attachment with girls. Accordingly, there is room to speculate a possibly weak construct comparability of the attachment anxiety scale between girls and boys, with a clear need for further research in this area.

The present study utilized a dimension-based attachment measure that was designed to tap adolescents' on-going attachment to their caregivers. Given theoretical and empirical demonstrations of attachment stability throughout life, use of a self-report measure of current attachment to parents was considered appropriate for investigating the role of child-parent attachment on a mechanism of anger. Among the small number of previous studies that have investigated the attachment-anger relationship, the majority of them (Calamari & Pini, 2003; Meesters & Muris, 2002; Mikulincer, 1998; Murid et al., 2004; Troisi & D'Argenio, 2004) have assessed attachment in romantic relationships, tapping attachment to intimate partners in romantic relationships, not to parents. Utilizing a newly developed self-report measure of adolescent attachment to parents, the present study not only provided direct evidence to support Bowlby's hypothesis of dysfunctional anger as a predictable correlate of insecure attachment, but also provided evidence that these relationships are evident among adolescents and are similar for both boys and girls and with regard to attachment to both mothers and fathers.

A dimensional approach to assessing attachment patterns was useful in the present study for several reasons. Conceptualizing attachment patterns in dimensional terms were more reasonable and practical, as Fraley and Waller (1998) reported that there is no evidence to support a true attachment typology, and that the conceptual styles of attachment are regions in a dimensional space. Use of a typological measure instead of a dimensional scale may lead us to losing precision of examining a research objective in relation to attachment patterns. Finally, as described earlier, a dimensional understanding of attachment patterns has been empirically supported by Brennan et al. (1998).

As an extension to the SEM analyses to test the attachment-anger model developed in the present study, regression analyses were employed to identify relative contributions of attachment

dimensions and figures on anger. Due to the insufficient sample size, the present study was not able to directly assess the relative impact of father and mother figures in relation to anger experience and expression simultaneously in one model. Instead, an examination of the relative contributions of attachment dimensions and figures to anger was attempted by using the Pratt index in regression models. Results indicated that mother attachment contributed more to anger intensity and expression than father attachment, and that attachment avoidance was more influential than attachment anxiety in predicting levels of anger intensity and anger-in and anger-out expressions. The stronger contribution of the mother figure is consistent with Bowlby's notion of monotropy which specified that a biological mother who has the greatest biological investment in her child is likely to be most influential in the development of the child (Bowlby, 1967/1997; Cassidy, 2008). Regression analyses examining the relative contribution of attachment figures in the present study provide an initial idea of the relative impact of mother and father figures. Specifically, mother figure contributed more than father figure to increasing levels of adolescents' anger feelings and anger-in and anger-out expressions. These results, however, cannot tell us whether there is a statistically significant difference in the relative contributions of mother versus father attachment. Further research with a larger sample size is needed to examine the relative impact of attachment figures within the attachment-anger model.

Implications of Findings

A number of important implications emerged from the present study. First, the finding that insecure attachment contributes to predicting greater feelings of anger and unhealthy expressions of anger serves as a strong reminder of the significant role of caregivers on adolescents' well-being and current social-emotional functioning. Indeed, conventional wisdom tends to stress the importance of peer influences on individuals' well-being during the period of

adolescence. Peer approval becomes increasingly critical as one moves into later childhood and beyond (e.g., Harter, 1990). However, peer influence is not the only major factor affecting adolescent life. Researchers (e.g., Harter, 1990, 1999) acknowledge that parental approval continues to significantly impact on one's well-being in her or his later life. For example, in the self-understanding literature, Harter (1999) found that correlations between parent approval and self-esteem did not decline, although teacher and peer approval became more predictive during middle childhood than during early childhood and this trend continued into adolescence. The results of the present study strengthen the considerable role of caregivers on individuals' growth even during adolescence.

Another point to be addressed with regard to the significant role of caregivers on adolescents' well-being is a deleterious nature of anger as suggested by clinical and health literature (Biaggio & Godwin, 1987; Blumberg & Izard, 1985; Chaplin, 2006; Farmer, 2002; Moreno et al., 1993; Pipher, 1994; Riley et al., 1989; Robbins & Tanck, 1997; Seidlitz et al., 2000). Researchers and practitioners in the clinical and health fields have provided extensive evidence for the predictive association of anger, especially anger expression (anger-in and anger-out), with physical problems and poor psychological adjustment. Combining the clinical literature on anger and the findings of the present study, we now know that insecure attachment predicts a greater anger experience and greater suppression and outward expression of anger. Although further research is needed to identify the factors that determine whether anger is expressed inwardly or outwardly, we already know that these anger expressions are associated with both psychological and physical maladjustment. The results of the present study underscore the importance of parent-child relations in understanding the emergence and expression of feelings of anger among at least some adolescents.

In particular, results of the present study demonstrate the importance of fathers for adolescents' well-being, as well as mothers. Given that separate analyses were employed for mother- and father-figure attachments in the present study, we cannot yet determine the relative influence of mother and father attachment figures. However, the pattern of results observed was consistent for both mother and father figures, suggesting that both parents may play a role in the adolescents' anger process. The study of child-father figure attachment has been virtually ignored within the literature, compared to the number of studies on child-mother attachments, especially for adolescent populations. Results of the present study add to a small but growing number of recent studies (Diener, Isabella, & Behunin, 2008; Gomez & McLaren, 2007) demonstrating the significant effects of not only maternal attachment but also paternal attachment on children's peer and academic competence (Diener et al., 2008) and aggressive behavior (Gomez & McLaren, 2007).

Mothers and fathers interact with their children differently, at least in Western cultures, and there are several differences between mothers and fathers that have been documented in the literature (Cox, Owen, Henderson, & Margand, 1992). For example, according to Cox and colleagues (Cox et al., 1992), whether fathers are highly involved in caretaking or not, they are less likely to hold, tend to show affection toward, smile at and vocalize with their child. Older research reported that in families, mothers engage in more caregiving behavior, while fathers serve more as playmates (for review, see Pipp, Easterbrooks, & Brown, 1993). More recent research in the attachment area, however, emphasizes that mothers and fathers generally show much more similarity than differences in their interactions with their child (Zupancic, Podlesek, & Kavcic, 2004). Over the past few decades, the systems of family life have been rapidly changing (Cabrera, Tamis-Lemonda, Bradley, Hofferth, & Lamb, 2000), leading to

characterizations of both mothers and fathers as co-caregivers. Traditional theories that place mothers as the central influence on children's lives need to be revised in light of such changes.

The present study, demonstrating the mediator role of anger experience between parent attachment and anger expression, supports theoretical arguments within the emotion literature that emotional expressions are manifestations of internal emotional states (Lewis, 2008; Lewis & Michalson, 1983), including anger (e.g., Spielberger, 1999). The present findings also underscore the importance of differentiating essential dimensions of anger (i.e., intensity of anger and anger expression) when investigating anger. In fact, distinguishing these two dimensions is considered key in the clinical literature (Spielberger, 1999).

Limitations

There are several limitations in the present study that must be noted. First, a static-nature (single-time point) investigation cannot genuinely claim a developmental implication. A primary aim of the present study was to examine dysfunctional anger as a predictable correlate of insecure attachment based on Bowlby's original hypothesis. Extending this hypothesis, the present study also evaluated a path model in which insecure attachment was specified as a predictor of intensity of anger. Nevertheless, both variables were concurrently measured in the present sample, raising the question of an alternative directionality, such as the possibility that anger may lead to insecure attachment. Another possibility is that a third variable (e.g., temperament, personality) leads to both anger and insecure attachment. Consistent with this latter possibility, some trait theorists (Brussoni, Jang, Livesley, & MacBeth, 2000; Crawford, Livesley, Jang, Shaver, Cohen, & Ganiban, 2007; Donnellan, Burt, Levendosky, & Klump, 2008) have suggested that genetic or temperamental aspects of anger (i.e., dispositional anger) leads to individual differences in attachment security, rather than the reverse. To uncover the possible

origins of individual differences in attachment as well as anger experiences, extensive longitudinal research is necessary to observe developmental changes over time, not just over one or two years, but across childhood and adolescence. Although the stability of attachment from infancy to adolescence has been empirically documented (Gloger-Tippelt et al., 2002; Hamilton, 2000; Main & Cassidy, 1988; Wartner et al., 1994; Waters et al., 2000), future longitudinal research may nevertheless benefit from an examination of the links between attachment, anger and temperament/personality over the life span.

The present study considered felt anger as a mediator linking insecure attachment with the expression of anger (i.e., anger in, anger out). Felt anger was treated as a mediator because it was considered a necessary prerequisite for anger expression. Bowlby (1973) described dysfunctional anger as intensive and persistent anger crossing “the threshold of intensity” (p. 249), suggesting that there is a certain level of felt anger that leads to negative consequences. Thus, one might also consider a “threshold” model of anger experience, speculating that an individual would have to feel a certain minimal level of anger before such emotion would be expressed. In addition to the mediational feature of anger intensity considered in the present study, examining the impact of anger *levels* on anger expression would be a potentially fruitful focus for future research examining the processes of anger experiences.

As another limitation, the present study was not able to investigate a possible integrative model of attachment relationships with mother and father figures in the SEM analyses due to the insufficient sample size. If how maternal and paternal attachments influence with each other could be examined in the present study in relation to anger, such evidence would provide important information concerning the nature of the relationship between the interactive system of mother and father figures and the anger process. This remains a question for future research.

Further, the present study does not speak to complex parent situations or roles of other significant adults besides parents. Our society is changing and becoming complicated in a way in which it often occurs that some children may not have the presences of mother and father figures. An expansion from research on parents to a family system including other family members, even to a system of neighbors or community, may provide us with a more comprehensive understanding of how multiple attachment experiences predict adolescents' outcomes.

Lastly, results of the present study are solely based on adolescent self-reports, raising concerns that the relationships observed are primarily the results of shared method invariance, although the use of SEM minimizes this effect by allowing correlations among the error terms. Integration of both adolescents' perceptions about their parents and parents' perceptions about their children may be useful to better understanding of bidirectional relationships between adolescents and their parents.

Despite these limitations, however, the present study sheds new light on the important roles of attachment to both mother and father in relation to adolescents' anger development, offering insightful knowledge that will be helpful for parents, family members, and educators to promote children's healthy growth through emotional maturity.

References

- Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Allen, J. P. (2008). The attachment system in adolescence. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 419-435). New York: The Guildford Press.
- Allen, J. P., & Land, D. (1999). Attachment in adolescence. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 319-335). New York: The Guildford Press.
- 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, 226-244.
- Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment: Do they converge? In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp.25-45). New York: The Guilford Press.
- Biaggio, M. K., & Godwin, W. H. (1987). Relation of depression to anger and hostility constructs. *Psychological Report*, 61, 87-90.
- Blumberg, S., & Izard, C. E. (1985). Affective and cognitive characteristics of depression in 10- and 11-year-old children. *Journal of Personality and Social Psychology*, 49, 194-202.
- Bosworth, K., Espelage, D. L., & Simon, T. R. (1999). Factors associated with bullying behavior in middle school students. *Journal of Early Adolescence*, 19, 341-362.
- Bowlby, J. (1973). *Attachment and loss, Vol. 2: Separation*. New York: Basic Books.

- Bowlby, J. (1997). *Attachment and loss, Vol. 1: Attachment*. London: Pimlico. (Original work published 1969)
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. London: Routledge.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp.46-76). New York: The Guilford Press.
- Brennan, K. A., Shaver, P. R., & Tobey, A. E. (1991). Attachment styles, gender, and parental problem drinking. *Journal of Social and Personal Relationships*, 8, 451-466.
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development*, 50 (1-2, Serial No. 209).
- Bridewell, W. B., & Chang, E. C. (1997). Distinguishing between, depression, and hostility: Relations to anger-in, anger-out, and anger control. *Personality and Individual Differences*, 22, 587-590.
- Brody, L. R., & Hall, J. A. (2008). Gender and emotion in context. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 395-408). New York: The Guildford Press.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In Bollen, K. A. & Long, J. S. (Eds.), *Testing structural equation models* (pp.136-162). Newbury Park, CA: Sage Publications
- Brussoni, M. J., Jang, K. L., Livesley, W. J., & MacBeth, T. M. (2000). Genetic and environmental influences on adult attachment styles. *Personal Relationships*, 7, 283-289.
- Cabrera, N., Tamis-LeMonda, C. S., Bradley, B., Hofferth, S. & Lamb, M. (2000). Fatherhood in

- the 21st century. *Child Development*, 71, 127-136.
- Calamari, E., & Pini, M. (2003). Dissociative experiences and anger proneness in late adolescent females with different attachment styles. *Adolescence*, 38, 287-303.
- Cassidy, J. (2008). The nature of the child's ties. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 3-22). New York: The Guildford Press.
- Cautin, R. L., & Overholser, J. C. (2001). Assessment of mode of anger expression in adolescent psychiatric inpatients. *Adolescence*, 36, 163-170.
- Chaplin, T. M., (2006). Anger, happiness, and sadness: Associations with depressive symptoms in late adolescence. *Journal of Youth and Adolescence*, 35, 977-986.
- Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005). Parental socialization of emotion expression: Gender differences and relations to child adjustment. *Emotion*, 5, 80-88.
- Clay, D. L., Anderson, W. P., & Dixon, W. A. (1993). Relationship between anger expression and stress in predicting depression. *Journal of Counseling & Development*, 72, 91-94.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Conger, R. D., Neppl, T., Kim, K. J., & Scaramella, L. (2003). Angry and aggressive behavior across three generations: A prospective, longitudinal study of parents and children. *Journal of Abnormal Child Psychology*, 31, 143-160.
- Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods*, 6, 147-168.
- Cornell, D. G., Peterson, C. S., & Richards, H. (1999). Anger as a predictor of aggression among incarcerated adolescents. *Journal of Consulting and Clinical Psychology*, 67, 108-115.

- Cox, M., Owen, M., Henderson, K., & Margand, N. (1992). Prediction of infant-father and infant-mother attachment. *Developmental Psychology*, 28, 474-483.
- Cox, D. L., Stabb, S. D., & Hulgus, J. F. (2000). Anger and depression in girls and boys: A study of gender differences. *Psychology of Women Quarterly*, 24, 110-112.
- Crawford, T. N., Livesley, W. J., Jang, K. L., Shaver, P. R., Cohen, P., & Ganiban, J. (2007). Insecure attachment and personality disorder: A twin study of adults. *European Journal of Personality*, 21, 191-208.
- Diener, M. L., Isabella, R. A., Behunin, M. G., & Wong, M. S. (2008). Attachment to mother and father during middle childhood: Associations with child gender, grade, and competence. *Social Development*, 17, 84-101.
- Donnellan, M. B., Burt, S. A., Levendosky, A. A., & Klump, K. L. (2008). Genes, personality, and attachment in adults: A multivariate behavioral genetic analysis. *Personality and Social Psychology Bulletin*, 34, 3-16.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4, 272-299.
- Farmer, T. J. (2002). The experience of major depression: Adolescents' perspectives. *Issues in Mental Health Nursing*, 23, 567-585.
- Field, T. (2002). Violence and touch deprivation in adolescents. *Adolescence*, 37, 735-749.
- Fischer, P. C., Smith, R. J., Leonard, E., Fugua, D. R., Campbell, J. L., & Masters, M. A. (1993). Sex differences on affective dimensions: Continuing examination. *Journal of Counseling & Development*, 71, 440-443.
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of

- clinical assessment instruments. *Psychological Assessment*, 7, 286-299.
- Ford, J. K., MacCallum, R. C., & Tait, M. (1986). The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, 39, 291-314.
- Fraley, R. S., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp.77-114). New York: The Guilford Press.
- Freud, S. (1963). Mourning and melancholia. In S. Freud (Ed.), *General psychology theory* (pp.1953-1974). New York: Collier Books. (Original work published 1917)
- Gerbing, D. W., & Anderson, J. C. (1993). Monte Carlo evaluations of goodness-of-fit indices for structural Equation models. In Bollen, K. A. & Long, J. S. (Eds.), *Testing structural equation models* (pp.40-65). Newbury Park, CA: Sage Publications
- Gloger-Tippelt, G., Gomille, B., Koenig, L., & Vetter, J. (2002). Attachment representations in 6-year-old: Related longitudinally to the quality of attachment in infancy and mothers' attachment representations. *Attachment and Human Development*, 4, 318-339.
- Golman, L., & Haaga, D. A. F. (1995). Depression and the experience and expression of anger in marital and other relationships. *Journal of Nervous and Mental Disease*, 183, 505-509.
- Gomez, R., & McLaren, S. (2007). The inter-relations of mother and father attachment, self-esteem and aggression during late adolescence. *Aggressive Behavior*, 33, 160-169.
- Gorsuch, R. L. (1997). Exploratory Factor Analysis: Its role in item analysis. *Journal of Personality Assessment*, 68, 532-560.
- Hair, J. E., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

- Hamilton, C. E. (2000). Continuity and discontinuity of attachment from infancy through adolescence. *Child Development, 71*, 690-694.
- Harburg, E., Blakelock, E. H., & Roeper, P. J. (1979). Resentful and reflective coping with arbitrary authority and blood pressure: Detroit. *Psychosomatic Medicine, 41*, 189-202.
- Harter, S. (1990). Causes, correlates, and the functional role of global self-worth: A life-span perspective. In R. J. Sternberg & J. Kolligian, Jr. (Eds.), *Competence considered* (pp.67-97). New Have, CT: Yale University Press.
- Hattie, J. (1985). Methodology review: Assessing unidimensionality of tests and items. *Applied Psychological Measurement, 9*, 139-174.
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*, 511-524.
- Helfritz, L. E., & Stanford, M. S. (2006). Personality and psychopathology in an impulsive aggressive college sample. *Aggressive Behavior, 32*, 28-37.
- Hesse, E. (1999). The Adult Attachment Interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 393-433). New York: The Guildford Press.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Hubbard, J. A. (2001). Emotion expression processes in children's peer interaction: The role of peer rejection, aggression, and gender. *Child Development, 72*, 1426-1438.
- Jacobs, A. G., Phelps, M., & Rohrs, B. (1989). Assessment of anger expression in children: The pediatric anger expression scale. *Personality and Individual Differences, 10*, 59-65
- Kinsfogel, K. M., & Grych, J. H. (2004). Interparental conflict and adolescent dating

- relationships: Integrating cognitive, emotional, and peer influences. *Journal of Family Psychology*, 18, 505-515.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: The Guilford Press.
- Kobak, R. R., Cole, H. E., Ferenz-Gillies, R., & Fleming, W. S. (1993). Attachment and emotion regulation during mother-teen problem solving: A control theory analysis. *Child Development*, 64, 231-245.
- Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development*, 59, 135-146.
- Kooper, B.A. (1993). Role of gender, sex role identity, and type: A behavior in anger expression and mental health functioning. *Journal of Counseling Psychology* 40, 232-237.
- Kopper, V. A., & Epperson, D. L. (1996). The experience and Expression of Anger: Relationships with gender, gender role socialization, depression, and mental health functioning. *Journal of Counseling Psychology*, 43, 158-165.
- Lemerise, E. A., & Dodge, K. A. (2008). The development of anger and hostile interactions. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 730-741). New York: The Guildford Press.
- Lemus, R. L., & Johnson, F. A. (2008). Relationship of Latino gang membership to anger expression, bullying, ethnic identity, and self-esteem. *Journal of Gang Research*, 16, 13-32.
- Lewis, M. (2008). The emergence of human emotions. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 304-319). New York: The Guildford Press.

- Lewis, M., & Michalson, L. (1983). *Children's emotions and moods: Developmental theory and measurement*. New York: Plenum Press.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7, 83–104.
- Main, M., & Cassidy, J. (1988). Categories of response to reunion with the parent at age 6: Predictable from infant attachment classifications and stable over a 1-month period. *Developmental Psychology*, 24, 415-426.
- Main, M., Kaplan, K., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 50 (1-2, Serial No.209).
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth strange situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 121-160). Chicago: The University of Chicago Press.
- McGee, R., Silva, P. A., & Williams, S. M. (1983). Parents' and teachers' perceptions of behavior problems in seen year old children, *Exceptional Child*, 30, 151-161.
- McKay, S., & Moretti, M. M. (2001, August). *Comprehensive Adolescent-Parent Attachment Inventory (CAPAI): Preliminary validation*. Poster presented at the American Psychological Association, San Francisco, CA.
- McWhirter, J. J., McWhirter, B. T., McWhirter, E. H., & McWhirter, R. J. (2003). *At-risk youth:*

- A comprehensive response: For counselors, teachers, psychologists, and human service professionals* (3rd ed.). Belmont, CA: Brooks/Cole-Thomson Learning.
- Meesters, C., & Muris, P. (2002). Attachment style and self-reported aggression. *Psychological Reports, 90*, 231-235.
- Mikulincer, M. (1998). Adult attachment style and individual differences in functional versus dysfunctional experiences of anger. *Journal of Personality and Social Psychology, 74*, 513-524.
- Miles, J., & Shevlin, M. (2001). *Applying regression & correlation: A guide for students and researchers*. Thousand Oaks, CA: Sage Publications.
- Moreno, J. K., Fuhrman, A., & Selby, M. J. (1993). Measurement of hostility, anger, and depression in depressed and nondepressed subjects. *Journal of Personality Assessment, 61*, 511-523.
- Moretti, M. M., McKay, S., & Holland, R. (2000). *The Comprehensive Adolescent-Parent Attachment Inventory*. Unpublished protocol.
- Morizot, J., Ainsworth, A. T., & Reise, S. P. (2007). Toward modern psychometrics: Application of item response theory models in personality research. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 407-423). New York: The Guilford Press.
- Muris, P., Meesters, C., Morren, M., & Moorman, L. (2004). Anger and hostility in adolescents: Relationships with self-reported attachment style and perceived parental rearing styles. *Journal of Psychosomatic Research, 57*, 257-264.
- Newman, J. L., Gray, E. A., & Fuqua, D. R. (1999). Sex differences in the relationship of anger and depression: An empirical study. *Journal of Counseling & Development, 77*, 198-203.

- Nandakumar, R. (1993). Assessing essential unidimensionality of real data. *Applied Psychological Measurement*, 17, 29-38.
- Nandakumar, R., & Ackerman, T. (2004). Test modeling. In D. Kaplan (Ed.), *The Sage handbook of quantitative methodology for the social science* (pp. 93-105). Thousand Oaks, CA: Sage Publications.
- Nunnally, J., & Bernstein, I. (1994). *Psychometric theory*. New York: Sage McGraw-Hill.
- Pipher, M. (1994). *Reviving Ophelia: Saving the selves of adolescent girls*. New York: Ballantine,
- Pipp, S., Easterbrooks, M. A., & Brown, S. R. (1993). Attachment status and complexity of infants' self- and other-knowledge when tested with mother and father. *Social Development*, 2, 1-14.
- Riley, W. T., Treiber, E. A., & Woods, M.G. (1989). Anger and hostility in depression. *Journal of Nervous and Mental Disease*, 177, 668-674.
- Robbins, P. R., & Tanck, R. H. (1997). Anger and depressed affect: Interindividual and intraindividula perspectives. *Journal of Psychology*, 131, 489-500.
- Rubin, I. R. (1969). *The angry book*. New York: Collier.
- Ryan, L. G., Miller-Loessi, K., & Nieri, T. (2007). Relationship with adults as predictors of substance use, gang involvement, and threats to safety among disadvantaged urban high-school adolescents. *Journal of Community Psychology*, 35, 1053-1071.
- Seidlitz, L., Fujita, F., & Duberstain, P. R. (2000). Emotional experience over time and self-reported depressive symptoms. *Personality and Individual differences*, 28, 447-460.
- Sharkin, B. S. (1993). Anger and gender: Theory, research, and implications. *Journal of Counseling & Development*, 71, 386-389.

- Singer, J. L. (1995). *Repression and dissociation: Implications for personality theory, psychopathology, and health*. Chicago: University of Chicago Press.
- Sperberg, E. D., & Stabb, S. D. (1998). Depression in woman as related to anger and mutuality in relationships. *Psychology of Woman Quarterly*, 22, 223-238.
- Spielberger, C. D. (1988). *Manual for the State-Trait Anger Expression Inventory (STAXI)*. Odessa, FL: Psychological Assessment Resources.
- Spielberger, C. D. (1999). *Manual for the State-Trait Anger Expression Inventory (STAXI-2)*. Odessa, FL: Psychological Assessment Resources.
- Spielberger, C. D., Jacobs, G., Russell, S., & Crane, R. (1983). Assessment of anger: The State-Trait Anger Scale. In J. N. Butcher & C. D. Spielberger (Eds.), *Advances in personality assessment* (Vol. 3, pp. 112-134). Hillsdale, N. J.: Lawrence Erlbaum Associates.
- Spielberger, C. D., Johnson, E. H., Russell, S. F., Crane, R. J., Jacobs, G. A., & Worden, T. J. (1985). The experience and expression of anger: Construction and validation of an anger expression scale. In M. A. Chesney & R. H. Rosenman (Eds.), *Anger and hostility in cardiovascular and behavioral disorders* (pp.5-30). New York: Hemisphere Publishing Corporation.
- Steiger, A. R. (2003). *Preliminary validation of the Comprehensive Adolescent-Parent Attachment Inventory*. Unpublished master's thesis.
- Stout, W. F. (1987). A nonparametric approach for assessing latent trait unidimensionality. *Psychometrika*, 52, 589-617.
- Stout, W. F. (1990). A new item response theory modeling approach with applications to unidimensionality assessment and ability estimation. *Psychometrika*, 55, 293-325.
- Swan, S. C., Gambone, L. J., Fields, A. M., Sullivan, T. P., & Snow, D. L. (2005). Women who

- use violence in intimate relationships: The role of anger, victimization, and symptoms of posttraumatic stress and depression. *Violence and Victims*, 20, 267-285.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.
- Thomas, D. R., Hughes, E., & Zumbo, B. D. (1998). On variable importance in linear regression. *Social Indicators Research: An International and Interdisciplinary Journal of Quality-of-Life Measurement*, 45, 253-275.
- Thomas, D. R., & Zumbo, B. D. (1996). Using a measure of variable importance to investigate the standardization of discriminant coefficients. *Journal of Educational & Behavioral Statistics*, 21, 110-130.
- Thompson, R. A. (1997). Sensitivity and security: New lessons to ponder. *Child Development*, 68, 595-597.
- Thompson, R. A. (1999). Early attachment and later development. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment* (pp. 265-286). New York: The Guildford Press.
- Troisi, A., & D'Argenio, A. (2004). The relationship between anger and depression in a clinical sample of young men: The role of insecure attachment. *Journal of Affective Disorders*, 79, 269-272.
- Underwood, M. K. (2003). *Social aggression among girls*. New York: Guilford Press.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117, 387-403.
- van IJzendoorn, M. H., & De Wolff, M. S. (1997). In search of the absent father – Meta-analyses

- of infant-father attachment: A rejoinder to our discussants. *Child Development*, 68, 604-609.
- Venable, V. L., Carlson, C. R., & Wilson, J. (2001). The role of anger and depression in recurrent headache. *Headache*, 41, 21-30.
- Wartner, U. G., Grossmann, K., Fremmer-Bombik, E., & Suess, G. (1994). Attachment patterns at age six in South Germany: Predictability from infancy and implications for preschool behavior. *Child Development*, 65, 1014-1027.
- Waters, E., Merrick, S., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child Development*, 71, 684-689.
- Whiteside, S. P., & Abramowitz, J. S. (2005). The expression of anger and its relationship to symptoms and cognitions in obsessive-compulsive disorder. *Depression and Anxiety*, 21, 106-111.
- Zaitsoff, S. L., Geller, J., & Srikameswaren, S. (2002). Silencing the self and suppressed anger: Relationship to eating disorder symptoms in adolescent females. *European Eating Disorders Review*, 10, 51-60.
- Zeman, J., Shipman, K., Suveg, C. (2002). Anger and sadness regulation: Predictions to internalizing and externalizing symptoms in children. *Journal of Clinical Child and Adolescent Psychology*, 31, 393-398.
- Zupancic, M., Podlesek, A., & Kavcic, T. (2004). Parental child-care practices of Slovenian preschoolers' mothers and fathers: The Family Environment Questionnaire. *Horizons of Psychology*, 13, 7-26.

Appendix A -1

Dear Parent(s) or Guardian(s),

We are writing to ask permission for your son/daughter to take part in a research project entitled, "Relationships and Anger Among Teens" at your son/daughter's school. In this project, we are trying to learn more about how teens' experiences of anger – how much they feel angry and how they express that anger (acting out towards others, or keeping it inside) – are linked to the quality of their relationships with parents and friends. All students in grades 8-12 are invited to participate, but first they need your consent to do so. To help you decide, we describe the project for you here.

Study Description: Students will be asked to fill out questionnaires in one group session (approximately 45 minutes in length) during class time. The questionnaires will ask students: a) about their background information (grade, gender, age), b) their feelings about how well they feel they get along with both friends and family, c) how much and how often they feel angry at things, and d) their ability to regulate and express emotions such as anger.

Who Participates: Only students who receive parent permission will be asked to take part in our project and students themselves will be asked if they wish to participate. Your son/daughter's participation is voluntary and students can withdraw from the study at any time without any consequences. Whether or not a student takes part in this project does not affect their schoolwork in any way. Students who do not participate will be given a classroom activity to complete (decided by teachers) such as reading during the testing.

Confidentiality: All of the information obtained from individual students in this project is considered strictly confidential and will only be seen by the researchers. All reports of the findings of this project will be at the level of group findings, not individuals. No names will appear on any of the questionnaires. Instead, numbers will be given to each student.

Consent: Please indicate on the next page if you give permission for your son/daughter to participate or not. Your son/daughter should then return the form to his or her teacher by _____. Please return the form even if you do not want your son/daughter to participate so that we know you received our request. You can keep this letter and the top portion of the consent form for your records. All students who return parent/guardian and student consent forms (indicating "yes" or "no") will have the opportunity to win a \$25.00 bookstore gift certificate (one award per class).

Contact: We would be very pleased if your son or daughter takes part in our study and we hope that you will give her or him permission to do so. If you have any questions, please feel free to call Chiaki Konishi (604-827-2104)⁸ or Dr. Shelley Hymel (604-822-6022). If you have any questions about your son/daughter's treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604) 822-8598. Thank you very much for your time and consideration of this request.

Sincerely,

Shelley Hymel, Department Head & Professor

Chiaki Konishi, M.A., Ph.D. Student

*** PLEASE KEEP THIS LETTER FOR YOUR RECORDS ***

⁸ This research is being conducted in order to fulfill the dissertation requirements for a Ph.D. degree in the department of Educational and Counselling Psychology, and Special Education at the University of British Columbia.

PARENT/GUARDIAN CONSENT FORM

Study Title: "Relationships and Anger Among Teens"
Principal Investigator: Shelley Hymel, Ph.D.
 Department Head & Professor
 University of British Columbia
Co-Investigator: Chiaki Konishi, M.A.
 University of British Columbia

Consent:

I have read and understood the information presented about the study entitled, "Relationships and Anger Among Teens".

I understand that my son/daughter's participation in the study is entirely voluntary, and that he/she may withdraw from the study at any time without any consequences or impact on his/her class standing or schoolwork.

I have received a copy of this consent form for my own records.

My decision regarding my son/daughter's participation in the study is indicated below (please check one):

_____ YES, I give permission for my son/daughter to participate in this study.

_____ NO, I do not give permission for my son/daughter to participate in this study.

***** PLEASE KEEP THIS PORTION FOR YOUR RECORDS *****

----- ✂ ----- ✂ -----

***** PLEASE RETURN THE BOTTOM HALF OF THE FORM TO THE SCHOOL *****

PARENT/GUARDIAN CONSENT FORM**Consent:**

I have read and understood the information presented about the study entitled "Relationships and Anger Among Teens".

I understand that my son/daughter's participation in the study is entirely voluntary, and that he/she may withdraw from the study at any time without any consequences or impact on his/her class standing or schoolwork.

I have received a copy of this consent form for my own records.

My decision regarding my son/daughter's participation in the study is indicated below (please check one):

_____ YES, I give permission for my son/daughter to participate in this study.

_____ NO, I do not give permission for my son/daughter to participate in this study.

Son/daughter's Name (please print): _____

Son/daughter's Grade: _____

Son/daughter's Birth Date: _____

Parent/Guardian Signature: _____

Date: _____

Appendix A-2

STUDENT ASSENT FORM

Dear Students,

You are invited to be part of a research project that will take place at your school. In this project, we are trying to learn more about how teens' experiences with anger are linked to the quality of their relationships with parents and friends. All students in grades 8-12 are invited to participate.

If you take part in this project, you will fill out questionnaires in a group session (about 45 minutes), held during regular class time. In the questionnaires, we will first ask some questions about you (your grade, if you are a boy or girl, your age). We will also ask about how you feel about the important people in your life – friends and family. You will also be asked about your experiences with anger – how often you feel angry and how you express your anger.

If you take part in our study, it does not affect your schoolwork or your grades in any way. You can choose not to be in this project now or at any time; that's okay. Students who do not want to be part of our project will be asked to work on other school work that your teacher will assign while the other students are filling out the questionnaires. We hope that we can use what we learn in this project to better understand the challenges that teens face today.

All of the information you give us on our questionnaires is **confidential**. You will not put your name on any of the questionnaires. Also, your answers will not be shown to your teachers, parents, students, or any other persons in the school. **THIS IS NOT A TEST**. There are no right or wrong answers – just what you think. So it is very important that you answer all of the questions as honestly as you can.

If you want to take part in our project, please fill out the form on the next page. Thank you very much for your help.

Sincerely,

Shelley Hymel, Ph.D. and Chiaki Konishi, M.A.

Please see other side ►

STUDENT ASSENT FORM

I have read and understood the description of the study, "Relationships and Anger Among Teens."

I understand that it is my decision to be part of this project or not, and that I can decide not to take part at any time without any problem. I also understand that being in this project will not affect my school work at all.

Please check below, if you choose to participate in this project:

_____ Yes, I agree to participate.

Name (Please print):

Signature:

Grade:

Date:

Appendix B

Ethics Approval



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road, Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - FULL BOARD

PRINCIPAL INVESTIGATOR: Shelley Hymel	INSTITUTION / DEPARTMENT: UBC/Education/Educational & Counselling Psychology, and Special Education	UBC BREB NUMBER: H07-00663
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution	Site	
N/A Other locations where the research will be conducted: Public schools in the Lower Mainland, including Vancouver, West Vancouver and Coquitlam school districts		
CO-INVESTIGATOR(S): Chiaki Konishi		
SPONSORING AGENCIES: N/A		
PROJECT TITLE: Relationships and Anger Among Teens		
REB MEETING DATE: May 24, 2007	CERTIFICATE EXPIRY DATE: May 24, 2008	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: June 12, 2007
Document Name	Version	Date
Consent Forms:		
Parental Consent:	Version 1	May 1, 2007
Assent Forms:		
Student Assent	Version 2	May 29, 2007
Questionnaire, Questionnaire Cover Letter, Tests:		
Questionnaires (including a cover sheet)	Version 1	May 1, 2007
Letter of Initial Contact:		
Parental Consent:	Version 1	May 1, 2007
Other Documents:		
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		
Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:		
Dr. Peter Suedfeld, Chair Dr. Jim Rupert, Associate Chair Dr. Arminee Kazanjian, Associate Chair Dr. M. Judith Lynam, Associate Chair Dr. Laurie Ford, Associate Chair		

Appendix C-1

ABOUT YOU

We are interested in learning about your background. Please answer all of the questions honestly.

REMEMBER, ALL OF YOUR ANSWERS WILL REMAIN PRIVATE AND CONFIDENTIAL, AND WILL ONLY BE SEEN BY THE RESEARCHERS.

1. Are you female or male? (Check one): Female _____ Male _____

2. How old are you?: _____ Years Old

3. When were you born?: _____ / _____ / _____
(month) (day) (year)

4. What grade are you in now? (Check one): 8th _____ 9th _____ 10th _____
11th _____ 12th _____

5. How do you describe yourself in terms of ethnic or cultural heritage? (**Check all that apply**)

_____ First Nations (North American Indian, Metis, Inuit, etc.)

_____ African / Caribbean

_____ Asian (Chinese, Japanese, Korean, etc.)

_____ South Asian (East Indian, Indonesian, Pakistani, etc.)

_____ European (Anglo, European descent, etc.)

_____ Latino (Spanish, Mexican, South American, etc.)

_____ Middle Eastern (Arabic, Iranian, Israeli, Persian, Turkish, etc.)

_____ Other (If you would describe your ethnic or cultural heritage in some way that is not listed above, please describe your ethnic or heritage on the line below.)

Thank you!

For the following pages, please be sure to read all of the instructions before starting

Appendix C-2

ABOUT MY PARENTS

Instructions: Please think about parents or caregivers that have played the most important part in raising you. You most likely live with them now, but you may be living somewhere else and still have contact with them. Answer all the questions below based on how you feel about them.
Read each sentence and circle the number to show how much you agree or disagree.

Before you start,

1. Circle the **mother figure** you will be describing (If you have both, choose the one you think of as your primary mother figure).

- A. Biological Mother
- B. Adopted Mother
- C. Step-Mother (or Father's Significant Other)
- D. Other _____

2. Circle the **father figure** you will be describing (If you have both, choose the one you think of as your primary father figure).

- A. Biological Father
- B. Adopted Father
- C. Step-Father (or Mother's Significant Other)
- D. Other _____

About <i>Mother</i>	Disagree Strongly			Neutral/ Mixed		Agree Strongly	
1. I prefer not to show my mother how I feel deep down.	1	2	3	4	5	6	7
2. When I'm away from my mother I feel anxious and afraid.	1	2	3	4	5	6	7
3. I am very comfortable being close to my mother.	1	2	3	4	5	6	7
4. If I can't get my mother to show interest in me, I get upset or angry.	1	2	3	4	5	6	7
5. I find it difficult to depend on my mother.	1	2	3	4	5	6	7
6. I worry about being away from my mother.	1	2	3	4	5	6	7
7. I need a lot of reassurance that I am loved by my mother.	1	2	3	4	5	6	7
8. I worry that my mother won't care about me as much as I care about my mother.	1	2	3	4	5	6	7
9. I worry about being abandoned by my mother.	1	2	3	4	5	6	7
10. I don't feel comfortable opening up to my mother.	1	2	3	4	5	6	7

About <i>Mother</i> (continued)	Disagree Strongly			Neutral/ Mixed			Agree Strongly
11. Just when my mother starts to get close to me I find myself pulling away.	1	2	3	4	5	6	7
12. I get frustrated when my mother is not around as much as I would like.	1	2	3	4	5	6	7
13. I feel comfortable sharing my private thoughts and feelings with my mother.	1	2	3	4	5	6	7
14. I get uncomfortable when my mother wants to be very close.	1	2	3	4	5	6	7
15. I often wish that my mother's feelings for me were as strong as my feelings are for my mother.	1	2	3	4	5	6	7
16. I feel comfortable depending on my mother.	1	2	3	4	5	6	7
17. When my mother disapproves of me, I feel really bad about myself.	1	2	3	4	5	6	7
18. I try to avoid getting too close to my mother.	1	2	3	4	5	6	7
19. I worry a lot about my relationship with my mother.	1	2	3	4	5	6	7
20. I tell my mother just about everything.	1	2	3	4	5	6	7
21. I often want to be really close to my mother and sometimes this makes my mother back away.	1	2	3	4	5	6	7
22. I want to get close to my mother, but I keep pulling back.	1	2	3	4	5	6	7
23. I resent it when my mother spends time away from me.	1	2	3	4	5	6	7
24. I usually discuss my problems and concerns with my mother.	1	2	3	4	5	6	7
25. I find it relatively easy to get close to my mother.	1	2	3	4	5	6	7
26. Sometimes I feel that I have to force my mother to show that my mother cares about me.	1	2	3	4	5	6	7
27. I don't mind asking my mother for comfort, advice, or help.	1	2	3	4	5	6	7
28. My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7

About <i>Mother</i> (continued)	Disagree Strongly			Neutral/ Mixed		Agree Strongly	
29. I worry a fair amount about losing my mother.	1	2	3	4	5	6	7
30. I turn to my mother for many things, including comfort and reassurance.	1	2	3	4	5	6	7
31. I prefer not to be too close to my mother.	1	2	3	4	5	6	7
32. I get frustrated if my mother is not available when I need my mother.	1	2	3	4	5	6	7
33. It helps to turn to my mother in times of need.	1	2	3	4	5	6	7
34. I find that my mother doesn't want to get as close as I would like.	1	2	3	4	5	6	7
35. I don't often worry about being abandoned.	1	2	3	4	5	6	7
36. I am nervous when my mother gets too close to me.	1	2	3	4	5	6	7

Now About Father...

About Father	Disagree Strongly			Neutral/ Mixed			Agree Strongly
1. I prefer not to show my father how I feel deep down.	1	2	3	4	5	6	7
2. When I'm away from my father I feel anxious and afraid.	1	2	3	4	5	6	7
3. I am very comfortable being close to my father.	1	2	3	4	5	6	7
4. If I can't get my father to show interest in me, I get upset or angry.	1	2	3	4	5	6	7
5. I find it difficult to depend on my father.	1	2	3	4	5	6	7
6. I worry about being away from my father.	1	2	3	4	5	6	7
7. I need a lot of reassurance that I am loved by my father.	1	2	3	4	5	6	7
8. I worry that my father won't care about me as much as I care about my father.	1	2	3	4	5	6	7
9. I worry about being abandoned by my father.	1	2	3	4	5	6	7
10. I don't feel comfortable opening up to my father.	1	2	3	4	5	6	7
11. Just when my father starts to get close to me I find myself pulling away.	1	2	3	4	5	6	7
12. I get frustrated when my father is not around as much as I would like.	1	2	3	4	5	6	7
13. I feel comfortable sharing my private thoughts and feelings with my father.	1	2	3	4	5	6	7
14. I get uncomfortable when my father wants to be very close.	1	2	3	4	5	6	7
15. I often wish that my father's feelings for me were as strong as my feelings are for my father.	1	2	3	4	5	6	7
16. I feel comfortable depending on my father.	1	2	3	4	5	6	7
17. When my father disapproves of me, I feel really bad about myself.	1	2	3	4	5	6	7
18. I try to avoid getting too close to my father.	1	2	3	4	5	6	7
19. I worry a lot about my relationship with my father.	1	2	3	4	5	6	7

About <i>Father</i> (continued)	Disagree Strongly			Neutral/ Mixed		Agree Strongly	
20. I tell my father just about everything.	1	2	3	4	5	6	7
21. I often want to be really close to my father and sometimes this makes my father back away.	1	2	3	4	5	6	7
22. I want to get close to my father, but I keep pulling back.	1	2	3	4	5	6	7
23. I resent it when my father spends time away from me.	1	2	3	4	5	6	7
24. I usually discuss my problems and concerns with my father.	1	2	3	4	5	6	7
25. I find it relatively easy to get close to my father.	1	2	3	4	5	6	7
26. Sometimes I feel that I have to force my father to show that my father cares about me.	1	2	3	4	5	6	7
27. I don't mind asking my father for comfort, advice, or help.	1	2	3	4	5	6	7
28. My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7
29. I worry a fair amount about losing my father.	1	2	3	4	5	6	7
30. I turn to my father for many things, including comfort and reassurance.	1	2	3	4	5	6	7
31. I prefer not to be too close to my father.	1	2	3	4	5	6	7
32. I get frustrated if my father is not available when I need my father.	1	2	3	4	5	6	7
33. It helps to turn to my father in times of need.	1	2	3	4	5	6	7
34. I find that my father doesn't want to get as close as I would like.	1	2	3	4	5	6	7
35. I don't often worry about being abandoned.	1	2	3	4	5	6	7
36. I am nervous when my father gets too close to me.	1	2	3	4	5	6	7

Appendix C-3**STAXI-2 QUESTIONNAIRE**

Note: Due to copyright, the questionnaire items were not presented on this page.

Appendix D

Scree Plots for Exploratory Factor Analyses

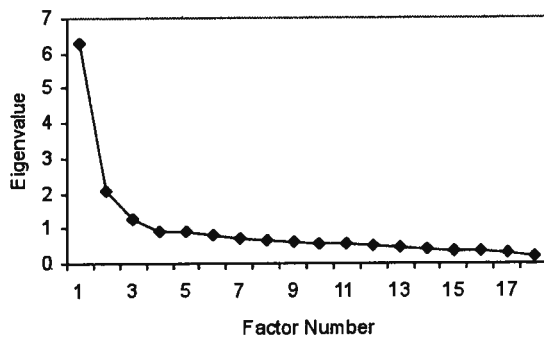


Figure 1. Scree plot of eigenvalues from the EFA of the anxious attachment item Mother figure attachment - Entire samp

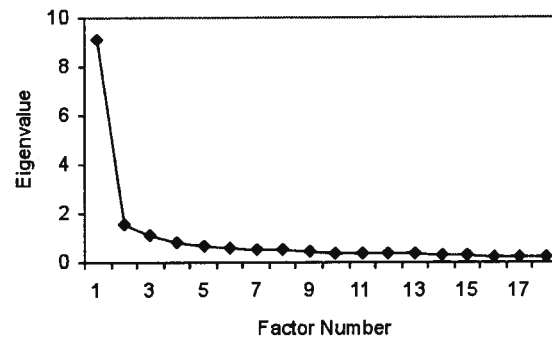


Figure 2. Scree plot of eigenvalues from the EFA of the avoidant attachment item Mother figure attachment - Entire samp

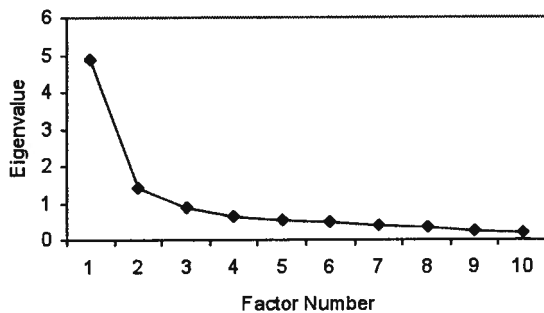


Figure 3. Scree plot of eigenvalues from the EFA of the trait anger items: Mother figure attachment - Entire sample.

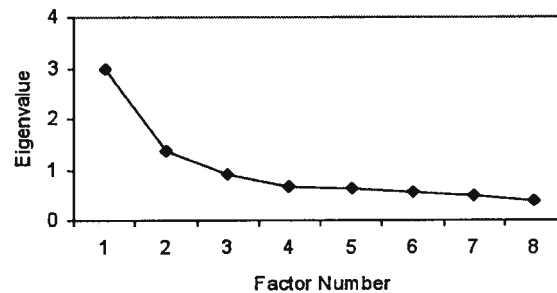


Figure 4. Scree plot of eigenvalues from the EFA of the anger-in items: Mother figure attachment - Entire sample.

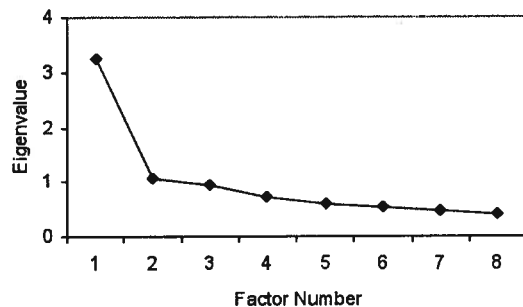


Figure 5. Scree plot of eigenvalues from the EFA of the anger-out items: Mother figure attachment - Entire sample.

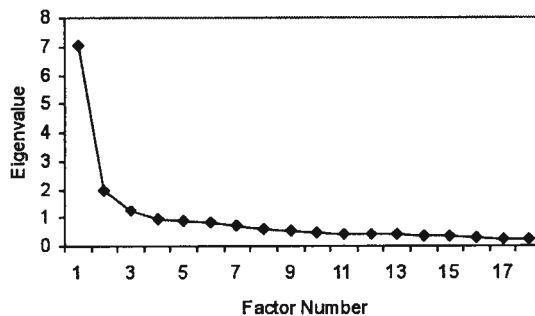


Figure 6. Scree plot of eigenvalues from the EFA of the anxious attachment items: Father figure attachment - Entire sample.

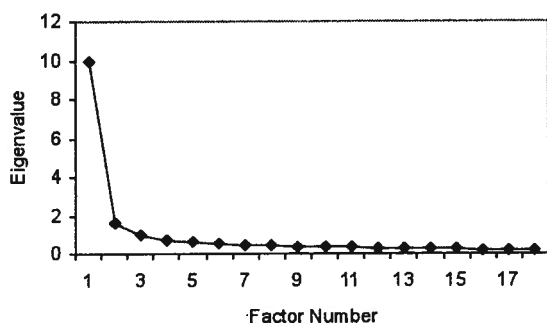


Figure 7. Scree plot of eigenvalues from the EFA of the avoidant attachment items: Father figure attachment - Entire sample.

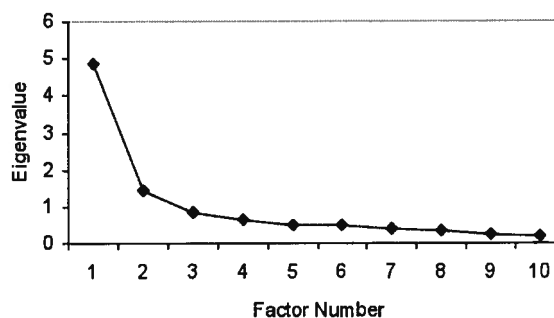


Figure 8. Scree plot of eigenvalues from the EFA of the trait anger items: Father figure attachment - Entire sample.

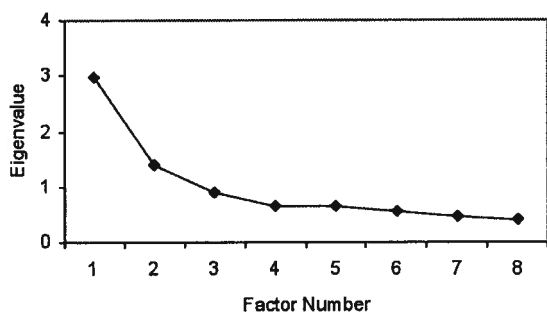


Figure 9. Scree plot of eigenvalues from the EFA of the anger-in items: Father figure attachment - Entire sample.

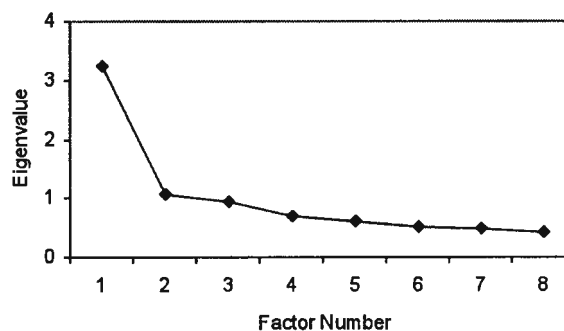


Figure 10. Scree plot of eigenvalues from the EFA of the anger-out items: Father figure attachment - Entire sample.

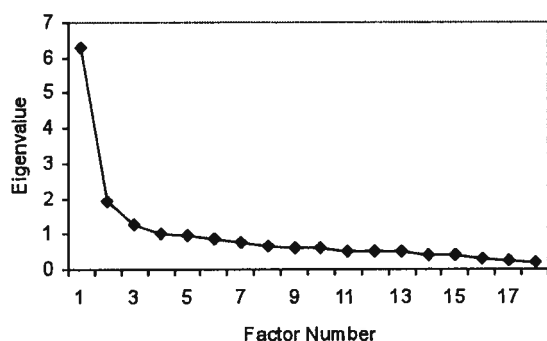


Figure 11. Scree plot of eigenvalues from the EFA of the anxious attachment item: Mother figure attachment - Boys.

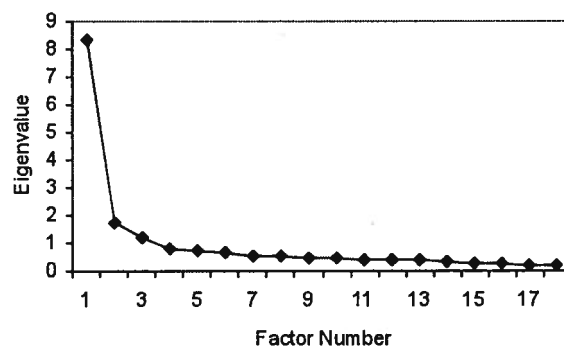


Figure 12. Scree plot of eigenvalues from the EFA of the avoidant attachment item: Mother figure attachment - Boys.

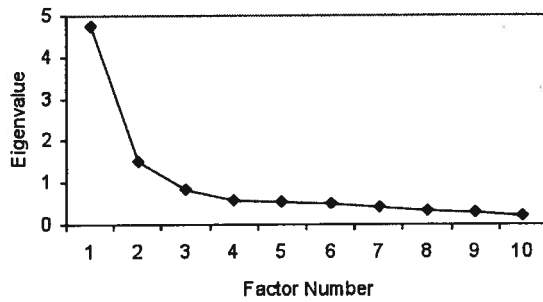


Figure 13. Scree plot of eigenvalues from the EFA of the trait anger items: Mother figure attachment - Boys.

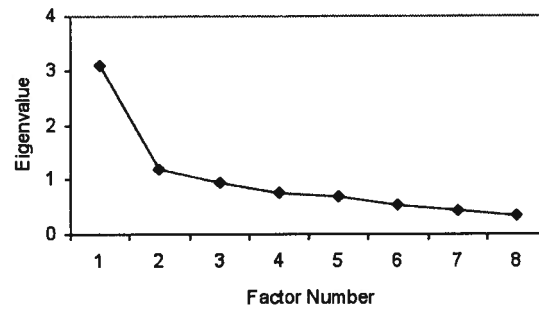


Figure 14. Scree plot of eigenvalues from the EFA of the anger-in items: Mother figure attachment - Boys.

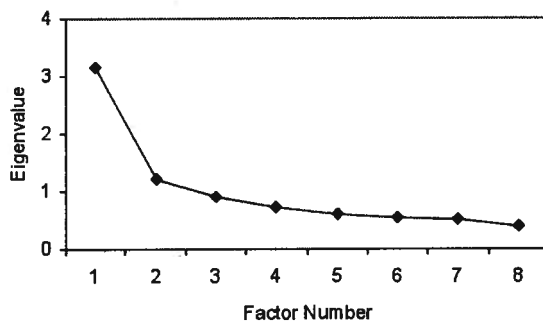


Figure 15. Scree plot of eigenvalues from the EFA of the anger-out items: Mother figure attachment - Boys.

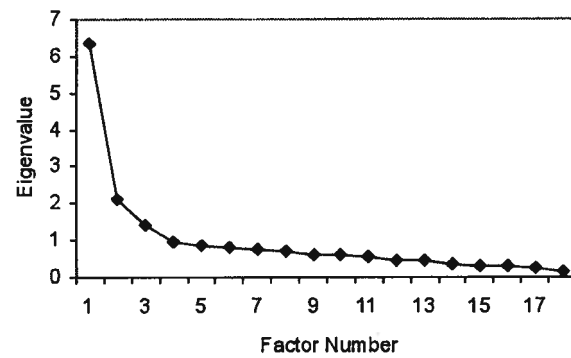


Figure 16. Scree plot of eigenvalues from the EFA of the anxious attachment item: Mother figure attachment - Girls.

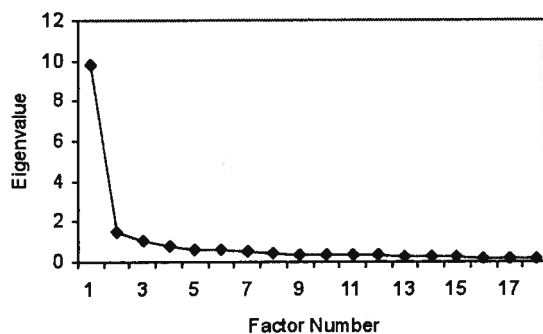


Figure 17. Scree plot of eigenvalues from the EFA of the avoidant attachment item: Mother figure attachment - Girls.

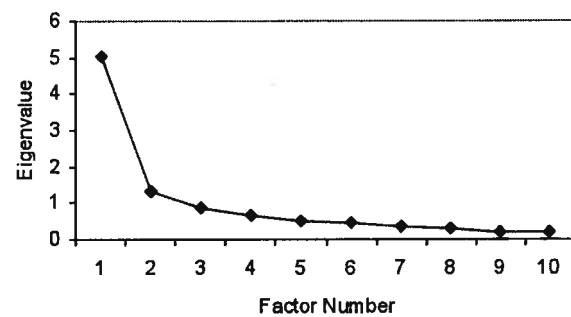


Figure 18. Scree plot of eigenvalues from the EFA of the trait anger items: Mother figure attachment - Girls.

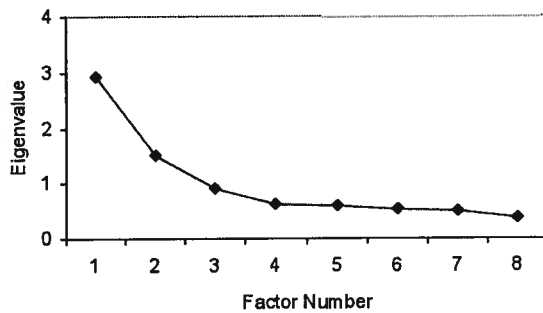


Figure 19. Scree plot of eigenvalues from the EFA of the anger-in items: Mother figure attachment - Girls.

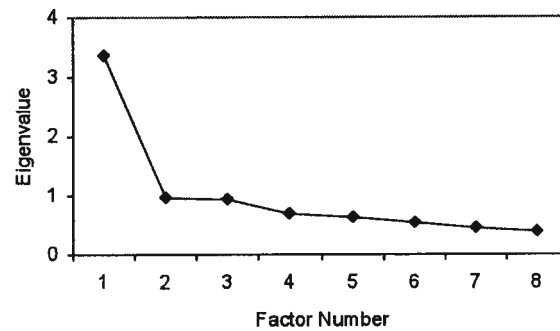


Figure 20. Scree plot of eigenvalues from the EFA of the anger-out items: Mother figure attachment - Girls.

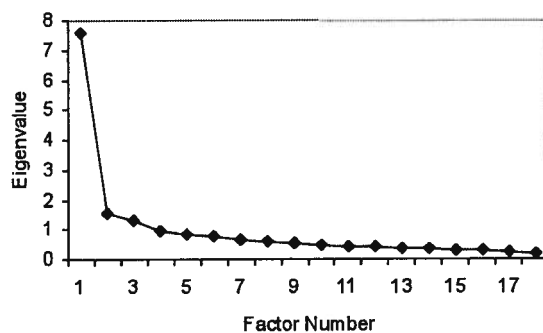


Figure 21. Scree plot of eigenvalues from the EFA of the anxious attachment items: Father figure attachment - Boys.

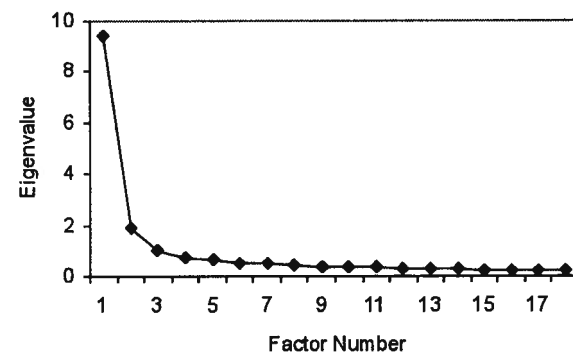


Figure 22. Scree plot of eigenvalues from the EFA of the avoidant attachment items: Father figure attachment - Boys.

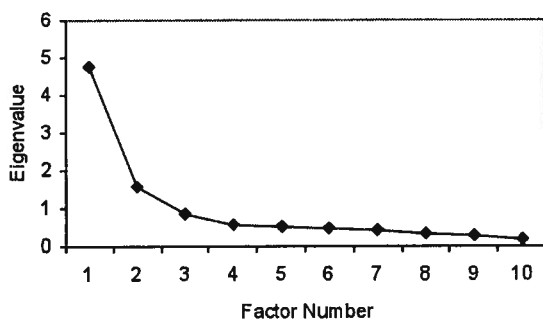


Figure 23. Scree plot of eigenvalues from the EFA of the trait anger items: Father figure attachment - Boys.

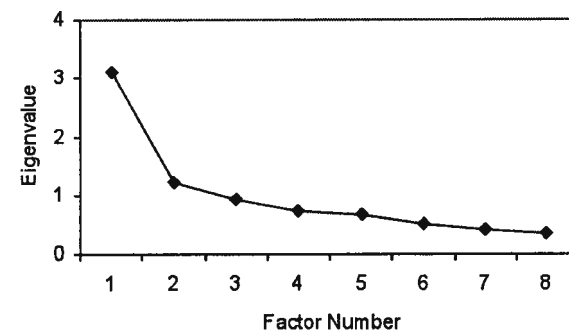


Figure 24. Scree plot of eigenvalues from the EFA of the anger-in items: Father figure attachment - Boys.

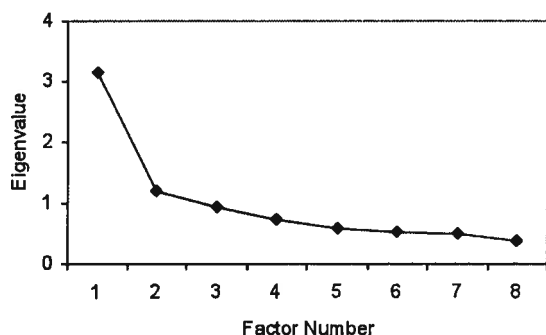


Figure 25. Scree plot of eigenvalues from the EFA of the anger-out items: Father figure attachment - Boys.

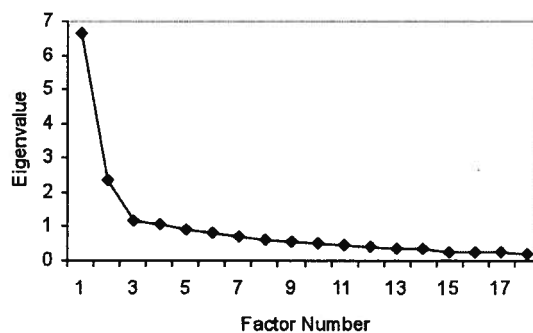


Figure 26. Scree plot of eigenvalues from the EFA of the anxious attachment item: Father figure attachment - Girls.

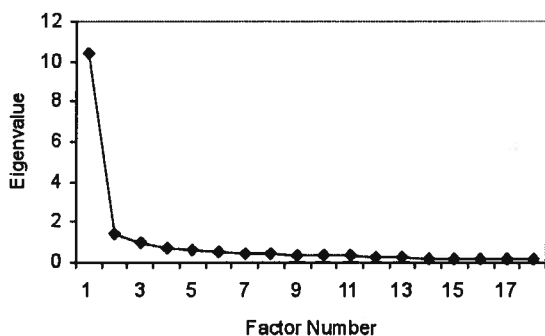


Figure 27. Scree plot of eigenvalues from the EFA of the avoidant attachment item: Father figure attachment - Girls.

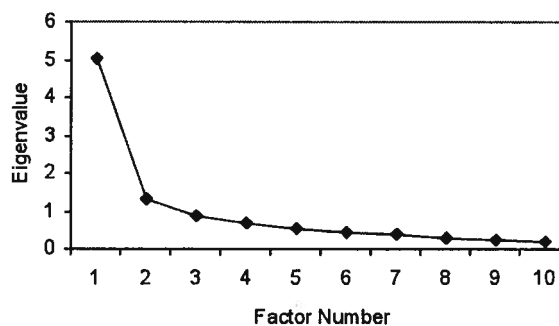


Figure 28. Scree plot of eigenvalues from the EFA of the trait anger items: Father figure attachment - Girls.

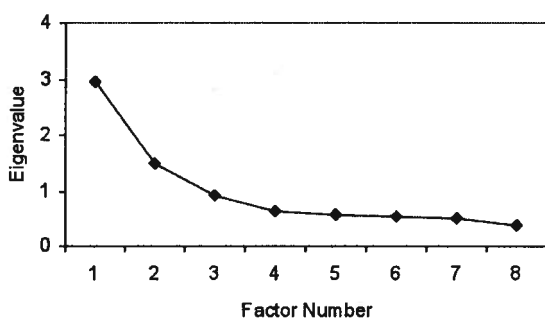


Figure 29. Scree plot of eigenvalues from the EFA of the anger-in items: Father figure attachment - Girls.

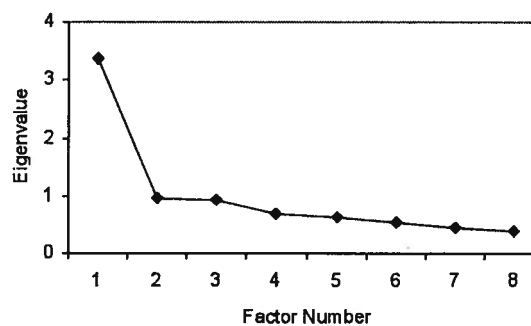


Figure 30. Scree plot of eigenvalues from the EFA of the anger-out items: Father figure attachment - Girls.

Appendix E

Correlation Matrices for Scale Items

Table 1
Intercorrelations Among the Attachment Anxiety Scale Items for Mother Figure Attachment: Entire Sample ($N = 775$)

Item	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18
X1	1.00																	
X2	.31	1.00																
X3	.65	.36	1.00															
X4	.30	.41	.38	1.00														
X5	.21	.33	.28	.55	1.00													
X6	.22	.24	.26	.43	.67	1.00												
X7	.35	.42	.35	.35	.36	.23	1.00											
X8	.16	.18	.15	.44	.59	.49	.20	1.00										
X9	.25	.29	.22	.17	.10	.07	.25	.04	1.00									
X10	.21	.33	.28	.36	.45	.45	.30	.37	.15	1.00								
X11	.18	.27	.18	.34	.49	.37	.31	.46	.11	.39	1.00							
X12	.36	.35	.36	.35	.29	.28	.45	.34	.23	.35	.37	1.00						
X13	.17	.38	.17	.44	.55	.45	.36	.53	.08	.44	.59	.37	1.00					
X14	.20	.23	.22	.32	.33	.30	.28	.31	.08	.30	.49	.30	.37	1.00				
X15	.25	.21	.33	.29	.38	.52	.22	.27	.17	.37	.26	.24	.24	.27	1.00			
X16	.32	.43	.29	.30	.22	.15	.47	.14	.23	.25	.19	.41	.31	.25	.19	1.00		
X17	.09	.21	.06	.31	.49	.40	.23	.45	-.02	.39	.62	.35	.59	.36	.21	.20	1.00	
X18	.07	.16	.15	.21	.28	.47	.12	.25	-.02	.28	.28	.12	.26	.22	.29	.10	.27	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: X = Attachment anxiety. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 2

Intercorrelations Among the Attachment Avoidance Scale Items for Mother Figure Attachment: Entire Sample ($N = 775$)

Item	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18
V1	1.00																	
V2	.43	1.00																
V3	.35	.41	1.00															
V4	.61	.49	.45	1.00														
V5	.49	.50	.42	.56	1.00													
V6	.56	.47	.31	.61	.45	1.00												
V7	.39	.42	.30	.39	.53	.34	1.00											
V8	.35	.43	.63	.38	.37	.36	.29	1.00										
V9	.53	.54	.45	.54	.69	.52	.57	.43	1.00									
V10	.60	.56	.38	.62	.52	.68	.43	.39	.54	1.00								
V11	.29	.25	.32	.38	.53	.26	.32	.24	.42	.28	1.00							
V12	.57	.51	.39	.55	.45	.68	.38	.42	.52	.76	.22	1.00						
V13	.46	.57	.43	.49	.46	.51	.31	.48	.54	.56	.33	.57	1.00					
V14	.49	.49	.47	.52	.50	.57	.32	.49	.52	.61	.36	.64	.62	1.00				
V15	.49	.51	.43	.47	.41	.52	.33	.51	.47	.61	.17	.63	.57	.64	1.00			
V16	.51	.51	.40	.55	.63	.53	.54	.41	.77	.54	.38	.54	.54	.55	.48	1.00		
V17	.46	.48	.45	.42	.41	.50	.30	.50	.50	.51	.18	.56	.55	.61	.65	.47	1.00	
V18	.37	.46	.37	.46	.59	.41	.55	.32	.68	.43	.47	.35	.42	.43	.35	.64	.31	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: V = Attachment avoidance. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 3
Intercorrelations Among the Intensity of Anger Scale Items for Mother Figure
Attachment: Entire Sample ($N = 775$)

Item	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
T1	1.00									
T2	.72	1.00								
T3	.70	.76	1.00							
T4	.39	.41	.40	1.00						
T5	.25	.27	.26	.52	1.00					
T6	.54	.62	.67	.42	.37	1.00				
T7	.45	.51	.45	.35	.25	.51	1.00			
T8	.38	.33	.35	.40	.47	.30	.35	1.00		
T9	.33	.42	.36	.33	.25	.47	.51	.43	1.00	
T10	.30	.37	.34	.47	.62	.37	.35	.53	.37	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: T = Intensity of anger. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 4
Intercorrelations Among the Anger-In Scale Items for Mother
Figure Attachment: Entire Sample ($N = 775$)

Item	I1	I2	I3	I4	I5	I6	I7	I8
I1	1.00							
I2	-.06	1.00						
I3	.13	.33	1.00					
I4	.50	.04	.21	1.00				
I5	.19	.25	.33	.32	1.00			
I6	.08	.24	.35	.20	.39	1.00		
I7	.07	.16	.29	.22	.36	.34	1.00	
I8	.20	.19	.39	.30	.45	.44	.57	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: I = Anger-in. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 5
Intercorrelations Among the Anger-Out Scale Items for Mother
Figure Attachment: Entire Sample ($N = 775$)

Item	O1	O2	O3	O4	O5	O6	O7	O8
O1	1.00							
O2	.23	1.00						
O3	.43	.11	1.00					
O4	.18	.16	.18	1.00				
O5	.25	.08	.41	.12	1.00			
O6	.33	.23	.49	.38	.32	1.00		
O7	.37	.16	.52	.18	.36	.42	1.00	
O8	.38	.14	.46	.37	.35	.47	.43	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: O = Anger-out. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 6

Intercorrelations Among the Attachment Anxiety Scale Items for Father Figure Attachment: Entire Sample ($N = 762$)

Item	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18
X1	1.00																	
X2	.42	1.00																
X3	.70	.45	1.00															
X4	.30	.41	.40	1.00														
X5	.33	.44	.39	.70	1.00													
X6	.31	.30	.45	.50	.58	1.00												
X7	.44	.50	.54	.35	.37	.34	1.00											
X8	.26	.38	.36	.55	.65	.45	.40	1.00										
X9	.25	.41	.32	.22	.23	.14	.30	.16	1.00									
X10	.22	.33	.36	.54	.54	.54	.34	.45	.20	1.00								
X11	.23	.32	.29	.41	.53	.46	.35	.52	.15	.44	1.00							
X12	.45	.36	.51	.40	.38	.38	.60	.39	.25	.34	.38	1.00						
X13	.14	.39	.25	.60	.62	.47	.31	.56	.18	.53	.56	.32	1.00					
X14	.24	.29	.25	.28	.38	.36	.21	.36	.15	.29	.41	.28	.30	1.00				
X15	.35	.26	.43	.34	.41	.57	.27	.32	.17	.49	.27	.32	.32	.24	1.00			
X16	.40	.45	.42	.30	.28	.21	.64	.29	.32	.32	.24	.47	.26	.14	.31	1.00		
X17	.11	.27	.17	.38	.53	.37	.27	.51	.09	.46	.57	.29	.56	.41	.27	.21	1.00	
X18	.08	.16	.09	.13	.15	.35	.09	.11	.04	.23	.12	.05	.20	.10	.24	.07	.11	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: X = Attachment anxiety. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 7

Intercorrelations Among the Attachment Avoidance Scale Items for Father Figure Attachment: Entire Sample ($N = 762$)

Item	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18
V1	1.00																	
V2	.51	1.00																
V3	.46	.46	1.00															
V4	.65	.52	.54	1.00														
V5	.48	.52	.49	.61	1.00													
V6	.57	.54	.36	.59	.43	1.00												
V7	.41	.46	.43	.49	.63	.35	1.00											
V8	.46	.59	.75	.46	.44	.43	.37	1.00										
V9	.56	.57	.55	.59	.67	.45	.62	.53	1.00									
V10	.63	.59	.51	.64	.49	.69	.41	.55	.55	1.00								
V11	.27	.26	.27	.36	.53	.24	.35	.23	.38	.24	1.00							
V12	.61	.59	.52	.62	.45	.68	.38	.59	.54	.77	.23	1.00						
V13	.50	.65	.56	.52	.46	.51	.39	.63	.55	.63	.31	.65	1.00					
V14	.58	.61	.55	.56	.49	.55	.44	.65	.56	.66	.30	.71	.67	1.00				
V15	.53	.61	.55	.55	.47	.56	.43	.63	.54	.71	.21	.73	.66	.76	1.00			
V16	.51	.54	.51	.52	.61	.44	.54	.50	.73	.55	.33	.57	.52	.53	.56	1.00		
V17	.48	.55	.54	.47	.41	.49	.36	.62	.52	.61	.19	.66	.60	.68	.75	.54	1.00	
V18	.47	.51	.44	.53	.68	.39	.63	.41	.68	.47	.47	.42	.46	.47	.45	.63	.40	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: V = Attachment avoidance. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 8
Intercorrelations Among the Intensity of Anger Scale Items for Father Figure
Attachment: Entire Sample ($N = 762$)

Item	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
T1	1.00									
T2	.73	1.00								
T3	.70	.75	1.00							
T4	.39	.42	.41	1.00						
T5	.26	.26	.26	.52	1.00					
T6	.54	.61	.66	.42	.36	1.00				
T7	.45	.51	.45	.35	.25	.50	1.00			
T8	.39	.34	.35	.41	.48	.30	.35	1.00		
T9	.33	.42	.36	.33	.25	.47	.51	.43	1.00	
T10	.30	.36	.33	.48	.62	.36	.35	.53	.37	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: T = Intensity of anger. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 9
Intercorrelations Among the Anger-In Scale Items for Father Figure
Attachment: Entire Sample ($N = 762$)

Item	I1	I2	I3	I4	I5	I6	I7	I8
I1	1.00							
I2	-.06	1.00						
I3	.11	.34	1.00					
I4	.51	.04	.20	1.00				
I5	.19	.27	.33	.33	1.00			
I6	.08	.24	.37	.20	.41	1.00		
I7	.07	.17	.30	.21	.36	.34	1.00	
I8	.19	.19	.39	.29	.46	.44	.57	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: I = Anger-in. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 10

Intercorrelations Among the Anger-Out Scale Items for Father

Figure Attachment: Entire Sample ($N = 762$)

Item	O1	O2	O3	O4	O5	O6	O7	O8
O1	1.00							
O2	.24	1.00						
O3	.43	.11	1.00					
O4	.16	.16	.18	1.00				
O5	.25	.08	.41	.12	1.00			
O6	.33	.23	.49	.39	.31	1.00		
O7	.38	.17	.52	.18	.36	.43	1.00	
O8	.38	.15	.46	.38	.34	.47	.43	1.00

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: O = Anger-out. The numbers in the first column and in the first row of the table denote the item numbers in the scale.

Table 11

Intercorrelations Among the Attachment Anxiety Scale Items for Mother Figure Attachment: Boys ($n = 379$) and Girls ($n = 396$)

Item	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18
X1	-	.27	.61	.29	.18	.20	.35	.17	.32	.22	.25	.40	.22	.30	.23	.26	.14	.06
X2	.26	-	.36	.37	.38	.33	.38	.24	.29	.34	.33	.32	.43	.29	.16	.35	.28	.20
X3	.65	.31	-	.32	.30	.27	.32	.19	.23	.24	.23	.45	.15	.27	.34	.22	.12	.11
X4	.29	.43	.41	-	.59	.52	.31	.46	.17	.38	.34	.38	.44	.31	.25	.21	.39	.16
X5	.26	.32	.28	.53	-	.62	.32	.47	.19	.43	.41	.30	.47	.27	.30	.23	.54	.26
X6	.24	.17	.26	.36	.72	-	.27	.47	.10	.55	.32	.33	.45	.24	.47	.15	.45	.50
X7	.35	.44	.35	.37	.39	.21	-	.19	.34	.29	.35	.43	.31	.35	.22	.44	.25	.13
X8	.18	.17	.14	.44	.68	.51	.22	-	.05	.38	.45	.35	.51	.23	.25	.12	.47	.27
X9	.12	.21	.15	.14	.04	.04	.15	.05	-	.19	.16	.25	.06	.20	.20	.16	-.01	.01
X10	.19	.30	.29	.35	.47	.35	.30	.39	.10	-	.39	.42	.41	.34	.39	.22	.30	.29
X11	.11	.23	.16	.35	.56	.42	.28	.47	.06	.39	-	.11	.56	.49	.21	.22	.55	.31
X12	.33	.35	.27	.32	.29	.24	.45	.34	.19	.27	.36	-	.36	.35	.23	.37	.33	.14
X13	.12	.33	.16	.44	.61	.46	.40	.56	.06	.45	.63	.37	-	.33	.18	.27	.56	.28
X14	.15	.21	.20	.34	.39	.35	.22	.39	-.01	.28	.49	.26	.42	-	.17	.26	.35	.24
X15	.30	.29	.36	.34	.43	.56	.23	.29	.18	.37	.31	.24	.30	.36	-	.17	.18	.27
X16	.30	.44	.30	.37	.23	.15	.49	.18	.23	.27	.16	.43	.33	.27	.24	-	.20	.12
X17	.06	.17	.03	.24	.45	.37	.22	.44	-.05	.46	.68	.37	.61	.37	.23	.20	-	.29
X18	.06	.11	.18	.24	.29	.45	.12	.25	-.07	.28	.25	.10	.24	.21	.32	.06	.26	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: X = Attachment anxiety. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 12

Intercorrelations Among the Attachment Avoidance Scale Items for Mother Figure Attachment: Boys ($n = 379$) and Girls ($n = 396$)

Item	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18
V1	-	.42	.35	.58	.47	.50	.38	.31	.54	.50	.21	.52	.39	.45	.43	.54	.42	.30
V2	.44	-	.39	.38	.45	.45	.44	.48	.50	.55	.18	.49	.52	.48	.52	.47	.48	.36
V3	.36	.44	-	.42	.40	.25	.35	.60	.43	.35	.28	.32	.42	.48	.40	.45	.45	.40
V4	.64	.58	.49	-	.46	.52	.37	.36	.47	.55	.26	.47	.39	.41	.43	.53	.38	.31
V5	.51	.55	.43	.65	-	.37	.50	.30	.69	.43	.43	.39	.38	.48	.35	.64	.37	.52
V6	.60	.49	.35	.67	.53	-	.37	.30	.47	.62	.13	.63	.39	.49	.45	.49	.41	.31
V7	.40	.42	.24	.40	.55	.31	-	.31	.61	.43	.30	.33	.32	.32	.34	.56	.31	.54
V8	.38	.40	.66	.40	.44	.40	.26	-	.40	.34	.21	.33	.41	.42	.46	.39	.44	.31
V9	.21	.58	.46	.60	.69	.55	.53	.45	-	.47	.36	.48	.50	.50	.44	.78	.46	.64
V10	.66	.56	.40	.68	.59	.72	.42	.42	.60	-	.15	.72	.48	.55	.53	.49	.45	.30
V11	.38	.32	.38	.47	.63	.38	.38	.28	.50	.42	-	.09	.27	.26	.08	.34	.10	.46
V12	.60	.53	.44	.62	.51	.71	.40	.48	.54	.78	.34	-	.46	.54	.57	.52	.48	.20
V13	.52	.62	.45	.58	.52	.61	.31	.55	.57	.63	.38	.67	-	.51	.50	.48	.48	.36
V14	.51	.50	.47	.61	.53	.63	.31	.54	.54	.66	.44	.72	.71	-	.55	.54	.56	.36
V15	.52	.49	.45	.51	.50	.57	.31	.55	.51	.66	.28	.67	.65	.72	-	.47	.61	.25
V16	.48	.55	.35	.58	.62	.57	.53	.42	.76	.59	.43	.56	.59	.56	.49	-	.45	.57
V17	.48	.48	.45	.45	.44	.58	.28	.55	.52	.54	.27	.62	.61	.66	.67	.49	-	.23
V18	.43	.55	.33	.59	.64	.50	.54	.32	.71	.53	.50	.45	.48	.49	.42	.70	.38	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: V = Attachment avoidance. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 13
Intercorrelations Among the Intensity of Anger Scale Items for Mother Figure
Attachment: Boys ($n = 379$) and Girls ($n = 396$)

Item	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
T1	-	.69	.67	.37	.16	.53	.44	.33	.32	.23
T2	.77	-	.75	.38	.23	.58	.52	.28	.44	.39
T3	.72	.77	-	.38	.17	.65	.48	.32	.37	.31
T4	.40	.45	.42	-	.49	.44	.37	.39	.34	.46
T5	.33	.30	.36	.55	-	.32	.23	.47	.24	.64
T6	.57	.66	.69	.41	.44	-	.51	.34	.47	.36
T7	.48	.50	.44	.32	.28	.49	-	.37	.47	.38
T8	.42	.39	.38	.43	.48	.27	.35	-	.53	.51
T9	.38	.40	.38	.33	.29	.46	.54	.37	-	.35
T10	.37	.36	.38	.49	.61	.37	.32	.55	.41	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: T = Intensity of anger. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 14

Intercorrelations Among the Anger-In Scale Items for Mother
Figure Attachment: Boys ($n = 379$) and Girls ($n = 396$)

Item	I1	I2	I3	I4	I5	I6	I7	I8
I1	-	.08	.15	.54	.25	.16	.08	.26
I2	-.14	-	.32	.21	.23	.25	.16	.25
I3	.11	.34	-	.26	.30	.43	.31	.40
I4	.47	-.08	.17	-	.43	.292	.23	.35
I5	.13	.28	.36	.23	-	.35	.29	.41
I6	.04	.23	.28	.11	.43	-	.25	.43
I7	.06	.19	.28	.21	.43	.42	-	.56
I8	.15	.15	.39	.24	.50	.44	.57	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: I = Anger-in. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 15

Intercorrelations Among the Anger-Out Scale Items for Mother

Figure Attachment: Boys ($n = 379$) and Girls ($n = 396$)

Item	O1	O2	O3	O4	O5	O6	O7	O8
O1	-	.18	.45	.08	.26	.31	.41	.41
O2	.29	-	.02	.17	.01	.23	.11	.12
O3	.42	.21	-	.07	.37	.47	.52	.46
O4	.18	.15	.28	-	.10	.40	.16	.29
O5	.23	.15	.46	.14	-	.30	.35	.33
O6	.37	.25	.51	.37	.35	-	.42	.47
O7	.34	.21	.52	.19	.37	.44	-	.45
O8	.39	.18	.45	.46	.38	.45	.41	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: O = Anger-out. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 16

Intercorrelations Among the Attachment Anxiety Scale Items for Father Figure Attachment: Boys ($n = 369$) and Girls ($n = 393$)

Item	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18
X1	-	.53	.69	.36	.43	.38	.48	.28	.31	.38	.26	.45	.25	.27	.42	.46	.27	.11
X2	.31	-	.51	.41	.55	.35	.53	.46	.48	.44	.40	.44	.48	.33	.32	.42	.38	.13
X3	.70	.38	-	.45	.53	.52	.57	.42	.35	.53	.32	.54	.36	.26	.49	.41	.31	.11
X4	.24	.40	.34	-	.70	.50	.37	.56	.32	.53	.36	.42	.60	.29	.30	.31	.41	.08
X5	.24	.33	.26	.70	-	.60	.46	.61	.33	.56	.50	.47	.61	.42	.42	.30	.57	.14
X6	.24	.25	.39	.49	.56	-	.33	.41	.20	.53	.38	.37	.43	.41	.50	.17	.34	.34
X7	.40	.46	.50	.32	.28	.33	-	.42	.31	.43	.35	.58	.33	.29	.31	.60	.36	.12
X8	.26	.33	.28	.56	.69	.50	.40	-	.28	.47	.45	.44	.55	.35	.33	.33	.49	.05
X9	.17	.33	.27	.11	.14	.07	.26	.71	-	.36	.24	.31	.29	.26	.23	.28	.21	.01
X10	.08	.23	.20	.55	.52	.55	.25	.43	.05	-	.38	.41	.52	.33	.54	.38	.42	.17
X11	.22	.25	.28	.47	.55	.53	.36	.58	.06	.50	-	.39	.57	.42	.19	.24	.61	.08
X12	.43	.28	.48	.38	.31	.37	.61	.35	.18	.27	.37	-	.40	.30	.36	.47	.36	.03
X13	.04	.30	.15	.61	.62	.49	.27	.56	.08	.54	.55	.23	-	.36	.28	.32	.56	.20
X14	.23	.27	.27	.28	.34	.35	.16	.36	.06	.25	.39	.27	.27	-	.06	.20	.43	.10
X15	.32	.21	.39	.39	.41	.64	.25	.32	.13	.46	.34	.28	.35	.31	-	.30	.19	.21
X16	.33	.45	.42	.27	.26	.22	.66	.26	.33	.25	.26	.45	.21	.10	.34	-	.35	.06
X17	.02	.21	.08	.37	.51	.41	.22	.51	.02	.50	.53	.25	.57	.38	.34	.12	-	.07
X18	.01	.11	.03	.15	.15	.33	.06	.17	.03	.26	.16	.05	.19	.11	.28	.06	.15	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: X = Attachment anxiety. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 17

Intercorrelations Among the Attachment Avoidance Scale Items for Father Figure Attachment: Boys ($n = 369$) and Girls ($n = 393$)

Item	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18
V1	-	.51	.44	.66	.46	.58	.44	.41	.53	.59	.15	.63	.43	.56	.51	.49	.47	.43
V2	.50	-	.46	.50	.50	.57	.43	.60	.56	.59	.22	.64	.61	.58	.60	.53	.57	.46
V3	.49	.46	-	.49	.53	.42	.46	.71	.52	.48	.24	.52	.52	.50	.49	.48	.51	.41
V4	.64	.54	.58	-	.63	.61	.50	.41	.61	.59	.30	.63	.43	.52	.54	.53	.46	.52
V5	.50	.54	.46	.61	-	.42	.59	.39	.68	.39	.54	.43	.42	.43	.40	.59	.34	.65
V6	.55	.51	.32	.57	.44	-	.40	.47	.43	.72	.13	.74	.53	.58	.61	.45	.50	.35
V7	.38	.48	.41	.49	.65	.30	-	.35	.60	.38	.35	.38	.33	.40	.39	.55	.30	.64
V8	.50	.58	.58	.52	.48	.40	.39	-	.45	.51	.14	.56	.60	.61	.57	.42	.59	.32
V9	.60	.57	.58	.58	.67	.47	.64	.60	-	.48	.35	.51	.47	.48	.47	.67	.43	.67
V10	.67	.59	.54	.68	.59	.66	.44	.60	.63	-	.12	.75	.55	.57	.67	.46	.56	.41
V11	.37	.30	.29	.41	.53	.33	.35	.32	.41	.34	-	.14	.26	.24	.10	.29	.12	.41
V12	.59	.55	.52	.62	.48	.63	.39	.61	.58/	.80	.31	-	.62	.69	.73	.55	.66	.38
V13	.56	.69	.60	.59	.50	.50	.44	.65	.62	.71	.36	.67	-	.63	.58	.44	.56	.35
V14	.59	.63	.59	.60	.54	.52	.47	.68	.63	.73	.34	.73	.71	-	.70	.44	.65	.38
V15	.56	.62	.59	.57	.52	.52	.47	.69	.60	.75	.30	.74	.72	.82	-	.49	.72	.40
V16	.53	.54	.53	.52	.63	.44	.53	.57	.58	.66	.37	.59	.60	.61	.62	-	.44	.63
V17	.49	.53	.57	.50	.46	.48	.40	.65	.60	.66	.25	.66	.64	.70	.76	.63	-	.39
V18	.51	.55	.49	.54	.70	.42	.63	.49	.69	.52	.53	.45	.55	.53	.49	.64	.41	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: V = Attachment avoidance. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 18
 Intercorrelations Among the Intensity of Anger Scale Items for Father Figure
 Attachment: Boys ($n = 369$) and Girls ($n = 393$)

Item	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
T1	-	.69	.68	.38	.17	.53	.44	.33	.32	.23
T2	.77	-	.75	.38	.22	.57	.51	.29	.43	.38
T3	.72	.76	-	.40	.16	.64	.47	.33	.37	.29
T4	.41	.45	.43	-	.50	.44	.38	.41	.34	.48
T5	.33	.30	.35	.55	-	.30	.22	.48	.24	.64
T6	.57	.65	.69	.41	.43	-	.51	.35	.47	.35
T7	.48	.51	.44	.32	.28	.49	-	.37	.47	.38
T8	.44	.39	.38	.42	.48	.27	.35	-	.54	.52
T9	.37	.40	.37	.33	.29	.46	.54	.37	-	.34
T10	.37	.35	.38	.49	.61	.37	.32	.55	.40	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: T = Intensity of anger. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 19

Intercorrelations Among the Anger-In Scale Items for Father Figure Attachment: Boys ($n = 369$) and Girls ($n = 393$)

Item	I1	I2	I3	I4	I5	I6	I7	I8
I1	-	.09	.14	.55	.24	.12	.07	.25
I2	-.14	-	.33	.22	.24	.25	.16	.26
I3	.08	.35	-	.25	.28	.46	.30	.39
I4	.47	-.08	.16	-	.44	.31	.22	.35
I5	.14	.29	.37	.22	-	.37	.28	.41
I6	.05	.23	.29	.11	.43	-	.25	.44
I7	.07	.19	.29	.20	.43	.42	-	.55
I8	.13	.15	.39	.23	.51	.44	.58	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: I = Anger-in. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.

Table 20
Intercorrelations Among the Anger-Out Scale Items for Father
Figure Attachment: Boys ($n = 369$) and Girls ($n = 393$)

Item	O1	O2	O3	O4	O5	O6	O7	O8
O1	-	.19	.46	.08	.25	.31	.42	.40
O2	.29	-	.02	.17	.01	.23	.13	.13
O3	.42	.20	-	.08	.35	.47	.52	.45
O4	.18	.16	.28	-	.09	.41	.17	.30
O5	.24	.14	.47	.14	-	.29	.36	.32
O6	.37	.25	.50	.38	.34	-	.43	.48
O7	.34	.22	.53	.18	.37	.43	-	.46
O8	.40	.20	.46	.46	.38	.45	.40	-

Note. Given the categorical nature of the measures, polychoric correlations were used. The first letter of the variable name indicates the scale it belongs to: O = Anger-out. The numbers in the first column and in the first row of the table denote the item numbers in the scale. The correlations below the diagonal are for girls and the correlations above the diagonal are for boys.