

COPING WITH PEER STRESS: GENDER SPECIFIC AND COMMON PATHWAYS TO  
SYMPTOMS OF PSYCHOPATHOLOGY

By

LISA MICHELLE SONTAG

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL  
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2009

© 2009 Lisa Michelle Sontag

This work is dedicated to my friends, family, and mentors, who have always supported me and encouraged me to reach beyond my limits.

## ACKNOWLEDGMENTS

There are several people who have played supportive roles for me during my years as a graduate student. I would like to take this opportunity to thank these people for their guidance and encouragement during this formative experience in my life. First, I would like to express my most sincere gratitude to my advisor, Dr. Julia Graber. Throughout my graduate training she has provided exceptional insight, encouragement, and support, aiding in the development and refinement of my research interests in developmental psychopathology and adolescent development. She is a tremendous academic who has served as a prime example to me of a strong, intelligent, and successful woman. Her expertise and guidance have provided me with the skills and confidence to pursue my goals of continued academic research and excellence in the area of adolescent adjustment.

Special thanks go to my committee members, Drs. James Algina, Susan Bluck, and Kenneth Rice. With their help, I have learned the importance of thoroughness and clarity in conducting and reporting scientific research and I truly feel confident in my ability to do so. In particular, I would like to thank Dr. James Algina for the time he has spent helping me refine my statistical skills and applying new statistically methodology to my work.

I would like to extend special thanks to my family. The support and understanding from my parents and grandparents have given me strength and endurance to persevere even when I felt defeated.

Finally, I would like to thank my partner, Armando Padilla, for his continual support and patience, even during the times when I was less than pleasant to be around. I feel lucky to have someone who will continue to support me and all of my goals in the years to come.

## TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS .....	4
LIST OF TABLES .....	7
LIST OF FIGURES .....	8
ABSTRACT.....	9
 CHAPTER	
1 A DEVELOPMENTAL PSYCHOPATHOLOGY PERSPECTIVE OF STRESS AND COPING DURING EARLY ADOLESCENCE.....	11
Gender Differences in Depressive and Aggressive Problems during Adolescence .....	14
Gender and Depression.....	14
Gender and Aggression .....	15
Co-occurrence of Depressive and Aggressive Problems.....	18
Peer Stress and Vulnerabilities to Psychopathology .....	18
Goals and Hypotheses.....	27
Aim 1 .....	27
Aim 2 .....	28
Aim 3 .....	28
2 RESEARCH DESIGN AND METHODS.....	30
Procedure .....	30
Participants .....	31
Measures .....	31
Demographic Data.....	31
Peer Stress .....	32
Responses to Stress.....	33
Engagement and disengagement coping .....	36
Involuntary responses.....	36
Anxiety/Depression .....	37
Indirect Aggression .....	37
Overt Aggression.....	38
Analytic Plan .....	38
Power Analysis and Model Fit .....	39
Aim 1: Tests of Mediation Effects .....	40
Aim 2: Tests of Moderation Effects .....	41
Aim 3: Gender Difference in Moderated Mediation Effects .....	41
3 RESULTS .....	43

Descriptive Analyses .....	43
Tests of Stress Responses as Mediators.....	44
Tests of Moderation of Coping on Stress Responses .....	45
Tests of Moderated Mediation.....	47
Gender Differences in Conditional Indirect Effects.....	48
Indirect effects of peer stress on symptoms of anxiety/depression .....	48
Indirect effects of peer stress on symptoms of indirect aggression.....	49
Indirect effects of peer stress on symptoms of overt aggression.....	49
Summary of Moderated Mediation Findings .....	50
4 DISCUSSION.....	62
Strengths of the Study.....	67
Limitations of the Study .....	68
Implications of the Study.....	69
APPENDIX	
A PARENTAL CONSENT FORM.....	72
B PARENT INTERVIEW.....	74
C PEER STRESS CHECKLIST .....	76
D RESPONSES TO PEER STRESS.....	77
E ANXIETY/DEPRESSION MEASURE .....	80
F INDIRECT AGGRESSION MEASURE .....	81
G OVERT AGGRESSION MEASURE.....	82
LIST OF REFERENCES .....	83
BIOGRAPHICAL SKETCH .....	92

LIST OF TABLES

<u>Table</u>		<u>page</u>
3-1	Means and Standard Deviations of Adolescents' Demographic Information, Stress, Responses to Stress, and Symptoms of Psychopathology .....	52
3-2	Intercorrelations Among Demographic Information, Responses to Stress, and Symptoms of Psychopathology.....	53
3-3	Hierarchical regression analyses testing engagement coping as a moderator .....	54
3-4	Conditional indirect effects of peer stress on symptoms of anxiety/depression.....	55
3-5	Conditional indirect effects of peer stress on symptoms of indirect aggression.....	56

## LIST OF FIGURES

<u>Figure</u>	<u>page</u>
1-1 Moderated mediation model. ....	29
3-1 Mediation models for peer stress to anxiety/depression and indirect aggression.....	58
3-2 The following figures represent the interaction between peer stress engagement coping, when predicting A) disengagement coping and B) involuntary responses.....	59
3-3 Moderated mediation model path diagram. ....	60
3-4 Moderated mediation path diagram for girls and boys separately .....	61

Abstract of Dissertation Presented to the Graduate School  
of the University of Florida in Partial Fulfillment of the  
Requirements for the Degree of Doctor of Philosophy

COPING WITH PEER STRESS: GENDER SPECIFIC AND COMMON PATHWAYS TO  
SYMPTOMS OF PSYCHOPATHOLOGY

By

Lisa Michelle Sontag

May 2009

Chair: Julia A. Graber  
Major: Psychology

This study investigated gender specific versus common pathways to anxious/depressive and aggressive symptoms as a means of determining the comparative importance of peer stress and different coping strategies in relation to symptoms of psychopathology. Participants were recruited from middle schools in Gainesville, FL. Of the students who participated in this study ( $N = 295$ ; 63.7% female;  $M_{age} = 12.39$ ,  $SD = .99$ ), approximately 56% were White, 25% African American, 10% Latino, and 9% other ethnicities. Participants completed in-school surveys that assessed experiences of peer stress, use of coping strategies and involuntary responses to stress, and symptoms of psychopathology. Results suggested that the stress and coping process differed not only by type of psychopathology but also by gender. Differences in the stress and coping process emerged when examining disengagement coping (e.g., avoidance, denial, wishful thinking) as a mediator of the association between peer stress and symptoms of psychopathology. Specifically, disengagement coping mediated the association between peer stress and *anxiety/depression* for girls, whereas disengagement coping mediated the association between peer stress and *overt aggression* for boys. For both girls and boys, peer stress was associated with greater use of disengagement coping to deal with peer stress. Interestingly, for girls,

disengagement coping was associated with an *increased* risk for reporting symptoms of *anxiety/depression*, whereas for boys, disengagement was associated with a *decreased* risk for reporting symptoms of *overt aggression*. Gender differences in the stress and coping process also emerged when examining the role of engagement coping. Specifically, girls who used engagement coping more often demonstrated a weaker association between peer stress and disengagement coping and involuntary responses, which in turn was associated with lower levels of psychopathology; this effect did not emerge for boys. Results from this study, particularly the emergence of gender differences in the effectiveness of coping strategies, support the need for more targeted prevention and intervention programming aimed at reducing the incidence of emotional and behavioral problems during adolescence.

## CHAPTER 1

### A DEVELOPMENTAL PSYCHOPATHOLOGY PERSPECTIVE OF STRESS AND COPING DURING EARLY ADOLESCENCE

Adolescence represents a period for developing skills—interpersonal as well as personal; however, it also represents a period of increased risk for a range of both internalizing and externalizing problems such as depression and aggression (Graber & Sontag, 2009; Farrington, 2004). Some individuals enter adolescence with prior vulnerabilities (i.e., personal traits that put individuals at risk for psychopathology) making it more challenging to adapt effectively to the quickly changing landscape of adolescence (Ingram & Luxton, 2005). As time spent with peers increases during the transition into adolescence, so does the likelihood of experiencing negative peer interactions, such as victimization by peers (via both overt and relational aggression), interpersonal problems with a close friend, or being teased or hassled by one's peers. Based on prior vulnerabilities and prior experiences, adolescents often respond to such negative peer events with a range of reactions—anger, sadness, aggression, emotional suppression, etc. In turn, *how* an adolescent interprets and reacts to these experiences is often associated with the expression of emotional and behavioral problems (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001).

Differentiating who will and who will not develop serious problems, and differentiating normative experience from atypical, are central themes of the field of developmental psychopathology (Graber & Sontag, 2009). In particular, under this rubric, describing pathways both to psychopathology and to normative, healthy, or competent development are essential for understanding etiology and treatment of problems (e.g., Cicchetti & Cohen, 1995; Masten & Curtis, 2000). In fact, it is often emphasized that in order to understand the development of abnormal behavior, one must first understand normative development. As a field, Developmental Psychopathology emphasizes not only the need to examine clinical disorder, but

to also examine the development of sub-clinical levels or symptoms of psychopathology. As symptomatology is often one of the strongest predictors of later clinical disorder, understanding mechanisms of risk for more normative levels of internalizing and externalizing problems may serve to inform about mechanisms of risk for more serious levels of disease.

Models of developmental psychopathology typically focus on the experience of stressful life events as a way of explaining the emergence of abnormal behavior throughout the lifespan (Ingram & Luxton, 2005). It has been widely recognized that increased levels of stress are associated with a host of emotional and behavioral problems for children and adolescents (Cicchetti & Walker, 2001; Grant et al., 2003). Because of the increasing amount of time spent with peers and the importance of close interpersonal relationships during early adolescence, social stress becomes particularly salient as a threat to psychological well-being at this time (La Greca & Harrison, 2005; Rudolph, 2002). Moreover, levels of social stress, specifically in peer relationships, tend to increase from preadolescence to adolescence for both boys and girls, highlighting adolescence as a period of life during which individuals may be at greater risk for developing symptoms of psychopathology. Increased exposure to negative peer events, such as peer rejection and victimization, during childhood and adolescence has been linked to disorders and symptoms of psychopathology, namely anxiety, depression, aggression, and substance use (Coie, Dodge, & Kupersmidt, 1990; Deater-Deckard, 2001; Dodge, Coie, & Lynam, 2006; Hawker & Boulton, 2000; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004). Moreover, such associations may be generalized across adolescents, in that, peer rejection and victimization have been consistently linked to externalizing and internalizing symptoms in White, Hispanic, and African American adolescents (Deater-Deckard, 2001; Khatri, Kupersmidt, & Patterson, 2000; Storch, Nock, Masia-Warner, & Barlas, 2003). However, events in and of themselves

rarely fully explain changes in affect or onset of disorder. Attention must also be given to the inter-play between vulnerability and stress exposure.

The diathesis-stress model predicts that major transitions or stressful events interact with prior vulnerabilities to psychopathology, resulting in increased problems or poor outcomes in the face of these stressors. As indicated, vulnerability, or “diathesis,” refers to predispositional, usually intra-individual, factors that increase an individual’s susceptibility to psychopathology. Vulnerabilities may include such factors as cognitive biases, emotion regulation skills, temperamental tendencies, and physiological responses to stress, that are in part shaped by experience but often become stable during childhood and adolescence (Ingram & Luxton, 2005). Ingram and Luxton (2005) suggest that risk factors (e.g., gender, lower SES, exposure to violence, etc.), which are associated with increased probability of internalizing or externalizing problems but may not clearly be identified as causal, are distinct from vulnerabilities. They further suggest that vulnerabilities must exist prior to the emergence of psychopathology and are typically considered to be part of the individual’s internal states as opposed to external environmental factors (Ingram & Luxton, 2005). Although vulnerabilities to psychopathology are typically in place by adolescence, they differ in the extent to which they are malleable. For example, negative emotionality (a factor of temperament associated with both depression and aggression) emerges as early as infancy and can remain relatively stable throughout the remainder of the lifespan. However, coping strategies (tactics employed to regulate emotional, cognitive, and physiological reactions to stress) have been found to be more dynamic, allowing for the adoption of new strategies as one matures and encounters new experiences and individuals. Given the potential malleability of coping strategies, a better understanding of the stress and coping process during adolescence as it pertains to peer stress is imperative as it may

provide a basis for more targeted prevention and intervention programming to reduce the incidence of depression and aggression problems.

### **Gender Differences in Depressive and Aggressive Problems during Adolescence**

Rates of internalizing and externalizing problems increase dramatically during early adolescence. Research indicates that gender differences in depression begin to emerge during adolescence such that girls report depressive symptoms at higher rates than boys (Graber & Sontag, 2009). In contrast, recent studies continue to demonstrate that gender differences in aggression are apparent during childhood such that boys tend to exhibit higher rates of aggression and conduct problems than girls; however, during the entry into adolescence, gender differences begin to narrow (Nichols, Graber, Brooks-Gunn, & Botvin, 2006). The differences seen in how gender influences the developmental trajectories of depression and aggression suggest that emotional and behavioral problems vary by gender in important ways during adolescence; in turn, a better understanding of the development of depressive and aggressive problems during adolescence and what mechanisms underlie these changes must consider the influence of gender.

### **Gender and Depression**

Internalizing problems are generally considered to be the subgroup of psychopathology that involve disturbances in emotion or mood and affect the individual's internal psychological environment, rather than the external world (Graber & Sontag, 2009; Liu, 2004). However, most discussions of internalizing symptoms or disorders during adolescence focus on depressive symptoms or Major Depressive Disorder (MDD), as this is the most commonly diagnosed mood disorder in childhood and adolescence. Typically, point prevalence rates of MDD have ranged from 0.4% to 8.3% among adolescents (Birmaher et al., 1996). Estimates of lifetime prevalence for MDD among children and adolescents range from 4%-25% (Kessler, Avenevoli, &

Merikangas, 2001) but have been found to range from 15%-20% for adolescents specifically (Birmaher et al., 1996; Lewinsohn & Essau, 2002). Community epidemiologic surveys of self-reported depressive symptoms have found that between 20% and 50% of individuals between the ages of 11 and 18 years exceed cut off points for clinically significant depression (Kessler, Avenevoli, & Merikangas, 2001). Most studies examining depression in childhood find no gender differences prior to adolescence, but by mid-adolescence, the gender difference in depression is at the adult rate of 2:1 for girls to boys (Costello, Foley, & Angold, 2006). In recent years, research has turned to examining gender differences in vulnerabilities to depression as a means of understanding why rates of depression begin to differ so dramatically during adolescence for girls and boys (Hyde, Mezulis, & Abramson, 2008); however, this research is still sparse and the majority of these studies tend to focus on specific risk factors (e.g., ruminative tendencies) rather than examining a broader spectrum of interrelating vulnerabilities. Hence, further research examining the mechanisms that underlie the gender difference in depression that emerges during adolescence is needed.

### **Gender and Aggression**

In contrast to internalizing behaviors which, as discussed previously, more centrally affect the individual's internal psychological environment, the construct of externalizing behavior generally refers to a grouping of behaviors that are manifested in children and adolescents' outward behavior and reflect the individual acting negatively on the *external* environment (Liu, 2004; Eisenberg, Fabes, Guthrie, & Murphy, 1996). Although externalizing disorders typically consist of disruptive, hyperactive, and aggressive behaviors, discussions of externalizing problems often focus mostly on aggressive behaviors or disorders (i.e., conduct disorder and oppositional defiant disorder).

The term aggression is commonly applied to behavior that is aimed at harming or injuring another person or persons (Dodge et al., 2006). Under the umbrella term “aggression,” researchers often focus on subtypes of aggressive behavior. The most common types discussed are overt aggression and indirect aggression. Overt aggression often refers to behaviors intended to harm an individual through direct means (e.g., physical and verbal assault). In contrast, indirect aggression (also referred to as social or relational aggression) inflicts harm by damaging one’s social reputation (e.g., spreading rumors about others or excluding others from social groups). However, as demonstrated by the dearth of studies examining the distinction between different types of aggression (e.g., proactive versus reactive, relational versus overt; Raine, et al., 2006), the term often suffers from definitional ambiguity. Hence, exact prevalence rates of aggressive problems are difficult to establish due to methodological and definitional inconsistencies (Loeber, Burke, Lahey, Winters, & Zera, 2000). Regardless, it is widely known that externalizing problems are one of the most frequently occurring childhood and adolescent difficulties (Loeber et al., 2000). Epidemiological studies of community samples estimate prevalence rates of oppositional defiant disorder (ODD) and conduct disorder (CD) to range between 1 and 16% (Breton et al., 1999; Costello et al., 2006; Loeber et al., 2000). Retrospective reports from a nationally representative sample of U.S. adults suggest a lifetime prevalence of ODD during childhood and adolescence of 10.2% (Nock et al., 2007). An increasing prevalence of CD with age is often reported for both girls and boys (Wicks-Nelson & Israel, 2008); however, this trend has not always been supported (Loeber et al., 2000).

Studies have consistently shown significant gender differences in rates of externalizing problems. Epidemiological studies examining externalizing disorders estimate that CD is diagnosed in boys 3 to 4 times as often as in girls (Loeber et al., 2000). Although boys are

consistently diagnosed with CD more often than girls, studies suggest that the gender difference narrows temporarily in mid-adolescence. Aggression research has demonstrated that gender differences in overt and physical aggression begin to emerge as early as 3 years of age and tend to persist through adolescence, such that boys tend to exhibit overt and physical aggression more often than girls (Dodge, et al., 2006). However, recent research examining gender differences in overt aggression has found that, compared to boys, girls reported a greater increase in the level of aggression from 6<sup>th</sup> grade to 7<sup>th</sup> grade, suggesting that the gender gap exhibited in childhood may decrease after the transition into adolescence (Nichols et al., 2006). Nichols and colleagues (2006) suggested that changing social norms may account for the increase in overt aggression in girls.

Researchers examining gender differences in aggression have asserted that indirect aggression may be more common among girls than boys (e.g., Crick & Bigbee, 1998; Underwood, 2003). However, although research has demonstrated that girls on average typically engage in relational aggression more often than overt aggression, there is not a definitive answer as to whether or not girls engage in relational or social aggression more than boys (Card, Stucky, Sawalani, & Little, 2008, and Dodge et al., 2006, for recent reviews). Specific tests of gender differences in the effects of vulnerability, risk, and protective factors on the development of aggression or conduct problems have not been conducted extensively. In one of the few studies to test this issue, Moffitt and colleagues (2001) did not find substantial differences in the risk factors for these problems between girls and boys, indicating that underlying developmental processes may be similar. Again, however, the differences in vulnerability have largely not been explored. Hence, further exploration of whether risk factors or mechanisms underlying gender differences in externalizing problems are needed.

## **Co-occurrence of Depressive and Aggressive Problems**

Although much of the literature examining psychopathology dichotomizes problems into internalizing and externalizing behaviors, this dichotomy is not without its limitations. Internalizing problems are often highly correlated with externalizing problems during adolescence (e.g., Krueger, Caspi, Moffitt, & Silva, 1998) and nearly half, or even two-thirds, of all adolescents who meet diagnostic criteria for depression have a comorbid condition (Rohde, Lewinsohn, & Seeley, 1991). The co-occurrence of depressive and aggressive problems is likely related to difficulty with adhering to the affect versus behavior distinction between internalizing and externalizing, especially when considering such emotional experiences as anxiety and anger. For example, research has shown that children and adolescents exhibiting symptoms of depression also experience intense feelings of anger in response to negative experiences (Quiggle, Garber, Panak, & Dodge, 1992). Similarly, adolescents displaying aggressive and delinquent behaviors often suffer from emotional problems (e.g., sadness, loneliness; Prinstein, Boergers, & Vernberg, 2001). Given that depression and aggression exhibit differences in trajectories (i.e., gender differences become greater for depression, whereas gender differences for aggression narrow) while demonstrating similarities in emotional processes, understanding the mechanisms that underlie these potential differences *and* commonalities in developmental pathways is needed.

## **Peer Stress and Vulnerabilities to Psychopathology**

As not all adolescents who experience challenge or stress develop symptoms of psychopathology, particular individual characteristics, skill deficits, and capacities, that is, vulnerabilities, have been identified that interact with stress increasing the likelihood of psychopathology. A well-documented literature demonstrates that cognitive vulnerabilities, temperament, and emotion regulation skills consistently differentiate youth with versus without

disorders and those with elevated versus average levels of depressive or aggressive symptoms (Chaplin & Cole, 2005; Dodge et al., 2006; Kaslow, Adamson, & Collins, 2000; Rothbart & Bates, 2006). Within the developmental psychopathology field, research has consistently demonstrated that an individual's way of attending to, interpreting, and remembering negative events confers vulnerability for the development of psychopathology in the presence of negative life events (Gibb & Coles, 2005). For example, studies have shown that rumination, a specific form of attentional bias that involves repetitive and cyclical thoughts about negative experiences or negative feelings, increases risk for depressive symptoms by augmenting accessibility and recall of negative events and negative feelings associated with the event, focusing attention on negative aspects of the self, and increasing the likelihood that the individual's perceived threat of the experience becomes heightened (Hankin & Abramson, 2001; Nolen-Hoeksema, 2000). Other studies examining cognitive vulnerabilities to aggressive behavior have indicated that individuals with hostile attribution biases (i.e., selectively attending to hostile features of others' behaviors regardless of the intent of others) are at greater risk for reacting aggressively to both stressful and benign situations (Crick & Dodge, 1994; Dodge et al., 2006).

In addition to cognitive vulnerabilities, research has shown that emotion regulation skills and deficits may either buffer against the negative effects of stress or may increase the risk for symptoms of psychopathology, respectively. Healthy emotion regulation patterns are characterized as flexible, allowing a person to access the full range of emotions yet modify the expression or even experience of emotions to be congruent with the social expectations of the environmental context (Chaplin & Cole, 2005). Emotion regulation deficits that are often associated with psychopathology involve poorly regulated responses, such as overwhelming emotion, restricted emotion, inappropriate affect, and poorly timed or attuned emotion.

Studies have shown that under-regulation of angry emotions is most often associated with externalizing problems, particularly aggression (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002; Keltner, Moffitt, & Stouthamer-Loeber, 1995), whereas overregulation of angry emotions and suppression of angry feelings is associated with internalizing problems (Zahn-Waxler, 2001). Recent studies examining emotion regulation skills and symptoms of psychopathology found that children with externalizing problems, compared to non-disordered children, were low in effortful regulation and high in impulsivity, whereas children with internalizing problems, compared to non-disorder children, were low in impulsivity but not effortful control (Eisenberg et al., 2005).

Research has also consistently demonstrated a direct link between temperament (i.e., individual differences in reactivity and self-regulation in the domains of affect, activity and attention) and symptoms of psychopathology (Rothbart & Bates, 2006). A large number of studies have found that negative emotionality and impulse control predict aggressive behaviors among children and adolescents (Eisenberg et al., 1996; Stice & Gonzales, 1998), whereas negative emotionality and fearfulness often predict depressive symptoms (Gilliom & Shaw, 2004). Additionally, prospective studies have found that individuals who were inhibited or over-controlled during early childhood had higher rates of depression during adolescence or adulthood, whereas those children with uninhibited and under-controlled temperament profiles had higher rates of aggression in adolescence and adulthood (Caspi, Moffit, Newman, & Silva, 1996; Farrington, 2004; Kagan & Fox, 2006).

Although research on cognitive biases, emotion regulation, and temperament as vulnerabilities to psychopathology has drawn a great deal of attention individually, there exists a large degree of overlap among these areas. Examination of theory and research on these

vulnerabilities as factors influencing adaptation to negative life experiences suggests that these personal qualities and processes converge within an individual's manner of coping with negative life experiences. Lazarus and Folkman (1984) define coping as an effort to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person. The stress and coping process has long been conceptualized as a dynamic, transactional process, involving appraisals of a stressful event, emotional, cognitive, and physiological arousal, and subsequent coping behaviors or strategies aimed at alleviating the stressful experience (Compas et al., 2001; Gould, Hussong, & Keeley, 2008; Somerfield & McCrae, 2000). Recently, researchers and theorists have emphasized that examinations of responses to stress should include both *involuntary* and *voluntary/active* responses to stressful experiences, suggesting that including both aspects presents a more holistic picture of how individuals experience or respond to stress (Compas et al., 2001; Gould et al., 2008; Somerfield & McCrae, 2000). In general, involuntary responses may include temperamentally based and conditioned cognitive, behavioral, emotional and physiological reactions to stress that may or may not be within conscious awareness and are not under personal control, such as physiological arousal, intrusive thoughts, and rumination. In contrast, voluntary responses to stress, more traditionally referred to as coping strategies, include behaviors aimed at ameliorating the negative experience or strategies used to manage negative emotions, negative or inappropriate cognitions, or other involuntary responses elicited by the negative experience.

Although there exist many taxonomies of coping strategies, a consistent theme across the literature focuses on the distinction between *engagement* or *disengagement* strategies (Compas et al., 2001; Rudolph, Dennig, & Weisz, 1995). Traditionally, the engagement (i.e., approach) versus disengagement (i.e., avoidance) dichotomy is shorthand for the cognitive and emotional

activity that is oriented either toward or away from the threatening or stressful experiences (Roth & Cohen, 1986). In a more recent conceptualization of this dichotomy, Compas and colleagues (2001) have proposed that both coping strategies (i.e., volitional or voluntary strategies) and involuntary responses to stress can qualify as either *engagement* or *disengagement*. Responses to stress that qualify as *engagement* are directed at the stressor or stressful experience, and are often intended to influence or change the condition of the stressor or the emotions and cognitions about the stressor (e.g., problem solving, emotional expression, rumination, etc.). In contrast, *disengagement* refers to responses that are oriented away from the stressor or one's reaction to the stressful experience (e.g., denial, wishful thinking, cognitive numbing, etc.). Many researchers further differentiate voluntary engagement responses (i.e., coping strategies) into two distinct subtypes of coping strategies: *primary control* and *secondary control* strategies (Compas, Connor, Saltzman, Harding, & Wadsworth, 1999; Rudolph et al., 1995). Primary control strategies are aimed at maintaining or enhancing a sense of personal control over the stressor and/or one's emotions (Compas et al., 1999); example strategies include problem solving, emotional expression, and emotion regulation. In contrast, secondary control responses are intended to gain control indirectly by accommodating or adapting to the stressful event or context and include strategies such as acceptance, positive thinking, and cognitive restructuring (Compas et al., 1999).

Studies have consistently shown that the manner in which individuals respond to stress is associated with symptoms of psychopathology (Compas et al., 2001; Tolan, Gorman-Smith, Henry, Chung, & Hunt, 2002). As indicated previously, negative emotionality and poor impulse control, which are typically considered to be involuntary temperamentally based responses to stress, have been shown to predict aggressive behaviors among children and adolescents

(Eisenberg et al., 1996; Stice & Gonzales, 1998), whereas rumination (a cognitively based involuntary response) has been shown to increase risk for depressive symptoms (Hankin & Abramson, 2001; Nolen-Hoeksema, 2000). With respect to voluntary responses to stress or coping strategies, several general findings have emerged. Research has shown that engagement or approach strategies tend to predict lower levels of psychopathology (Blalock & Joiner, 2000; Calvete & Connor-Smith, 2006; Sontag, Graber, Brooks-Gunn, & Warren, 2008), whereas disengagement (avoidant) strategies have been shown to predict higher levels of psychopathology (Calvete & Connor-Smith, 2006; Compas et al., 2001; Connor-Smith & Compas, 2002).

In the past couple of decades, stress and coping research has extended beyond direct associations between coping and adjustment, and has considered how coping resources act to buffer the impact of stress. Typically, the stress-buffering model is investigated or conceptualized as an interactive moderating model, such that more frequent use of adaptive coping strategies reduces the strength of the relationship between stress and symptoms of psychopathology (Sandler, Tein, & West, 1994; Wheaton, 1985). Presently, there exists a great amount of support that suggests that the utilization of engagement or approach strategies such as problem solving, positive thinking, constructive emotional expression, which are used to control ineffective response tendencies and reduce emotional and physiological arousal, buffer against the negative effects of stress on adjustment (Compas et al., 2001; Connor-Smith & Compas, 2004; Sontag et al., 2008). Much of the research examining engagement coping as a moderator has focused on the buffering effects on the stress and psychopathology link; however, it is more plausible that the use of engagement or approach strategies, which are used to control ineffective

response tendencies and reduce emotional and physiological arousal, buffer the link between stress and maladaptive responses instead.

Additionally, there exists some support that disengagement coping, such as avoidance, denial, and wishful thinking, serve to accentuate the association between stress and maladjustment (Connor-Smith & Compas, 2004). That is, it is likely that disengagement strategies (i.e., denial, wishful thinking, avoidance) may be counterproductive, perpetuating and exacerbating the negative emotions and heightening the negative experience and ultimately increasing the risk for developing symptoms of psychology (Jaser et al., 2005; Wadsworth, Raviv, Compas, & Connor-Smith, 2005). However, based on conceptual and empirical support, it is more likely that disengagement strategies impact the stress and maladjustment link via mediating effects. Wheaton (1985) and others have argued that, in addition to the moderating effects of coping, certain coping strategies or responses to stress may serve as a mediators of the stress and maladjustment link, such that stress mobilizes the coping strategies or stress responses, in turn dampening or amplifying the overall effect of stress on symptoms of psychopathology. This stress and coping model seems particularly salient to disengagement strategies and involuntary responses, as both are often immediate, non-meditated responses to stress exposure and are likely caused by the stressful experience itself. Recent empirical work supports a mediation model for disengagement strategies, finding that stress exposure is associated with greater use of disengagement strategies, which in turn are associated with greater symptoms of psychopathology (Calvete, Corral, & Estevez, 2008; Dempsey, 2002; Jose & Huntsinger, 2005; Sandler et al., 1994; Wadsworth & Compas, 2002). Similarly, it would be expected that involuntary responses, such as rumination, physiological arousal, and cognitive numbing, amplify the association between stress and symptoms of psychopathology via mediation effects.

Hence, although engagement strategies likely buffer against the negative effects of stress exposure, disengagement coping and involuntary responses may actually account for the relationship between stress and symptoms of psychopathology via indirect effects.

As mentioned previously, gender differences in rates of psychopathology begin to change during adolescence (i.e., gender differences in depression increase, whereas differences in aggression seem to decrease); changes in trajectories may be partly attributed to differences in stress exposure and reactivity. Overall, levels of interpersonal stress tend to increase from preadolescence to adolescence for both girls and boys; however, gender differences in levels of interpersonal stress typically begin to emerge during early adolescence with girls reporting higher levels of stress (Brooks-Gunn, 1991; Ge, Conger, & Elder, 2001; Rudolph & Hammen 1999). Because of girls' tendencies to rely heavily on peers for emotional support and intimacy, interpersonal stress is found to be more strongly related to depression for girls than boys (Hankin, Mermelstein, & Roesch, 2007; Rudolph & Hammen, 1999; Rudolph, 2002).

Differences in stress reactivity and depression have partly been attributed to gender differences in cognitive biases and coping strategies. Although some inconsistencies in gender differences in coping strategies exist in the literature, several consistent findings have emerged. Specifically, research has shown that girls are more likely to endorse ruminative responses and seek social support in response to stress, whereas boys are more likely to employ avoidant coping strategies (Hampel & Petermann, 2006; Eschenbeck, Kohlmann, & Lohaus, 2007; Nolen-Hoeksema, 1994; Petersen, Sarigiani, & Kennedy, 1991). Interestingly, in one study, gender differences in the use of certain coping strategies were stronger when in response to a social stressor compared to an academic stressor (Eschenbeck et al., 2007). Some studies have suggested that boys utilize problem solving strategies more often (Frydenberg & Lewis, 1991); however, other studies have

found no gender differences or even suggest that girls employ problem solving strategies more often (Eschenbeck et al., 2007; Williams, & McGillicuddy-DeLisi, 2000).

Although it is clear that gender differences in the use of certain coping strategies exists, it is only recently that researchers have begun to examine how these gender differences in coping impact the development of psychopathology. Studies examining the association between coping and adjustment have begun to demonstrate that gender moderates the impact of certain coping strategies on the development of symptoms of psychopathology. For instance, one study examining the effectiveness of engagement coping (e.g., emotional expression, seeking social support, problem solving) found that, for girls, engagement coping buffered against the negative effects of family stress on conduct problems; this effect did not emerge for boys. (Gonzales, Tein, Sandler, & Friedman, 2001). However, findings on gender differences in the effectiveness of engagement coping have been inconsistent. For example, another study examining the effectiveness of engagement coping found that the use of engagement coping was unrelated to peer-related withdrawal for boys, whereas for girls, greater use of engagement strategies was associated with higher peer-related withdrawal. It is worth noting, however, that these findings were contrary to the original hypotheses (Sandstrom, 2004). Recent studies examining the effectiveness of disengagement (i.e., avoidant) coping in response to peer victimization have demonstrated that strategies such as denial and avoidance may provide some protective benefits for boys, reducing the risk for low peer regard, whereas it may increase risk for loneliness and social problems for girls (Kochenderfer-Ladd & Skinner, 2002).

As suggested by these studies, the effectiveness of certain coping strategies may differ between girls and boys; however, only a small number of empirical studies exist that have examined whether gender differences in coping strategies account for gender differences in

associations between peer stress and psychopathology. Moreover, even fewer studies have focused specifically on whether or not gender differences in coping account for associations between peer stress and symptoms of psychopathology.

### **Goals and Hypotheses**

Although an extensive literature on the impact of negative peer experiences and vulnerabilities to psychopathology exists for both depression and aggression, independently, few studies have integrated these areas of research to highlight specific pathways of vulnerabilities and risk in the face of peer stress. Furthermore, virtually no studies have examined whether gender differences exist in these processes for both depression and aggression. Hence, the current study investigated whether unique patterns of vulnerabilities to peer stress are associated with anxious/depressive versus aggressive symptoms. Moreover, gender specific versus common pathways to anxious/depressive and aggressive symptoms were tested to determine the comparative importance of peer stress and different coping strategies in relation to symptoms of psychopathology. The specific aims of this study were as follows:

#### **Aim 1**

The first aim of the study was to determine whether responses to stress mediate the association between peer stress and symptoms of psychopathology. Based, on prior findings, it was expected that disengagement coping and involuntary responses would serve as mediators. Specifically, it was expected that higher levels of peer stress would be associated with greater use of disengagement coping (e.g., avoidance, denial, wishful thinking) and greater experience of involuntary responses (e.g., rumination, physiological arousal, cognitive numbing), which in turn would be associated with greater symptoms of psychopathology.

## **Aim 2**

The second aim of the study was to determine whether engagement coping (e.g., problem solving, emotion regulation, emotional expression) moderates the association between peer stress and the mediators, disengagement coping and involuntary responses. As indicated previously, engagement coping strategies are directed at the stressor or stressful experience, and are often intended to influence or change the condition of the stressor or the emotions and cognitions about the stressor (Compas et al., 2001). Hence, it was hypothesized that greater use of engagement coping buffers the association between peer stress and maladaptive responses to stress by dealing with the stressor before these maladaptive responses emerge. In combination, the hypotheses from Aim 1 and Aim 2 suggest a moderated mediation effect when examining the association between peer stress and symptoms of psychopathology, such that the mediation effects hypothesized in Aim 1 should be conditional upon the level of engagement coping. See Figure 1-1 for a representation of the moderated mediation model.

## **Aim 3**

The third aim of the study was to examine whether the moderated mediation effects differ by gender. Generally, it was hypothesized that participants who used engagement coping more often would demonstrate a small indirect effect because of the reduced association between peer stress and the mediators (i.e., disengagement coping and involuntary responses). Because previous studies have provided mixed support as to whether gender differences in the use of engagement strategies exist (e.g., Li et al., 2006; Sandstrom, 2004; Williams et al., 2000), analyses of gender differences in moderation effects were exploratory. Based on prior research suggesting greater use of disengagement strategies by boys, it was hypothesized that disengagement strategies would serve as a stronger mediator between stress and psychopathology for boys compared to girls. Aside from research indicating that girls engage in

ruminative responses to stress more often than boys (Hankin & Abramson, 2001; Nolen-  
 Hoeksema, 2000), there is mixed support as to whether gender differences in involuntary  
 responses to stress (e.g., physiological arousal, cognitive numbing, involuntary fleeing) exist  
 (Crozier et al., 2008; Kirschbaum, & Hellhammer, 1994; Schippell, Vasey, Cravens-Brown, &  
 Bretveld, 2003); hence, analyses of gender differences in the role of involuntary responses in the  
 stress and coping process were exploratory.

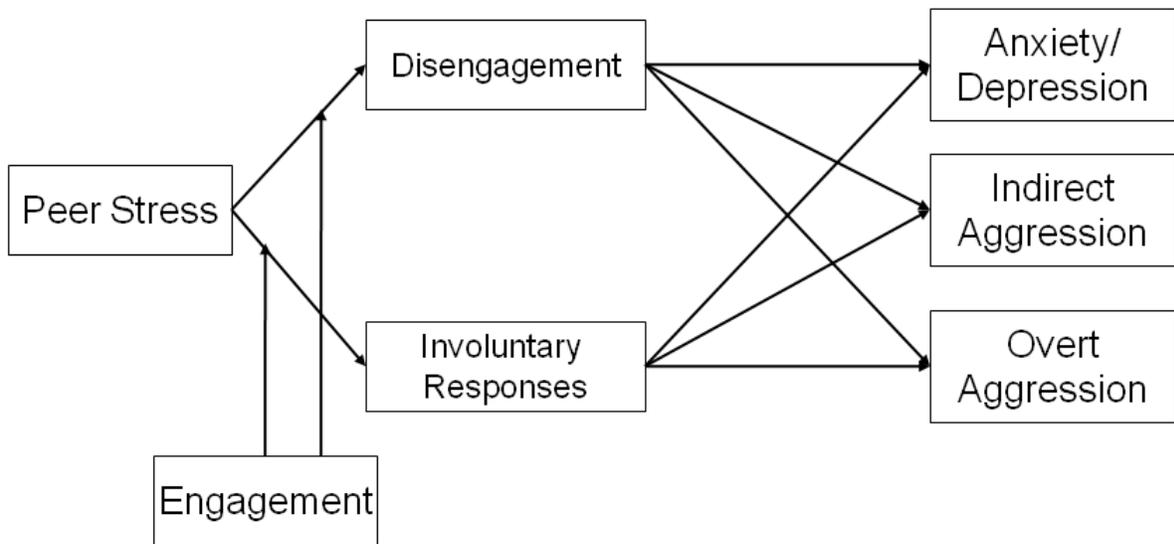


Figure 1-1. Moderated mediation model. The effect of peer stress on disengagement and  
 involuntary responses was assumed to be moderated by engagement, while  
 disengagement and involuntary responses were assumed to linearly predict symptoms  
 of anxiety/depression, indirect aggression, and overt aggression.

## CHAPTER 2 RESEARCH DESIGN AND METHODS

### **Procedure**

The current study is derived from a larger study, the Adolescent Peer Experiences (APEX) study, which investigated the impact of positive and negative peer experiences on the behavioral and psychosocial well-being of young adolescents. In order to recruit a sample of young adolescent participants comparable to the general public school population of Gainesville, FL (approximately 58% White, 32% African American, 5% Latino, and 5% other ethnicities), public middle schools in the area with an ethnically diverse student body of 300 students or more were contacted. Ultimately, two of the largest schools in the area accepted our proposal to recruit participants.

A team of trained graduate and undergraduate data collectors presented a brief synopsis of the study to all of the students (approximately 1100 students) in the 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grades in each of the two schools in their respective homeroom classes. Consent forms were passed out in multiple waves to the students to maximize the probability of students bringing consent forms home and giving them to their parents. Because of this method of distributing consent forms, a precise count of how many parents received consent forms at home could not be established. However, approximately 39% (N = 430) were returned, and of those students who returned their consent forms 83% (N = 357) provided parental consent. Ultimately, 92% (N = 327) of those students with parental consent agreed to participate in the study.

Each student who returned a form, regardless of consent decision, received a snack in class (e.g., small bag of chips, candy, trail mix, etc.). Upon receipt of parental consent, data collectors returned to the schools to administer the APEX surveys to participants during their homeroom or lunch periods. Surveys assessed psychosocial well-being, stressful peer experiences, and

responses to stress. Parents were also asked to provide consent for their own participation in a brief phone interview that was conducted at a time of the parent's choosing (usually in the evening). During the interview, the parent or guardian would respond to family background questions. A copy of all measures utilized in the proposed study can be found in the appendix. Procedures were approved by the IRB of the University of Florida.

### **Participants**

From the 327 middle school students who agreed to participate in the study, a total of 295 (63.7% female;  $M_{age} = 12.39$ ,  $SD = .99$ ) students were utilized in the analyses. A decision was made to exclude participants whose data were inadequate for inclusion. Specifically, participants were excluded if their data appeared falsified (e.g., students circled the same number for an entire measure even when items were reverse scored), if their data indicated a misunderstanding of the directions, or if they did not complete a student survey but had a complete parent interview. Of the students who were used in the current study, approximately 42% were in the 6<sup>th</sup> grade, 34% in the 7<sup>th</sup> grade, and 24 % in the 8<sup>th</sup> grade. As anticipated, the sample for the APEX study generally reflected the racial/ethnic make-up of the public school population, with 56% of participants reporting White, 25% African American, 10% Latino, and 9% other ethnicities.

### **Measures**

#### **Demographic Data**

Adolescents reported their gender, ethnicity, and age. During the phone interviews (Appendix A), parents verified participants' age, ethnicity, and eligibility for free or reduced-priced lunch. For regression analyses, a dichotomous minority variable (White vs. other) was used. The decision to examine the effects of minority status rather than ethnic group membership was based on several issues. First, the number of participants of Latino background ( $N = 29$ ) or other ethnicities ( $N = 26$ ) was insufficient for use in regression analyses due to power

issues. Second, due to the ethnic make-up of the schools and general community (with white as the majority), minority status was thought to be a more valid grouping variable rather than African American versus other. Third, preliminary analyses indicated similar levels of responses to stress and symptoms of psychopathology among the minority participants compared to white participants.

In addition, parents reported on their own and their spouses' education, occupation, and employment status. Family socioeconomic status (SES) was scored using the standard protocol for the Hollingshead Scale (Hollingshead, 1975). The range of possible scores for family SES was 8 to 66. This sample had an average SES score of 43.4 ( $SD = 14.00$ ), which equated to an average education of some college or a bachelor's degree and employment as clerical workers, sales workers, owners of small businesses or semi-professionals. As is often the case, effects of socioeconomic status on adjustment become more pronounced below certain thresholds (e.g., poverty lines). That is, there may be something qualitatively different about the experiences of children and adolescents from low SES backgrounds compared to those from middle to higher level SES backgrounds. For this reason, a dichotomous low SES variable was calculated from the continuous SES variable. Participants whose SES was 1 standard deviation below the mean for the sample were categorized as low SES versus all other participants; the low SES group comprised 15% of the sample. The dichotomous SES variable (low versus other) was used in subsequent analyses.

### **Peer Stress**

Participants completed the stressful events checklist in the Responses to Stress Questionnaire (RSQ; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). The negative peer events checklist asked participants to indicate if they had experienced each of 9 stressful events ( $\alpha = .78$ ) since the start of the school year (1 = yes, 0 = no). Example events

included being teased or hassled by other kids, having someone stop being your friend, and being left out or rejected. In addition to the checklist, participants responded to an appraisal question for each item endorsed in the checklist; the appraisal question asked how stressful the problem was (0 = not at all, to 3 = very). See Appendix B for a complete list of questions.

As mentioned previously, stress occurs when the relationship between a person and the environment is perceived as taxing or exceeding the resources of the individual and endangers the individual's well-being (Lazarus & Folkman, 1984). It can thereby be assumed that the cognitive appraisal of stress is what determines the level of distress that is to be experienced and explains why a particular situation may be stressful to one person but not another. That is, if an adolescent experiences negative peer events but does not perceive them as stressful, it may not be appropriate to classify those experiences as "stress." Despite the level of importance the adult stress and coping literature has placed on appraisal, much of the research on stressful events during adolescence fails to incorporate an appraisal component in the measurement of stress. Only recently have child and adolescent researchers begun to discuss the importance of appraisal when considering the impact of negative events on symptoms of psychopathology (Grant & McMahon, 2005). Hence, in order to calculate a score of overall peer stress, and not just the experience of negative events, a total peer stress score was calculated by weighting each checklist item by the corresponding appraisal score for that item and then summing each weighted checklist item to create a total peer stress score ranging from 0 to 27

(i.e.,  $\Sigma_{\text{peer stress}} = \text{checklist item} \times \text{appraisal score}$ ).

### **Responses to Stress**

For the purposes of this project, a slightly shorter form (38 items) of the RSQ (Connor-Smith et al., 2000) was used to assess both voluntary (i.e., coping strategies) and involuntary responses to stress (Appendix C). The present form contained the same scales but fewer items

per scale and has been used in prior research (Sontag et al., 2008). Importantly, unlike many studies examining stress and coping during adolescence, all of the items in this version of the RSQ directly assess responses to stressful *peer* events, rather than responses to a broad range of stressful events. This allows for exploration of the stress and coping process that is specific to peer relations. The RSQ has been previously tested using a sample of adolescents and their parents (Connor-Smith et al., 2000). The original form of the peer relations RSQ (Connor-Smith et al., 2000) contains five stress response subscales: primary control, secondary control, disengagement coping, involuntary engagement, and involuntary disengagement. As described previously, *primary control* strategies are voluntary engagement responses to stress that include emotional expression, emotional regulation, and problem solving. *Secondary control* strategies are voluntary engagement responses that include acceptance, positive thinking, and cognitive restructuring. *Disengagement* strategies are voluntary or volitional acts of denial, avoidance, and wishful thinking. Finally, *involuntary engagement* includes impulsive action, physiological arousal, and intrusive thoughts or rumination, whereas *involuntary disengagement* includes inaction, emotional and cognitive numbing, and involuntary avoidance or fleeing. Studies using the peer relations RSQ and other forms of the RSQ have demonstrated not only adequate to excellent internal consistency for each subscale, but also that coping subscales mapped onto other standard measures of coping quite clearly (Connor-Smith, et al., 2000; Wadsworth et al., 2005).

Because a shortened version of the RSQ was utilized for this study and because initial scoring indicated high correlations among the five subscales, preliminary exploratory factor analyses were conducted as a means of discerning the appropriate number of subscales and division of items in this study. Initially, a principal components analysis was conducted on the

38 items included in this study. Although prior studies using the RSQ (Connor-Smith et al., 2000; Wadsworth et al., 2005) have suggested the use of 5 factors (primary control, secondary control, disengagement, involuntary engagement, and involuntary disengagement), the scree plot showed a marked decline between 3 and 4 factors. For this reason, a 5-component, 4-component, and 3-component solution were tested using oblique varimax rotation. The 4-component solution produced the most parsimonious solution, which accounted for 44.23% of the variance. Examination of the factor loadings demonstrated that only two items loaded onto a fourth factor, suggesting that they did not tap into the core subscales. These items were “I don’t feel anything at all; it’s like I have no feelings” from the involuntary disengagement subscale and “I just take things as they are, I go with the flow” from the secondary control subscale. The wording of these items suggests that participants may not have interpreted the entirety of the item, resulting in a poorly discriminating item; for this reason, these two items were removed from the analyses. Once the two items were removed, a 4-factor solution was tested again using an oblique varimax rotation, which accounted for 45.66% of the variance. Items assessing primary control and secondary control clearly loaded onto a single factor (loadings ranged from .48 to .69), and items assessing disengagement loaded onto a second factor (loadings ranged from .39 to .63). The results corroborate findings from other studies (Connor-Smith et al., 2000; Wadsworth, Raviv, Compas, & Connor-Smith, 2005) that suggest primary and secondary control coping converge on a higher order engagement latent construct and that disengagement coping stands alone as its own factor. The remaining two factors from the factor analysis consisted of items from the involuntary engagement and involuntary disengagement subscales; however, the item division between the two factors did not map directly onto the two subscales. Because nothing from the factor analysis indicated how items from involuntary engagement and

involuntary disengagement subscales divide, results suggest that these subscales converge on a higher order latent construct representing involuntary responses. This notion is in line with previous studies that have found that involuntary engagement and involuntary disengagement converge on a higher order latent construct (Connor-Smith et al., 2000). For these reasons, three subscales (engagement coping, disengagement coping, and involuntary responses) were scored and used in the analyses for this study.

### **Engagement and disengagement coping**

Engagement and disengagement coping, which represent active or voluntary strategies used to manage stressful experiences, were assessed using items from the reduced RSQ (Connor-Smith et al., 2000) as used in the APEX study. Participants rated items on a likert scale (1 = not at all, to 4 = a lot).

The engagement coping subscale ( $\alpha = .83$ ) included 10 items that assessed emotional expression, emotional regulation, problem solving, acceptance, positive thinking, and cognitive restructuring. Example items included “I try to think of different ways to change the problem or fix the situation” and “I tell myself that everything will be all right.” The disengagement coping subscale ( $\alpha = .78$ ) contained 9 items (e.g., “I try to stay away from people and things that make me feel upset or remind me of the problem” and “when I’m around other people, I act like the problems never happened”). Scores for both subscales were calculated as means, with higher scores on each subscale reflecting more frequent use of the strategy in the face of peer stress.

### **Involuntary responses**

Involuntary responses, which represent responses to stress such as impulsive action, physiological arousal, intrusive thoughts, rumination, inaction, emotional and cognitive numbing, and involuntary avoidance or fleeing, were assessed using 14 items. Example items included “I feel it in my body...my heart racing, my breathing speeding up, feeling sweaty or

hot, or my muscles getting tight” and “I try not to feel anything.” The Chronbach’s alpha for the involuntary responses subscale was .87. Again, scores for the subscale were calculated as means, with higher scores indicating that participants were more likely to experience involuntary responses in the face of peer stress.

### **Anxiety/Depression**

Symptoms of anxiety/depression were assessed using the anxiety/depression syndrome subscale of the Youth Self Report (YSR; Achenbach, 2001). Participants were asked to report on behavior within the past 6 months and rated items on a likert scale (0 = not true, to 2 = very true or often true). Scores for the anxiety/depression subscale, which contained 12 items, demonstrated high reliability ( $\alpha = .84$ ) and were calculated as sum scores (Appendix D). Higher scores indicate more symptoms of anxiety/depression. This measure is commonly used with both clinical and non-clinical populations of youth in this age range and reliably distinguishes referred from non-referred adolescents across multiple cultures and nations (Ivanova et al., 2007).

### **Indirect Aggression**

Indirect aggression was measured using 7 items from the Revised Peer Experiences Questionnaire (RPEQ; Prinstein et al., 2001) that assessed aggressive acts aimed at hurting others indirectly by damaging their social relationships or reputations. Participants were asked to indicate how often they had performed each aggressive act. Items measuring indirect aggression included “I said mean things about someone so that people would think he/she was a loser” and “I left someone out of an activity that he/she really wanted to be included in.” Response options ranged from 0 (“never”) to 4 (“a few times a week”). All items were summed into a single scale to assess indirect aggression ( $\alpha = .78$ ); higher scores reflected a higher frequency of indirect aggression. See Appendix E for a complete list of questions.

## **Overt Aggression**

Overt aggression was assessed using five items from the Reactive-Proactive Aggression Questionnaire (RPQ; Raine et al., 2006) and three items from the Revised Peer Experiences Questionnaire (RPEQ; Prinstein et al., 2001). Participants were asked to report on behavior within the past year of the assessment date. Only items that reflected physical aggression and threats of physical aggression in the full RPQ and RPEQ were utilized; in total 8 items were used. Participants rated the frequency of occurrence of each item as 0 (never), 1 (sometimes), or 2 (often). Because items from the Revised Peer Experiences Questionnaire (RPEQ) were originally rated on a scale (0 = “Never” to 4 = “A few times a week”) that was different from the Reactive-Proactive Aggression Questionnaire (RPEQ) scale (0 = “never,” 1 = “sometimes,” or 2 = “often”), items from the RPEQ (Prinstein et al., 2001) were recoded to mirror the likert scale used in the RPQ (Rain et al., 2006). That is, items from the RPEQ were recoded as 0 = “never,” 1 = “once or twice” or “a few times,” and 2 = “about once a week” or “a few times a week.” Example items from both measures included “Used physical force to get others to do what you want” and “hit, kicked, or pushed someone in a mean way.” All items were summed into a single scale to assess overall overt aggression ( $\alpha = .73$ ); higher scores reflected a higher frequency of overt aggression. See Appendix F for a complete list of questions used.

## **Analytic Plan**

Data analysis encompassed two main phases in the proposed study: psychometric analysis followed by analysis of specific research Aims. Initial data cleaning and file construction were conducted under the advisement of the APEX primary investigators at the University of Florida Psychology Department.

## **Power Analysis and Model Fit**

The Aims of the proposed study will be examined via a combination of OLS regression and structural equation modeling (SEM). Specifically, simple mediation (Aim 1) and moderation (Aim 2) effects were examined separately by outcome using OLS regression, whereas moderated mediation effects with multiple mediators and outcomes were examined via structural equation modeling. Although recommendations for sample sizes testing mediation and moderation in SEM models varies by source, a common yet basic guideline for SEM is a sample size of 10 participants for each variable in the model (Tanaka, 1987). Hence, a total sample size of 295 affords the use of up to 29 variables in a path model examined via structural equation modeling; a sample size of 107 boys and 188 girls affords the use of approximately 10 variables in a structural equation model that examines gender differences in pathways among peer stress, coping and symptoms of psychopathology. Attention was paid to violation of norms when choosing specific estimation methods and test statistics. Due to the occurrence of missing data for some of the key variables, maximum likelihood estimations were used when evaluating fit of structural equation models and calculating pathway coefficients. Maximum likelihood estimation procedures calculate a likelihood function for each participant using only those values available for that participant, ultimately addressing issues of missing data while reducing estimation bias that is often introduced by pairwise or listwise deletion (Duncan, Duncan, & Strycker, 2006). To evaluate the fit of the models in Aim 3, a number of indices were examined; these included the overall  $\chi^2$ , the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). It is generally recognized that to support model fit, the following criteria must be met: non significant  $\chi^2$ , a CFI, and TLI > .90, and an RMSEA < .05 (Kline, 2005).

### **Aim 1: Tests of Mediation Effects**

In order to examine indirect effects of peer stress on symptoms of psychopathology (i.e., anxiety/depression, indirect aggression, and overt aggression) via responses to stress (i.e., disengagement coping and involuntary responses), mediation was tested using the guidelines delineated by Baron and Kenny (1986). Specifically, separate regression models tested the effects of peer stress on each mediator (disengagement coping and involuntary responses) and each of the three outcomes (anxiety/depression, indirect aggression, and overt aggression). A full model was then tested with peer stress and one mediator entered on the same step. For mediation to occur, peer stress must have a significant association with the mediator and the outcome variable; *and*, in the full model, the mediator must predict the outcome variable and the size and significance of the association between peer stress and the outcome variable must be reduced.

Researchers comparing methods to test mediation have suggested that Baron and Kenny's (1986) method neglects to provide a direct estimate of the size of the indirect effect of the independent variable on the dependent variable (MacKinnon, Lockwood, Williams, 2004; Preacher & Hayes, 2004). In turn they suggest supporting research findings with a product of coefficients test, typically the Sobel Test, which states if  $ab$  (the indirect effect) is not significantly different from zero, there is no effect of mediation (Sobel, 1982). However, according to Preacher and Hayes (2004) this method is also misleading because there is reason to be suspicious of the use of the normal distribution for computing the  $p$  value for the Sobel test because the sampling distribution of  $ab$  may not be normal. To address this issue, Preacher and Hayes (2006) recommend bootstrapping the sampling distribution of  $ab$  and deriving a confidence interval with the empirically derived bootstrapped sampling distribution. This approach has been suggested as a way of circumventing the power problem introduced by asymmetries and other forms of non-normality in the sampling distribution of  $ab$  (Preacher &

Hayes, 2004). Given this recommendation, a test of the indirect effect was performed to support mediation effects consistent with Baron and Kenny's (1986) guidelines.

### **Aim 2: Tests of Moderation Effects**

In order to test whether engagement coping moderated the associations between peer stress and disengagement coping and involuntary responses, OLS regression approaches were used. Specifically, peer stress, engagement coping, and the interaction between peer stress and engagement coping were entered simultaneously into a linear regression analysis with either disengagement coping or involuntary responses as the outcome. All interaction terms were computed from centered variables.

### **Aim 3: Gender Difference in Moderated Mediation Effects**

The purpose of Aim 3 was to examine the hypothesized moderated mediation effects via structural equation modeling. Utilizing structural equation modeling to examine moderated mediation or conditional indirect effects allows for the integration of multiple mediators and multiple outcomes in the same pathway model. As indicated previously, internalizing and externalizing problems tend to be highly comorbid during adolescence (Krueger et al., 1998); hence, examining all outcomes (i.e., anxiety/depression, indirect aggression, and overt aggression) provided the ability to examine unique effects of peer stress and responses to stress as they relate to symptoms of psychopathology.

To test for conditional indirect effects of peer stress on symptoms of psychopathology, procedures suggested by Preacher and colleagues (2007) were used. Using MPLUS 5.2 (Muthén & Muthén, 1998-2007), the conditional indirect effects of peer stress on symptoms of psychopathology (anxiety/depression, indirect aggression, and overt aggression) through disengagement and involuntary responses were calculated at values of engagement one standard deviation below the mean, at the mean, and one standard deviation above the mean. Bootstrap-

derived confidence intervals were also estimated using MPLUS 5.2; 1000 bootstrap samples were used, and a percentile-based 95% confidence interval for the effect was estimated. Because a conditional indirect effect is merely the product of two causal path estimates conditioned on the value of one or more moderators, bootstrapping can be applied just as readily to the assessment of conditional indirect effects as it can to unconditional indirect effects (Preacher et al., 2007). The null hypothesis that no indirect effect (i.e., mediation effect) is present was rejected if zero was not included in the confidence interval. Finally, in order to examine whether gender differences in moderated mediation effects emerged, pathway coefficients were allowed to vary by gender and conditional indirect effects and bootstrap-derived confidence intervals were calculated separately by gender.

## CHAPTER 3 RESULTS

### Descriptive Analyses

Descriptive information (i.e.,  $M$  and  $SD$ ) for all variables is shown in Table 3-1 and correlations among the variables of interest are shown in Table 3-2. As shown in Table 3-1, mean comparisons between girls and boys demonstrated that girls reported significantly higher levels of engagement coping and symptoms of anxiety/depression, whereas boys reported significantly higher levels of overt aggression. Interestingly, there were no significant differences between girls and boys on indirect aggression.

Differences in key variables between minority participants and others were examined via one-way ANOVAs. Results indicated significant differences in disengagement coping [ $F(1, 259) = 6.33, p < .01$ ]; Cohen's  $d = .31$ ] and involuntary responses [ $F(1, 259) = 9.33, p < .01$ ; Cohen's  $d = .38$ ], such that minority participants were higher on disengagement coping and involuntary responses. Differences in key variables were also examined for low SES status using one-way ANOVAs. Results indicated significant differences in indirect aggression [ $F(1, 245) = 6.46, p < .01$ ]; Cohen's  $d = .46$ ] and overt aggression [ $F(1, 241) = 3.83, p < .06$ ; Cohen's  $d = .35$ ], such that low SES participants were higher on indirect and overt aggression. For these reasons, subsequent analyses controlled for low SES and minority status. Differences in key variables by age were also examined via bivariate correlations (Table 3-2). Results demonstrated weak, but significant, associations between age and engagement coping and overt aggression, such that older adolescents were less likely to employ engagement strategies in the face of peer stress and tended to report more overt aggression. However, because these associations were weak and age was not associated with any of the other key variables, subsequent analyses did not control for age.

When examining the bivariate correlations among the variables of interest, several general trends emerged (Table 3-2). Findings indicated significant correlations among engagement coping, disengagement coping, and involuntary responses to stress ranging from .28 to .47; this suggested that the different types of responses to stress are similar but not completely overlapping constructs. As expected, peer stress was significantly correlated with all responses to stress, such that higher levels of stress were associated with greater usage of all stress responses. Additionally, higher levels of peer stress were associated with higher levels of anxiety/depression and indirect aggression; peer stress was not significantly correlated with overt aggression.

### **Tests of Stress Responses as Mediators**

The first aim of the study was to determine whether maladaptive responses to stress (i.e., disengagement coping and involuntary responses) mediate the association between peer stress and symptoms of psychopathology (i.e., anxiety/depression, indirect aggression, and overt aggression). As indicated in the analytic plan, mediation effects were tested using the guidelines delineated by Baron and Kenny (1986) with subsequent tests of the indirect effect using bootstrapping to derive a confidence interval for the indirect effect were conducted (Preacher & Hayes, 2006). All analyses controlled for low SES and minority status.

Because preliminary results indicated that overt aggression was not associated with peer stress ( $\beta = .09, p = .20$ ), further tests of mediation were not examined per Baron and Kenny's (1986) guidelines. Results suggested that both disengagement coping and involuntary responses to stress served as mediators of the association between peer stress and symptoms of psychopathology. The standardized  $\beta$  coefficients for these models are shown in Figure 3-1.

As shown in Figure 3-1, the association between peer stress and symptoms of anxiety/depression were partially mediated by disengagement coping and fully mediated by

involuntary responses. Preacher and Hayes' (2006) test of the indirect effect supported these findings. Specifically, the indirect effect of peer stress on anxiety/depression via disengagement [ $ab = .15$ , CI (.10 to .21)] and involuntary responses [ $ab = .22$ , CI (.16 to .29)] were significantly different from zero with 95% confidence. These findings suggested that higher levels of peer stress were associated with greater use of disengagement coping (e.g., denial, wishful thinking, avoidance) and involuntary responses (e.g., rumination, physiological arousal, inaction), which subsequently were associated with higher levels of anxiety/depression.

As also shown in Figure 3-1, the association between peer stress and symptoms of indirect aggression were fully mediated by disengagement coping and involuntary responses. Again, Preacher and Hayes' (2006) test of the indirect effect supported these findings. Specifically, the indirect effect of peer stress on indirect aggression via disengagement [ $ab = .05$ , CI (.02 to .09)] and involuntary responses [ $ab = .08$ , CI (.05 to .13)] were significantly different from zero with 95% confidence. These findings suggested that higher levels of peer stress were associated with greater use of disengagement coping and involuntary responses, which subsequently were associated with higher levels of indirect aggression.

In summary, as predicted, preliminary analyses indicated that disengagement coping and involuntary responses to stress mediated the association between peer stress and symptoms of anxiety/depression and indirect aggression. Again, as peer stress was not significantly associated with overt aggression, mediation was not tested.

### **Tests of Moderation of Coping on Stress Responses**

The second aim of the study was to determine whether engagement coping (e.g., problem solving, emotion regulation, emotional expression) moderated the association between peer stress and the mediators, disengagement coping and involuntary responses. It was hypothesized that active coping strategies aimed at alleviating the stressor or stressful experience would buffer

the impact of peer stress on negative responses, specifically disengagement and involuntary responses. Separate multiple regression analyses testing the interaction between peer stress and engagement coping were run for disengagement coping and involuntary responses. All interaction terms were computed from centered variables. In addition, all analyses controlled for low SES and minority status.

As expected, analyses demonstrated that engagement coping moderated the association between peer stress and disengagement coping ( $\beta = -.16, p < .01$ ) and involuntary responses ( $\beta = -.18, p < .001$ ). Participants who employed engagement coping strategies more often demonstrated a weaker association between peer stress and disengagement coping and involuntary responses to stress (Figure 3-2), suggesting that engagement coping buffers the effect of peer stress on negative stress responses. See Table 3-3 for regression models.

Because engagement coping moderated the association between peer stress and disengagement coping and involuntary responses (both mediators between peer stress and symptoms of psychopathology), results suggest the occurrence of the hypothesized scenario of moderated mediation. As mentioned previously, moderated mediation refers to the situation in which the pathway from the IV (i.e., peer stress) to the mediator (i.e., disengagement and involuntary responses) varies depending on the level of a third variable (i.e., engagement coping). That is, the preliminary moderation tests indicated that participants lower on engagement coping demonstrated a stronger association between peer stress and the mediators (i.e., disengagement and involuntary responses), in turn suggesting that mediation effects for the association between peer stress and symptoms of psychopathology may be stronger for those lower on engagement coping. This evidence suggested the need to examine moderated

mediation (i.e., conditional indirect effects) for the association between peer stress and symptoms of psychopathology.

### **Tests of Moderated Mediation**

The third aim of the study was to examine whether the moderated mediation effects differed by gender and by outcome. As indicated in the analysis plan, specific tests of moderated mediation were examined via structural equation modeling and bootstrap-derived confidence intervals for the conditional indirect effects using MPLUS 5.2 (Muthén & Muthén, 1998-2007). In order to examine the effects of multiple mediators (disengagement and involuntary responses) and multiple outcomes (anxiety/depression, indirect aggression, and overt aggression), all variables of interest were tested in a single path model (Figure 3-3). Additionally, although not visually depicted in Figure 3-3, low SES status and minority status were included as covariates for all analyses, with pathways from low SES and minority status to all endogenous variables (disengagement, involuntary responses, anxiety/depression, indirect aggression, and overt aggression). Hence all pathway coefficients reported control for the effect of low SES and minority status.

In order to examine gender differences in the model, all pathway coefficients were allowed to vary for girls and boys. In order to justify the need to examine the model separately by gender, a chi-square comparison test was conducted comparing a constrained model that required that the pathway coefficients did not vary across gender to the unconstrained model that did allow pathways to vary by gender. Results indicated that the constrained model fit significantly worse than the model that allowed the pathway coefficients to vary by gender ( $\Delta\chi^2 = 52.94$ ,  $df = 25$ ,  $p = .001$ ), suggesting the need to examine the model separately by gender. Additionally, fit indices of the unconstrained model (i.e., path coefficients varied by gender) suggested that the

model fit the data well ( $\chi^2 = 2.59, p = .86$ ; CFI = 1.00; TLI = 1.07; RMSEA = .00). Figure 3-4 presents the unconstrained path model for girls and boys separately.

### **Gender Differences in Conditional Indirect Effects**

Examination of the pathway coefficients for girls and boys indicated that the pathways from the interaction term (peer stress x engagement coping) to disengagement ( $\beta = -1.12, p < .001$ ) and involuntary responses ( $\beta = -1.08, p < .001$ ) were significant for girls only. These findings suggested the need to examine conditional indirect effects separately by gender.

### **Indirect effects of peer stress on symptoms of anxiety/depression**

Examination of conditional indirect effects of peer stress on symptoms of anxiety/depression separately by gender revealed several differences between girls and boys in the stress and coping process (Table 3-4). For girls only, disengagement coping mediated the association between peer stress and anxiety/depression, such that higher levels of peer stress were associated with higher levels of disengagement ( $\beta = .42, p < .01$ ), which in turn were associated with higher levels of anxiety/depression ( $\beta = .14, p < .01$ ). In contrast, both girls and boys demonstrated significant indirect effects of peer stress on anxiety/depression through involuntary responses. Interestingly, as demonstrated by the significant pathways from the interaction effect to disengagement ( $\beta = -1.12, p < .01$ ) and involuntary responses ( $\beta = -1.08, p < .01$ ) and by the change in the indirect effects across different levels of engagement, girls who were high on engagement coping (e.g., problem solving, emotional expression, emotional regulation) demonstrated weaker indirect effects for peer stress on anxiety/depression via both mediators (disengagement and involuntary responses). This finding suggests that using engagement strategies to cope with peer stress reduces the likelihood of girls using disengagement strategies and experiencing involuntary responses, in turn reducing the likelihood of exhibiting higher rates of anxiety/depression.

### **Indirect effects of peer stress on symptoms of indirect aggression**

Although preliminary mediation tests indicated that disengagement coping mediated the association between peer stress and indirect aggression (Figure 3-2), examination of conditional indirect effects (Table 3-5) demonstrated that this indirect effect was no longer significant when both mediators and all outcome variables (anxiety/depression, indirect aggression, and overt aggression) were accounted for in the full pathway model. This suggested that any indirect effect that emerged in preliminary tests was accounted for by other effects in the full model. In contrast, tests of conditional indirect effects of peer stress on indirect aggression via involuntary responses agreed with preliminary mediation tests indicating that involuntary responses served as a significant mediator. Similar to findings for anxiety/depression, the magnitude of the indirect effect was conditional upon the level of engagement coping for girls. As demonstrated by the significant pathway from the interaction effect to involuntary responses ( $\beta = -1.08, p < .01$ ) and by the change in the indirect effects across different levels of engagement, girls who were high on engagement coping (e.g., problem solving, emotional expression, emotional regulation) demonstrated weaker indirect effects for peer stress on indirect aggression via involuntary responses (e.g., rumination, physiological arousal, cognitive numbing). Again, for girls, this finding suggested that using engagement strategies may reduce the likelihood experiencing involuntary responses, in turn reducing the likelihood of exhibiting symptoms of indirect aggression.

### **Indirect effects of peer stress on symptoms of overt aggression**

Examination of conditional indirect effects of peer stress on symptoms of overt aggression separately by gender revealed several themes (Table 3-6). Interestingly, for boys only, disengagement coping mediated the association between peer stress and overt aggression, such that higher levels of peer stress were associated with higher levels of disengagement ( $\beta =$

.42,  $p < .01$ ), which in turn were associated with lower levels of overt aggression ( $\beta = -.41$ ,  $p < .001$ ), suggesting that disengagement coping (e.g., avoidance, denial, wishful thinking) may be a type of protective stress response, reducing the likelihood of reacting aggressively in response to peer stress.

With respect to involuntary responses, both girls and boys demonstrated significant indirect effects of peer stress on anxiety/depression through involuntary responses. Again, as was demonstrated for anxiety/depression and indirect aggression, girls high on engagement coping (e.g., problem solving, emotional expression, emotional regulation) demonstrated weaker indirect effects for peer stress on overt aggression via involuntary responses. Similar to the findings for anxiety/depression and indirect aggression, this finding suggested that using engagement strategies to cope with peer stress reduces the likelihood of exhibiting involuntary responses, in turn reducing the likelihood of exhibiting overt aggression.

### **Summary of Moderated Mediation Findings**

Tests of moderated mediation across multiple mediators (disengagement coping and involuntary responses) and multiple outcomes (anxiety/depression, indirect aggression, and overt aggression) suggested that the stress and coping process differs not only by outcome but also by gender. For both girls and boys, involuntary responses mediated the association between peer stress and all symptoms of psychopathology (anxiety/depression, indirect aggression, and overt aggression). Differences in the stress and coping process emerged when examining disengagement as a mediator of the association between peer stress and symptoms of psychopathology. Specifically, disengagement coping mediated the association between peer stress and anxiety/depression for girls, whereas disengagement coping mediated the association between peer stress and overt aggression for boys. Interestingly, for girls, disengagement coping was associated with an *increased* risk for reporting symptoms of *anxiety/depression*, whereas for

boys, disengagement was associated with a *decreased* risk for reporting symptoms of *overt aggression*. Additionally, for girls only, engagement coping served to buffer the association between peer stress and the mediators (disengagement coping and involuntary responses), suggesting that utilizing engagement coping protects against potential negative effects of exposure to peer stress on symptoms of psychopathology by reducing the likelihood of utilizing disengagement coping strategies or experiencing involuntary responses to stress.

Table 3-1. Means and Standard Deviations of Adolescents' Demographic Information, Stress, Responses to Stress, and Symptoms of Psychopathology

Variable	Total (N = 295)		Girls (N = 188)		Boys (N = 107)		T-Test	Effect Size
	M	SD	M	SD	M	SD	t	Cohen's d
Age	12.39	.99	12.35	.98	12.46	1.01	.918	.11
SES	43.43	14.00	42.91	13.22	44.40	15.39	.835	.11
Peer stress	8.23	6.38	8.66	6.16	7.49	6.72	-1.477	.18
Responses to stress								
Engagement coping	2.54	.63	2.66	.62	2.34	.61	-4.10**	.51
Disengagement coping	2.16	.61	2.18	.60	2.11	.64	-.963	.11
Involuntary responses	1.99	.61	2.02	.62	1.93	.59	-1.190	.15
Psychopathology								
Anxiety/depression	6.21	4.62	6.78	4.56	5.17	4.56	-2.76**	.35
Overt aggression	1.78	2.02	1.54	1.85	2.24	2.25	2.66**	.35
Indirect aggression	4.77	3.75	5.06	3.87	4.20	3.46	-1.77	.23

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

Table 3-2. Intercorrelations Among Demographic Information, Responses to Stress, and Symptoms of Psychopathology

	1	2	3	4	5	6	7	8	9
1. Age	---								
2. SES	-.17**	---							
3. Peer Stress	-.04	.01	---						
4. Engagement	-.12*	.04	.37**	---					
5. Disengagement	-.01	-.06	.40**	.28**	---				
6. Involuntary Responses	.02	-.10	.44**	.34**	.68**	---			
7. Anxiety/depression	.05	-.05	.38**	.19**	.54**	.65**	---		
8. Overt aggression	.13*	-.16*	.10	-.01	.18**	.32**	.20**	---	
9. Indirect aggression	.01	-.11	.20**	.12	.25**	.36**	.27**	.49**	---

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

Table 3-3. Hierarchical regression analyses testing engagement coping as a moderator

	Outcome: Disengagement			Outcome: Involuntary Responses				
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$		
Low SES	.14	.10	.08	.13	.10	.07		
Minority	.17	.07	.14*	.21	.07	.17**		
Peer Stress	.04	.01	.42**	.04	.01	.45**		
Engagement	.12	.06	.12*	.15	.06	.15**		
Stress x Engagement	-.03	.01	-.16**	-.03	.01	-.18**		
	<i>F</i>	<i>df</i>	<i>p</i>	<i>R</i> <sup>2</sup>	<i>F</i>	<i>df</i>	<i>p</i>	<i>R</i> <sup>2</sup>
	14.10	(5,237)	<.001	.23	14.10	(5,237)	<.001	.23

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

Table 3-4. Conditional indirect effects of peer stress on symptoms of anxiety/depression

Mediator	Engagement Values	Indirect Effect	SE	<i>p value</i>	Boot LL	Boot UL
Disengagement	Boys					
	-1 <i>SD</i> (1.91)	.08	.06	.23	-.02	.24
	<i>M</i> (2.54)	.07	.06	.22	-.02	.21
	+1 <i>SD</i> (3.17)	.06	.06	.27	-.01	.22
	Girls					
	-1 <i>SD</i> (1.91)	.09	.05	.08	.02	.25
	<i>M</i> (2.54)	.06	.03	.07	.01	.15
	+1 <i>SD</i> (3.17)	.03	.02	.18	.002	.09
	Involuntary Responses	Boys				
-1 <i>SD</i> (1.91)		.33	.12	.01	.13	.60
<i>M</i> (2.54)		.25	.09	.01	.11	.47
+1 <i>SD</i> (3.17)		.18	.11	.09	.02	.45
Girls						
-1 <i>SD</i> (1.91)		.36	.10	<.001	.19	.58
<i>M</i> (2.54)		.24	.06	<.001	.14	.38
+1 <i>SD</i> (3.17)		.12	.05	.05	.02	.21

Table 3-5. Conditional indirect effects of peer stress on symptoms of indirect aggression

Mediator	Engagement Values	Indirect Effect	SE	<i>p value</i>	Boot LL	Boot UL
Disengagement	Boys					
	-1 <i>SD</i> (1.91)	.02	.07	.77	-.09	.21
	<i>M</i> (2.54)	.02	.06	.76	-.09	.19
	+1 <i>SD</i> (3.17)	.02	.06	.77	-.07	.18
	Girls					
	-1 <i>SD</i> (1.91)	-.01	.07	.87	-.14	.12
<i>M</i> (2.54)	-.01	.05	.87	-.09	.08	
+1 <i>SD</i> (3.17)	-.003	.02	.88	-.06	.04	
Involuntary Responses	Boys					
	-1 <i>SD</i> (1.91)	.25	.14	.06	.02	.55
	<i>M</i> (2.54)	.20	.11	.06	.02	.45
	+1 <i>SD</i> (3.17)	.14	.07	.18	.002	.42
	Girls					
	-1 <i>SD</i> (1.91)	.20	.08	.02	.07	.39
<i>M</i> (2.54)	.13	.05	.01	.05	.26	
+1 <i>SD</i> (3.17)	.06	.03	.04	.02	.14	

Table 3-6. Conditional indirect effects of peer stress on symptoms of overt aggression

Mediator	Engagement Values	Indirect Effect	SE	<i>p value</i>	Boot LL	Boot UL
Disengagement	Boys					
	-1 <i>SD</i> (1.91)	-.22	.11	.05	-.48	-.05
	<i>M</i> (2.54)	-.20	.09	.03	-.41	-.06
	+1 <i>SD</i> (3.17)	-.17	.09	.06	-.42	-.03
	Girls					
	-1 <i>SD</i> (1.91)	.20	.08	.01	-.07	.20
<i>M</i> (2.54)	.13	.05	.01	-.04	.12	
+1 <i>SD</i> (3.17)	.07	.03	.04	-.02	.08	
Involuntary Responses	Boys					
	-1 <i>SD</i> (1.91)	.47	.19	.01	.18	.91
	<i>M</i> (2.54)	.37	.14	.01	.15	.68
	+1 <i>SD</i> (3.17)	.26	.16	.09	.02	.63
	Girls					
	-1 <i>SD</i> (1.91)	.20	.08	.01	.09	.40
<i>M</i> (2.54)	.13	.05	.01	.06	.27	
+1 <i>SD</i> (3.17)	.07	.03	.04	.02	.14	

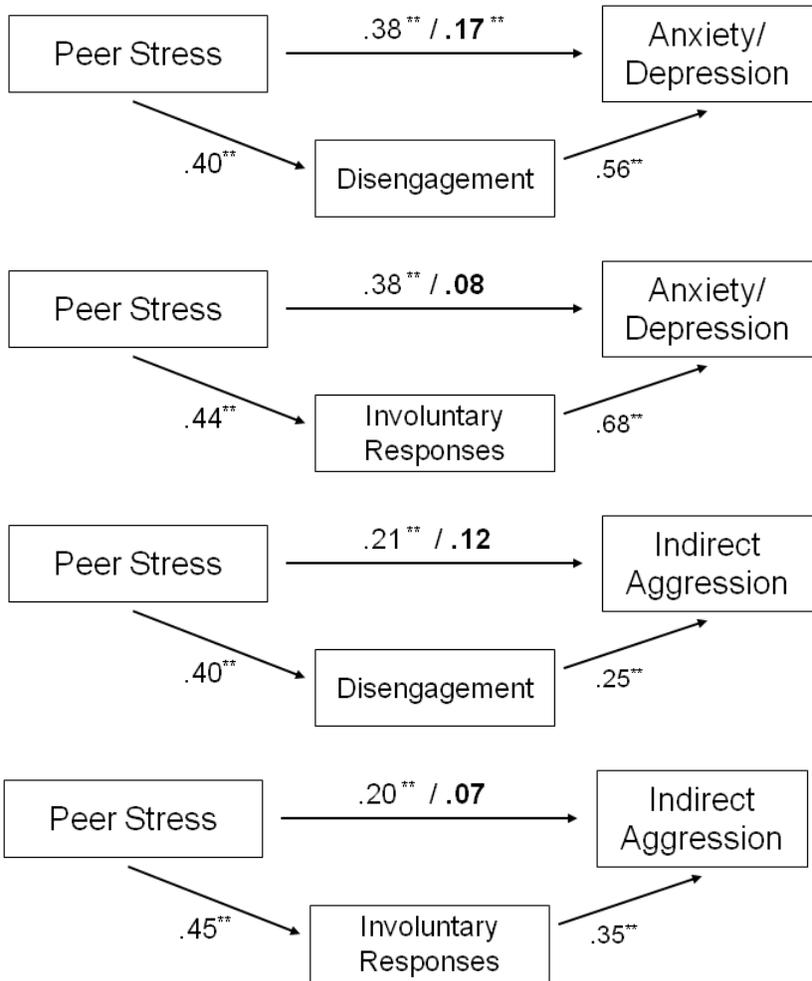
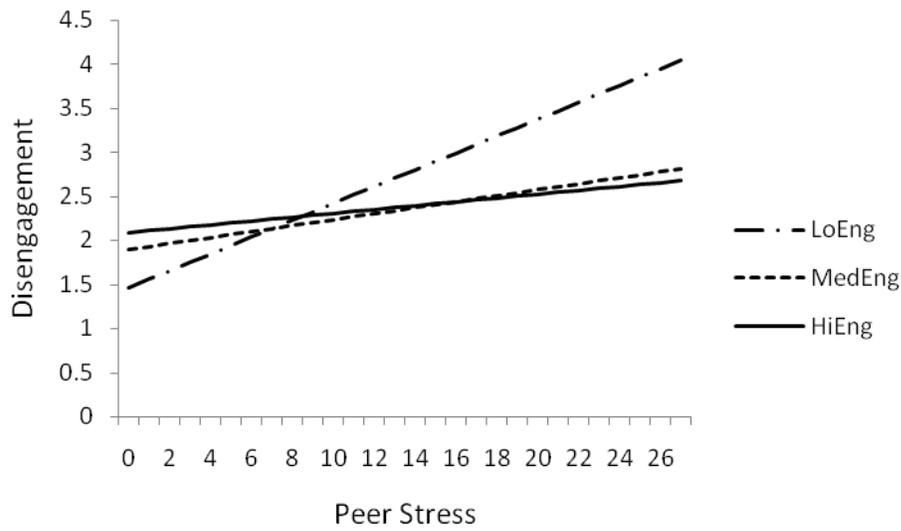


Figure 3-1. Mediation models for peer stress to anxiety/depression and indirect aggression. Each pathway controls for low SES. The  $\beta$  value to the right of the backslash represents the association between peer stress and symptoms of psychopathology, controlling for the mediator. \*\*  $p < .01$ ,

A



B

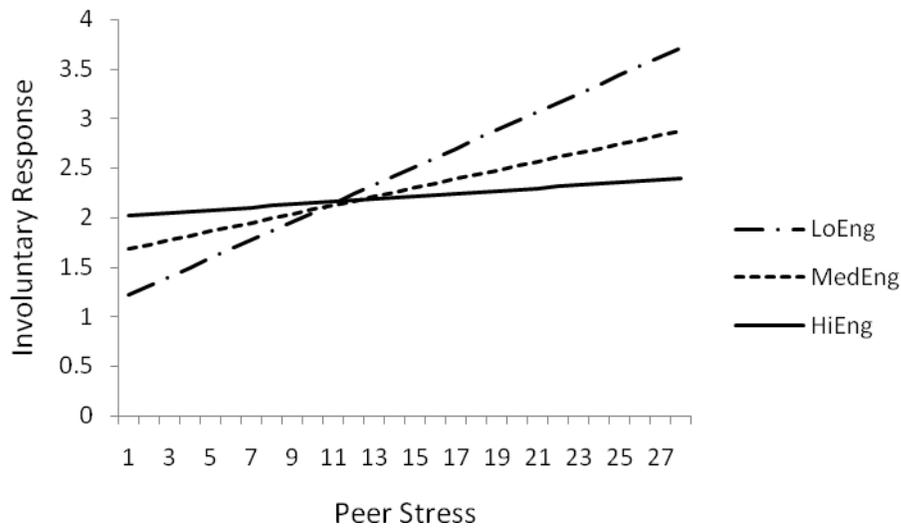


Figure 3-2. The following figures represent the interaction between peer stress engagement coping, when predicting A) disengagement coping and B) involuntary responses. Beta weights are presented for each subgroup for the association between peer stress and aggression.

B

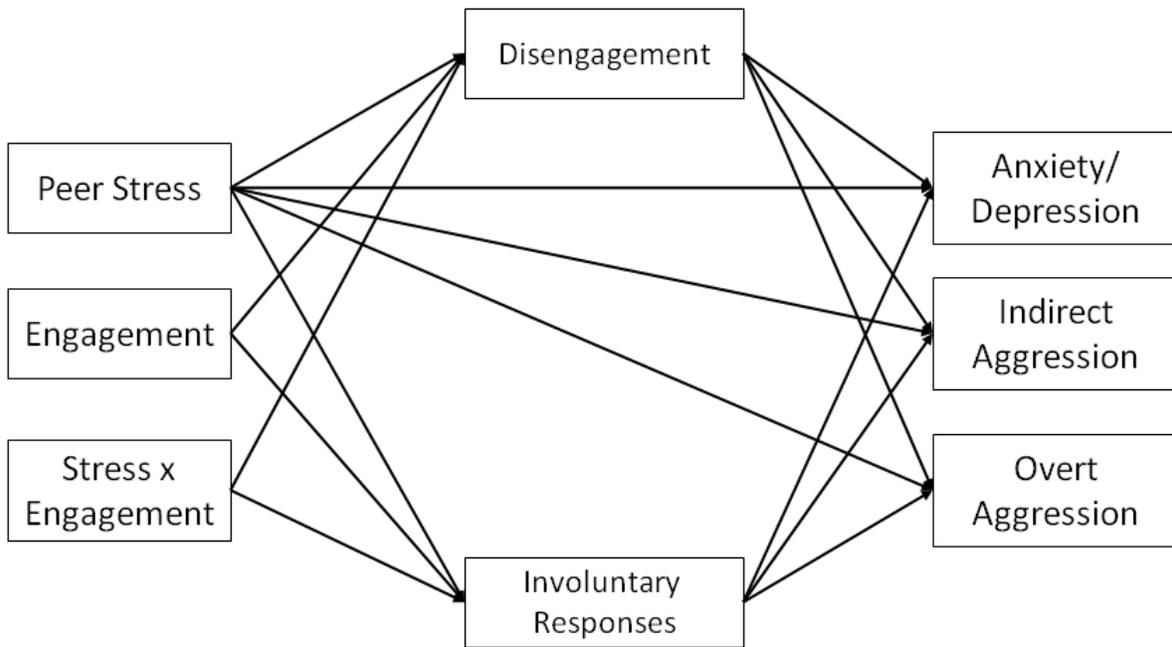


Figure 3-3. Moderated mediation model path diagram. The effect of peer stress on disengagement and involuntary responses was assumed to be moderated by engagement, while disengagement and involuntary responses were assumed to linearly predict anxiety/depression, indirect aggression, and over aggression.

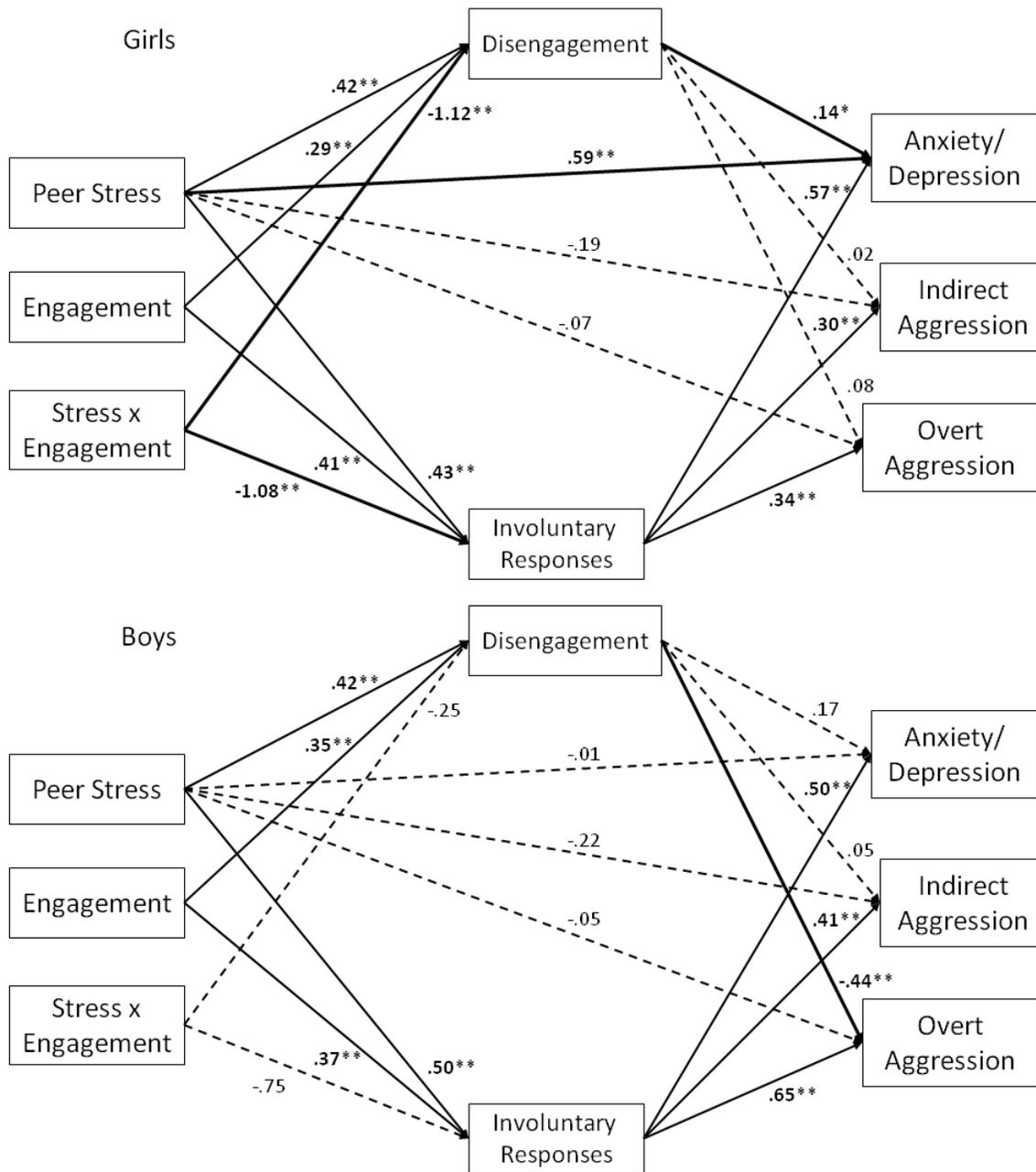


Figure 3-4. Moderated mediation path diagram for girls and boys separately. All pathway coefficients were standardized. Pathway coefficients from peer stress to disengagement, involuntary responses, and overt aggression were calculated as standardized simple slopes at the grand mean of engagement ( $M = 2.54$ ). Significant pathways are indicated by solid, bolded lines; non-significant pathways are indicated by dashed lines. Both models control for low SES and minority status with pathways to all endogenous variables. \* $p < .05$ ; \*\* $p < .01$

## CHAPTER 4 DISCUSSION

Early adolescence is a period of interpersonal, cognitive, and emotional growth. Due to rapidly occurring changes—both physical and social—early adolescence also represents a period of increased daily hassles and interpersonal stressors, which place adolescents at heightened risk for developing emotional and behavioral problems. However, despite the wealth of empirical evidence that indicates that negative peer experiences pose a considerable risk for the development of internalizing and externalizing problems during adolescence (Coie et al., 1990; Deater-Deckard, 2001; Dodge et al., 2006; Hawker & Boulton, 2000; Nansel et al., 2004), little attention has been given to mechanisms through which peer stress influences symptoms of psychopathology. Additionally, although research acknowledges the importance of considering gender differences in rates of psychopathology and studies have begun to demonstrate gender differences in specific types of stress responses (e.g., rumination), no studies to date have examined gender differences in the stress and coping process as it relates to both anxious/depressive and aggressive problems. Hence, the purpose of this study was to expand upon past research examining associations among peer stress, coping, and symptoms of psychopathology (Sontag et al., 2008) by examining gender specific and common mechanisms underlying the process of stress and coping and the development of symptoms of anxiety/depression and aggression.

The first aim of the study was to determine whether disengagement coping and involuntary responses mediated the association between peer stress and symptoms of psychopathology (i.e., anxiety/depression, indirect aggression, and overt aggression). Consistent with prior studies examining the role of disengagement or avoidant coping and involuntary responses to stress (Calvete, Corral, & Estevez, 2008; Dempsey, 2007; Jose & Huntsinger, 2005; Sandler et al.,

1994; Wadsworth & Compas, 2002), results demonstrated that disengagement coping (e.g., avoidance, denial, wishful thinking) and involuntary responses to stress (e.g., rumination, physiological arousal, cognitive numbing) mediated the association between peer stress and symptoms of anxiety/depression and indirect aggression. Specifically, adolescents who reported higher levels of peer stress also reported higher levels of disengagement coping and involuntary responses, in turn reporting higher levels of anxiety/depression and indirect aggression. Interestingly, these effects differed when both mediators (disengagement coping and involuntary responses) and all symptoms of psychopathology (i.e., anxiety/depression, indirect aggression, and overt aggression) were examined simultaneously. For example, the indirect effect of peer stress on indirect aggression via disengagement coping was no longer significant, suggesting that indirect effect detected in preliminary mediation tests were accounted for by processes related to either anxiety/depression or overt aggression. In contrast, significant indirect effects of peer stress on overt aggression via disengagement and involuntary responses emerged that were not evident in preliminary mediation analyses. The second Aim of the study examined whether engagement coping moderated the pathways between peer stress and the mediators, disengagement coping and involuntary responses. In line with prior research that suggests that the utilization of engagement coping buffers against the negative effects of stress on adjustment (Compas et al., 2001; Connor-Smith & Compas, 2004; Sontag, Graber, Brooks-Gunn, & Warren, 2008), results for Aim 2 indicated that adolescents who demonstrated greater use of strategies such as problem solving, emotion regulation, positive thinking, and constructive emotional expression in response to peer stress were less likely to respond with denial/avoidance or involuntary responses (e.g., physiological arousal, intrusive thoughts, cognitive numbing).

Considering findings from Aim 1 and Aim 2, results suggested a moderated mediation effect for the stress and coping process such that the indirect effect of peer stress on symptoms of psychopathology through disengagement coping and involuntary responses was conditional upon the level of engagement coping. The notion of a moderated mediation effect is particularly important, as it provides support to theories emphasizing that the stress and coping process is both multifaceted and dynamic and that the combination of more active coping strategies and more temperamentally based responses (i.e., denial/avoidance and involuntary responses) provides a more comprehensive explanation of why particular individuals demonstrate vulnerabilities to psychopathology (Compas et al., 2001; Gould et al., 2008; Somerfield & McCrae, 2000).

Subsequent tests of moderated mediation across both mediators (disengagement coping and involuntary responses) and all outcomes (anxiety/depression, indirect aggression, and overt aggression) suggested that the stress and coping process differed not only by type of psychopathology but also by gender. As hypothesized, involuntary responses mediated the association between peer stress and all symptoms of psychopathology (anxiety/depression, indirect aggression, and overt aggression) suggesting that involuntary responses to stress account for the association between peer stress and symptoms of psychopathology. That is, exposure to peer stress is associated with a greater tendency to react to peer stress with racing or uncontrollable thoughts, increased heart rate, cognitive interference, or other involuntary responses that in turn increase the likelihood of exhibiting emotional and behavioral problems. Interestingly, these mediation effects did not differ by gender. Prior studies have suggested that the role of involuntary responses may differ by gender (Crozier et al., 2008; Kirschbaum, & Hellhammer, 1994; Schippell et al., 2003); however, these studies typically examined specific

types of involuntary responses (e.g., heart rate) and gender differences have been discrepant. Given that involuntary responses in this study were conceptualized more generally, it is possible that specific gender differences do not emerge until these responses are examined individually (e.g., examining rumination, physiological arousal, and cognitive numbing separately).

Contrary to findings for involuntary responses, differences in the stress and coping process by gender emerged when examining disengagement coping (e.g., avoidance, denial, wishful thinking) as a mediator of the association between peer stress and symptoms of psychopathology. Specifically, disengagement coping mediated the association between peer stress and anxiety/depression for girls, whereas disengagement coping mediated the association between peer stress and overt aggression for boys. For both girls and boys, peer stress was associated with greater use of disengagement coping to deal with peer stress. Interestingly, for girls, disengagement coping was associated with an increased risk for reporting symptoms of anxiety/depression, whereas for boys, disengagement was associated with a decreased risk for reporting symptoms of overt aggression.

Additionally, as expected, disengagement coping served as a stronger mediator between stress and psychopathology for boys compared to girls. Consistent with prior research (Kochenderfer-Ladd & Skinner, 2002; Sandstrom, 2004) examining gender differences in the association between coping and maladjustment, these findings suggested that the effectiveness of particular coping strategies may differ for girls and boys. That is, disengagement coping as a response to peer stress may have a negative impact for girls, whereas disengagement coping may actually be adaptive for boys. However, whereas prior studies examining gender differences in coping have examined different psychopathologies separately, this study extended prior studies by examining mechanisms to anxious/depressive and aggressive problems simultaneously. In

doing so, this study revealed potentially important differences not only by gender, but also by outcome. That is, for boys, it is possible that ignoring peer problems or avoiding these negative experiences may be an effective way to delay immediate tendencies to react aggressively. However, for girls, avoiding the problem or pretending it does not exist may only temporarily relieve the stressful experience, resulting in a tendency to relive or revisit the negative emotions associated with the stressful experience at a later point in time, in turn increasing susceptibility to anxious/depressive affect.

Gender differences in the stress and coping process also emerged when examining the role of engagement coping as a moderator of the pathway between peer stress and the mediators (i.e., disengagement coping and involuntary responses). Consistent with prior studies (Blalock & Joiner, 2000; Calvete & Connor-Smith, 2006; Sontag et al., 2008) examining the role of engagement coping (e.g., problem solving, emotion regulation, emotional expression), findings from this study demonstrated that engagement coping buffered the association between peer stress and maladaptive responses to stress (i.e., disengagement coping and involuntary responses), suggesting that utilizing engagement coping protects against potential negative effects of exposure to peer stress on symptoms of psychopathology by reducing the likelihood of utilizing disengagement coping strategies or experiencing involuntary responses to stress. Interestingly, however, this moderated mediation or conditional indirect effect only emerged for girls. Although prior studies examining gender differences in engagement coping have provided mixed support as to whether gender differences in the use of engagement strategies exist (e.g., Li et al., 2006; Sandstrom, 2004; Williams et al., 2000), findings from this study suggested that girls who used engagement coping more often demonstrated a weaker association between peer stress and disengagement coping and involuntary responses, which in turn was associated with

lower levels of psychopathology. Again, this finding suggested that the effectiveness of particular coping strategies may differ for girls and boys. Specifically, engagement coping, which is often advocated as an effective way to deal with stress that is reasonably within one's control, may be particularly advantageous for girls.

### **Strengths of the Study**

Integrating a vulnerability-stress framework with theories of social and emotional development, this study examined gender specific versus common pathways to anxious/depressive and aggressive symptoms through the use of novel statistical methodology. Specifically, structural equation modeling and bootstrap-derived confidence intervals for indirect effects allowed for the evaluation of conditional indirect effects for multiple mediators and multiple outcomes. Although most researchers examining indirect effects have begun to integrate multiple mediators or moderators into their models (e.g., Naumann, Richter, Christmann, & Groeben, 2008; Preacher et al., 2007), few have utilized structural equation modeling as a means of examining conditional indirect effects for multiple outcomes. This aspect of the study is particularly important given the high comorbidity rates of depression and aggression during adolescence (Krueger et al., 1998); examining symptoms of depression and aggression simultaneously allows for a better understanding of common and distinct associations with vulnerabilities and risk.

Another strength of the study was the examination of gender specific and common pathways of the stress and coping process as it relates to symptoms of psychopathology. Few studies have directly tested gender differences in the stress and coping process as it relates to peer stress and virtually none have simultaneously examined internalizing and externalizing problems. The approach of this study provided the means for determining the comparative importance of peer stress and different coping strategies in relation to symptoms of

psychopathology by gender. Generally, results suggested that engagement and disengagement coping function differently for girls and boys, indicating the importance of examining the role of gender in these processes in future research. Additionally, differences in effectiveness of coping strategies by gender suggests the need to modify the design of intervention and prevention programming that aims to reduce emotional and behavioral by teaching adolescents how to deal with stress.

### **Limitations of the Study**

Despite the aforementioned methodological strengths, the present study has some limitations. First, because assessments were obtained concurrently, the direction of association among key variables must be interpreted with some caution. Although the stress and coping literature lends theoretical support to the notion that increased exposure to stress increases the use of particular coping strategies (Compas et al., 1999; Lazarus & Folkman, 1984), which in turn may be associated with greater or fewer emotional or behavioral problems, the literature also finds that individuals who exhibit emotional and behavioral problems are more likely to use ineffective coping strategies and elicit or provoke negative responses from others. Another limitation of the proposed study is reflected in the measures used, such that key variables (peer stress, coping, and symptoms of psychopathology) were obtained via self-report only. Alternatively, the proposed study could have incorporated parent or teacher report of symptoms of psychopathology. However, because the proposed study explored many constructs that tap internal processes (e.g. stress appraisal, cognitive and emotion-based coping strategies, anxious/depressive affect) which are often best assessed via self-report surveys or interviews, the use of self-report in this study may not strongly influence the results. Aggression too was assessed via self-report; however, peer-report of aggressive behaviors was collected in the general APEX study. The APEX study recruited teacher-nominated social experts in peer

relationships (e.g., friendship, cliques, and peer popularity). Nominated students who obtained parental consent were contacted and asked to complete a brief survey in which they were asked to nominate students who engaged in overt and relational aggression. The “social expert” method of sociometric assessment has been used with success in prior research (Prinstein, 2007). Preliminary comparisons of peer-nominated aggressive behavior and self-reported aggressive behavior indicated a weak association between peer report and self-report. It is possible that this finding indicated that self-reported aggressive behavior did not accurately represent actual aggressive behavior. However, because self-reported aggressive behavior was not abnormally skewed in either direction, it was assumed that self-report and peer-report aggressive behavior may have tapped different types of aggressive acts. In particular, because peer-report relied on a select group of students to report on all participants, less violent or overt forms of aggression may have been less likely to be detected by a select group of peers. For these reasons, the use of self-reported aggressive behavior was not expected to interfere with the interpretability of the results. Finally, because participant recruitment was limited to public schools and because no substantial compensation was offered, the study may suffer from sample selection issues (i.e., students with more behavioral problems may be less likely to volunteer as participants).

### **Implications of the Study**

This investigation provided insight into the underlying mechanisms that explain the connection between stress exposure and emotional and behavioral problems during early adolescence. Despite the fact that the co-occurrence of internalizing and externalizing problems is well documented in the literature, most research to date has evaluated mechanisms of risk for depressive and aggressive problems separately. Furthermore, few studies have directly examined gender differences in these processes as a means of explaining divergent trends in these outcomes. Hence, through the examination of gender differences in the stress and coping

process as it relates to both anxious/depressive and aggressive problems, this study has helped move the field in a direction to begin disentangling the mechanisms underlying risk for anxious/depressive and aggressive problems during early adolescence and to better understand gender differences in these processes. Additionally, through the examination of both active and involuntary aspects of stress response and examining the multiple roles these responses play in the development of psychopathology, this study not only supports current theory on coping in adolescence (Compas et al., 2001; Gould et al., 2008; Somerfield & McCrae, 2000), but it also extends this research by highlighting the interconnections among stress, multiple types of stress responses, and symptoms of psychopathology. Generalizing beyond the stress and coping literature, findings from this study hold implications for the application of the diathesis-stress perspective (Ingram & Luxton, 2005), such that examining the role of risk factors (e.g., gender) and vulnerabilities (e.g., responses to stress) separately may simplify or even mask mechanisms by which psychopathology develops.

Finally, findings of this study speak directly to the utilization of the cognitive-behavioral therapy approach by teachers, counselors, and clinicians to help teens learn to cope with potentially stressful experiences and minimize symptoms of psychopathology. Encouraging adolescents to modify potentially ineffective cognitive, behavioral and emotional reactions to stress (e.g., training on the use of problem solving tactics, importance of emotional expression, etc.) and teaching them to recognize and regulate involuntary responses such as physiological arousal and intrusive thoughts may help ease the psychological demands of transitioning into adolescence and ultimately reduce the likelihood of experiencing internalizing and externalizing problems. Importantly, however, the findings of this study also emphasize the importance of targeted prevention and intervention programming. As demonstrated by this study, strategies for

dealing with stress may not be universally effectively. As suggested by findings in this study, girls and boys may not benefit equally from training in problem solving, emotion regulation, and emotional expression. Modifying current programming and adapting design of future programs to consider potential gender differences in the effectiveness of coping strategies would serve to better reduce the incidence of anxious/depressive and aggressive problems during early adolescence. Finally, although much of the developmental psychopathology literature focuses on mechanisms of risk for emotional and behavioral problems, the field also highlights the importance of understanding what factors promote positive development (i.e., prosocial behavior, academic success, positive self-esteem) in the face of stress. As discussed previously, describing pathways both to psychopathology and to normative, healthy, or competent development are essential for understanding etiology and treatment of problems (e.g., Cicchetti & Cohen, 1995; Masten & Curtis, 2000). As such, extending the current study to examine how active coping strategies and more temperamentally-based strategies (i.e., disengagement and involuntary responses) impact positive development may ultimately expand our current understanding of healthy adjustment in the face of stress.

APPENDIX A  
PARENTAL CONSENT FORM

Dear Parent/Guardian,

We are graduate students in the Department of Psychology at the University of Florida, and we are conducting a research study called Adolescent Peer Experiences (APEX). This study is being conducted under the supervision of Dr. Julia A. Graber, Associate Professor of Psychology at the University of Florida. The purpose of APEX is to understand how experiences with their peers change during middle school. General findings from this study will be shared with your child's school; the information may help teachers and school administrators better understand how students deal with potentially stressful social, emotional, and physical changes. These results may not directly help your child today, but they have the potential to benefit future students.

All of the participating students will be asked to complete a survey during their designated lunch period in their school. The survey will be split into three parts and completed on three different days to allow students time to eat their lunches while completing the survey. Surveys will be administered in April by qualified and trained researchers and research assistants. Soon after the administration of this survey, a small number of students in each grade will be asked to complete an additional short survey about peer relationships.

In addition, we feel it is important to speak to each participant's parent or guardian in order to get accurate information about your family. Therefore, we would also like to contact you by phone so that you can provide some brief background information. If your child is selected for the second phase of the study, we will also contact him/her by telephone to briefly describe the study and participation options. Your consent on this form covers your child's participation in the first part of the survey, your child's participation in the second part of the survey (if selected), and contact by a researcher via telephone.

You and your child will not have to answer any question that you do not wish to answer. All personal information and data collected throughout the course of the study will remain locked in our laboratory in the UF Psychology department and will only be available to researchers in our lab. Furthermore, all information collected throughout the course of the study will remain confidential to the extent provided by law. All survey data will be identifiable by ID code only; a list connecting student names and ID codes will be maintained by and accessible to only the primary investigators of this study and may be used only to contact participants after the initial phase of data collection is complete.

You and your child have the right to withdraw consent for your child's participation and your participation at any time without consequence. There are no known risks or immediate benefits to the participants. No compensation is offered for participation. General findings of this study will be made available to parents upon request in the Fall of 2007. If you have any questions about this research protocol, please contact us at 392-9982 or our faculty supervisor, Dr. Graber, at 392-0601 (ext. 352). Questions or concerns about your child's rights as a research participant may be directed to the UFIRB office, University of Florida, P.O. Box 112250, Gainesville, FL, 32611, (352) 392-0433. We would greatly appreciate your and your child's participation in our research study.



**Please complete this page and give to your student to return to his/her teacher. You may keep the first page for your reference.**

I have read the procedure described above. I voluntarily give my consent for my child, \_\_\_\_\_(print name), to participate in APEX. I understand that I will be contacted via phone call to provide information about myself and my family.

I have read the procedure described above. I **DO NOT** give my consent for my child, \_\_\_\_\_(print name), to participate in APEX.

PRINT NAME \_\_\_\_\_  
(Name of parent or legal guardian)

SIGNED \_\_\_\_\_ Date \_\_\_\_\_  
(To be signed by parent or legal guardian)

Contact Information:

Name of parent to contact \_\_\_\_\_

Phone number \_\_\_\_\_ (home) and \_\_\_\_\_

(alternate)

Best time of day to call for interview: \_\_\_\_\_AM / PM (Please circle one or both that are good)

ADDRESS \_\_\_\_\_

APPENDIX B  
PARENT INTERVIEW

1. What is your relationship to (child's name)?
  - a. Mother
  - b. Father
  - c. Grandmother
  - d. Grandfather
  - e. Other \_\_\_\_\_
  
2. What is (child's name) date of birth? \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
  
3. What is your (child's name) race?
  - a. White or Caucasian
  - b. African American
  - c. Hispanic
  - d. Biracial (specify) \_\_\_\_\_
  - e. Other \_\_\_\_\_
  
4. What is the highest level of education you have completed?
  - a. 8<sup>th</sup> grade (middle school)
  - b. Some high school
  - c. High school graduate or GED
  - d. Some college or Associates Degree
  - e. Bachelors degree (4 year institution)
  - f. Some graduate school
  - g. Graduate professional (MD, PHD, MS, Lawyer, DDS, etc)
  
5. Are you employed?
  - a. Yes
  - b. No
  
6. What is your occupation? (title and brief description)  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_
  
7. What is your current marital status?
  - a. Married or living with a partner
  - b. Divorced or separated
  - c. Single
  - d. Widowed

**IF ANSWERED (A) TO QUESTION 7, ASK QUESTIONS 8-10**

8. What is the highest level of education your spouse or partner has completed?
- a. 8<sup>th</sup> grade (middle school)
  - b. Some high school
  - c. High school graduate or GED
  - d. Some college or Associates Degree
  - e. Bachelors degree (4 year institution)
  - f. Some graduate school
  - g. Graduate professional (MD, PHD, MS, Lawyer, DDS, etc)

9. Is your spouse or partner employed?
- a. Yes
  - b. No

10. What is your spouse or partner's occupation? (title and brief description)

---

---

---

**ASK ALL PARENTS THE FOLLOWING QUESTION...**

11. Is your child eligible to receive a free or reduced price lunch from your school?
- a. Yes
  - b. No

APPENDIX C  
PEER STRESS CHECKLIST

So that we can find out how things have been going for you lately, please circle yes or no for each thing that has happened to you in the past 6 months. If you answer yes, then answer the question next to it by circling the number that shows how stressful these problems were for you.

Did this happen to you in the past 6 months?			If this happened to you, <u>how stressful was it?</u>			
			Not at all	A little	Somewhat	Very
1. Being around kids who are rude	Y	N	0	1	2	3
2. Not having as many friends	Y	N	0	1	2	3
3. Having someone stop being my friend	Y	N	0	1	2	3
4. Being teased or hassled by other kids	Y	N	0	1	2	3
5. Feeling pressured to do something	Y	N	0	1	2	3
6. Fighting with other kids	Y	N	0	1	2	3
7. Having problems with a friend	Y	N	0	1	2	3
8. Being left out or rejected	Y	N	0	1	2	3
9. Asking someone out and being turned down	Y	N	0	1	2	3

APPENDIX D  
RESPONSES TO PEER STRESS

The next section is a list of things that people sometimes do, think, or feel when something stressful happens. Everybody deals with problems in their own way – some people do a lot of the things on this list or have a bunch of feelings, other people just do or think a few.

**Think of the situations you just checked off.** For each item on the list below, circle the **one** number beside the item that shows **how much** you do or feel each of these things when you have problems with other kids. Please let us know about everything you do, think, and feel, even if you don't think it helps make things better.

Subscale	<i>When I have a problem with other kids</i>	How much do you do this?			
		Not at all	A little	Some	A lot
Disengagement	I try not to feel anything.	1	2	3	4
Involuntary Response	I feel sick to my stomach or get headaches.	1	2	3	4
Engagement	I try to think of different ways to change the problem or fix the situation.	1	2	3	4
Involuntary Response	I don't feel anything at all; it's like I have no feelings.	1	2	3	4
Disengagement	I wish that I were stronger, smarter, or more popular so that things so that things would be different.	1	2	3	4
Involuntary Response	I keep remembering what happened with the other kids or can't stop thinking about what might happen.	1	2	3	4
Engagement	I let someone or something know how I feel (for example, parent, friend, God, pet, brother/sister).	1	2	3	4
Involuntary Response	I just have to get away when I have problems with other kids; I can't stop myself.	1	2	3	4
Disengagement	I deal with the problem by wishing it would just go away, that everything would work itself out.	1	2	3	4
Disengagement	I try not to think about it, forget all about it.	1	2	3	4
Engagement	I ask other people for help or ideas about how to make the problem better.	1	2	3	4
Involuntary Response	I can't stop thinking about the problems when I try to sleep, or I have bad dreams about them.	1	2	3	4
Engagement	I tell myself that I can get through this, or that I'll do better next time.	1	2	3	4
Engagement	I let my feelings out.	1	2	3	4

	<i>When I have a problem with other kids</i>	How much do you do this?			
		Not at all	A little	Some	A lot
Engagement	I get help from other people when I'm trying to figure out how to deal with my feelings.	1	2	3	4
Involuntary Response	I just can't get myself to face the situation or the person with whom I'm having problems	1	2	3	4
Disengagement	I wish that someone would just come get me out of this mess.	1	2	3	4
Engagement	I do something to try to fix the problem or to take action to change things.	1	2	3	4
Involuntary Response	I feel it in my body. Things that I feel might be my heart racing, my breathing speeding up, feeling sweaty or hot, or my muscles getting tight.	1	2	3	4
Disengagement	I try to stay away from people and things that make me feel upset or remind me of the problem.	1	2	3	4
Engagement	I just take things as they are, I go with the flow.	1	2	3	4
Involuntary Response	I can't stop thinking about how I am feeling.	1	2	3	4
Involuntary Response	I can't always control what I do (for example, I can't stop eating, I can't stop doing dangerous things, I can't stop talking, etc).	1	2	3	4
Involuntary Response	It's really hard for me to concentrate or pay attention.	1	2	3	4
Engagement	I think about the things I'm learning from the situation, or something good that will come from it.	1	2	3	4
Involuntary Response	I end up just lying around or sleeping a lot.	1	2	3	4
Engagement	I do something to calm myself down.	1	2	3	4
Involuntary Response	I just freeze; I can't do anything.	1	2	3	4
Involuntary Response	Sometimes I act without thinking.	1	2	3	4
Engagement	I tell myself that everything will be all right.	1	2	3	4
Involuntary Response	I can't seem to get around to doing things I'm supposed to do.	1	2	3	4
Disengagement	I try to believe that it never happened.	1	2	3	4

	<i>When I have a problem with other kids</i>	How much do you do this?			
		Not at all	A little	Some	A lot
Involuntary Response	Sometimes I can't control what I do or say.	1	2	3	4
Disengagement	When I'm around other people, I act like the problems never happened.	1	2	3	4
Disengagement	I say to myself, "This isn't real."	1	2	3	4

APPENDIX E  
ANXIETY/DEPRESSION MEASURE

Please rate how well each of the following items describes you now or within the past 6 months by circling the best number next to that sentence.

<i>0 = Not true (as far as I know)</i>				<i>1 = Somewhat or sometimes true</i>				<i>2 = Very true or often true</i>
I worry a lot	0	1	2	I am nervous or tense	0	1	2	
I cry a lot	0	1	2	I am too fearful or anxious	0	1	2	
I am afraid of going to school	0	1	2	I feel too guilty	0	1	2	
I am afraid I might think or do something bad	0	1	2	I am self-conscious or easily embarrassed	0	1	2	
I feel that I have to be perfect	0	1	2	I feel worthless or inferior	0	1	2	
I feel that no one loves me	0	1	2	I am afraid of certain animals, situations, or places, other than school	0	1	2	

APPENDIX F  
INDIRECT AGGRESSION MEASURE

These questions ask about some things that often happen between kids. You might see some questions that are like those on page 2. Please rate how often you have done these things to others and how often these things have happened to you in the past year. For each question, use the following scale:

<i>How often have you done this to another kid?</i>	<b>Never</b>	<b>Once or twice</b>	<b>A few times</b>	<b>About once a week</b>	<b>A few times a week</b>
I left someone out of an activity that he/she really wanted to be included in.	0	1	2	3	4
I tried to damage someone's social reputation by spreading rumors about him/her.	0	1	2	3	4
I did not invite someone to a party or other social event even though I knew he/she wanted to go.	0	1	2	3	4
I told someone that I would not be friends with him/her anymore to get back at him/her.	0	1	2	3	4
I gossiped about someone so others would not like him/her.	0	1	2	3	4
I gave someone the silent treatment (did not talk to him/her on purpose).	0	1	2	3	4
I said mean things about someone so that people would think he/she was a loser.	0	1	2	3	4

APPENDIX G  
OVERT AGGRESSION MEASURE

There are times when most of us feel angry, or have done things we should not have done. Rate each of the items below by checking the answer that most describes you.

Do not spend a lot of time thinking about the items—just give your first response and only mark one answer. Make sure you answer all the items.

<b>Original Measure</b>	<b><i>How often have you...</i></b>	<b>Never</b>	<b>Sometimes</b>	<b>Often</b>
RPQ	Had fights with others to show who was on top	0	1	2
RPQ	Hut others to win a game	0	1	2
RPEQ	Threatened and bullied someone	0	1	2
RPQ	Used physical force to get others to do what you want	0	1	2
RPQ	Used force to obtain money or things from other people	0	1	2
RPEQ	I chased someone like I was really trying hurt him/her.	0	1	2
RPEQ	I threatened to hurt or beat up someone.	0	1	2
RPEQ	I hit, kicked, or pushed someone in a mean way.	0	1	2

Note. RPQ = Reactive-Proactive Aggression Questionnaire (Raine et al., 2006); RPEQ = Revised Peer Experiences Questionnaire (Prinstein et al., 2001)

## LIST OF REFERENCES

- Achenbach, T. M. (2001). *Manual for the Youth Self-Report and 2001 Profile*. Department of Psychiatry, University of Vermont, Burlington, VT.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Blalock, J. A., Joiner, T. E. (2000). Interaction of cognitive avoidance coping and stress in predicting depression/anxiety. *Cognitive Therapy and Research*, 24, 47-65.
- Breton, J., Bergeron, L., Valla, J., Berthiaume, C., Gaudet, N., Lambert, J., et al. (1999). Quebec Child Mental Health Survey: Prevalence of DSM-III-R mental health disorders. *Journal of Child Psychology and Psychiatry*, 40, 375-384
- Brooks-Gunn, J. (1991). How stressful is the transition to adolescence for girls? In M. E. Colten & S. Gore (Eds.), *Adolescent stress: Causes and consequences* (pp. 131-149). New York: Aldine de Gruyter.
- Calvete, E., & Connor-Smith, J. K. (2006). Perceived social support, coping, and symptoms of distress in American and Spanish cultures. *Anxiety, Stress and Coping*, 19, 47-65.
- Calvete, E., Corral, S., & Estévez, A. (2008). Coping as a mediator and moderator between intimate partner violence and symptoms of anxiety and depression. *Violence Against Women*, 14, 886-904.
- Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, 79, 1185-1229.
- Caspi, A., Moffitt, T. E., Newman, D. L., & Silva, P. A. (1996). Behavioral observations at age 3 years predict adult psychiatric disorders: Longitudinal evidence from a birth cohort. *Archives of General Psychiatry*, 53, 1033-1039.
- Cicchetti, D., & Cohen, D. J. (1995). Perspectives on developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Vol. 1. Theory and methods* (pp. 3-20). New York: Wiley.
- Cicchetti, D., & Walker, E. F. (2001). Stress and development: Biological and psychological consequences. *Development and Psychopathology*, 13, 413-418.
- Chaplin, T. M., & Cole, P. M. (2005). The role of emotion regulation in the development of psychopathology. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 49-74). Thousand Oaks, CA: Sage Publications.

- Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). The role of poor peer relationships in the development of disorder. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 274-305). New York: Cambridge University Press.
- Compas, B. E., Connor, J. K., Saltzman, H., Thomsen, T. A., & Wadsworth, M. (1999). Getting specific about coping: Effortful and involuntary responses to stress in development. In M. Lewis & D. Ramsay (Eds.), *Soothing and stress* (pp. 229-256). Mahwah, NJ: Lawrence Erlbaum Associates.
- Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin*, 127, 87-127.
- Connor-Smith, J. K., Compas, B. E., Wadsworth, M. E., Thomsen, A. H., & Saltzman, H. (2000). Responses to stress in adolescence: Measurement of coping and involuntary stress responses. *Journal of Consulting and Clinical Psychology*, 68, 976-992.
- Connor-Smith, J. K., & Compas, B. E. (2002). Vulnerability to social stress: Coping as a mediator or moderator of sociotropy and symptoms of anxiety and depression. *Cognitive Therapy and Research*, 26, 39-55.
- Costello, E. J., Foley, D. L., & Angold, A. (2006). Ten-year research update review: The epidemiology of child and adolescent psychiatric disorders: II. Developmental Epidemiology. *Journal of the American Academy of Child and Adolescent Psychiatry*, 45, 8-25.
- Crick, N. R., & Bigbee, M. A. (1998) Relational and overt forms of peer victimization: A multi-informant approach. *Journal of Consulting and Clinical Psychology*, 66, 337-347.
- Crozier, J. C., Dodge, K. A., Fontaine, R. G., Lansford, J. E., Bates, J. E., Pettit, G. S., et al. (2008). Social information-processing and cardiac predictors of adolescent antisocial behavior. *Journal of Abnormal Psychology*, 117, 253-267.
- Deater-Deckard, K. (2001). Annotation: Recent research examining the role of peer relationships in the development of psychopathology. *Journal of Child Psychology and Psychiatry*, 42, 565-579.
- Dempsey, M. (2002). Negative coping as mediator in the relation between violence and outcomes: Inner-city African American youth. *American Journal of Orthopsychiatry*, 72, 102-109.
- Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., pp. 719-788). New Jersey: John Wiley & Sons.
- Dorn, L. D., Susman, E. J., & Ponirakis, A. (2003). Pubertal timing and adolescent adjustment and behavior: Conclusions vary by rater *Journal of Youth and Adolescence*, 32, 157-167.

- Duncan, T. E., Duncan, S. C., & Strycker, L. A. (2006). *An introduction to latent variable growth curve modeling: Concepts, issues, and applications* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Murphy, B. C. (1996). The relations of regulation and emotionality to problem behavior in elementary school children. *Development and Psychopathology*, 8, 141-162.
- Eisenberg, N., Sadovsky, A., Spinrad, T. L., Fabes, R. A., Losoya, S. H., Valiente, C., et al. (2005). The relations of problem behavior status to children's negative emotionality, effortful control, and impulsivity: Concurrent relations and prediction of change. *Developmental Psychology*, 41, 193-211.
- Eschenbeck, H., Kohlmann, C., & Lohaus, A. (2007). Gender differences in coping strategies in children and adolescents. *Journal of Individual Differences*, 28, 18-26.
- Farrington, D. P. (2004). Conduct disorder, aggression, and delinquency. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2 ed., pp. 627-664). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Frydenberg, E., & Lewis, R. (1991). Adolescent coping: The different ways in which boys and girls cope. *Journal of Adolescence*, 14, 119-133.
- Gibb, B. E., & Coles, M. E. (2005). Cognitive vulnerability-stress models of psychopathology: A developmental perspective. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 104-135). Thousand Oaks, CA: Sage Publications.
- Gilliom, M., Shaw, D. S., Beck, J. E., Schonberg, M. A., & Lukon, J. L. (2002). Anger regulation in disadvantaged preschool boys: Strategies, antecedents, and the development of self-control. *Developmental Psychology*, 38, 222-235.
- Gilliom, M., & Shaw, D. S. (2004). Codevelopment of externalizing and internalizing problems in early childhood. *Development and Psychopathology*, 16, 313-333.
- Gonzales, N., Tein, J., Sandler, I., & Friedman, R. (2001). On the limits of coping: Interaction between stress and coping for inner-city adolescents.
- Gould, L. F., Hussong, A. M., & Keeley, M. L. (2008). The adolescent coping process interview: Measuring temporal and affective components of adolescent responses to peer stress. *Journal of Adolescence*, 31, 641-657.
- Graber, J. A., & Sontag, L. M. (2009). Internalizing problems during adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd Ed., pp. 642-682). New York: John Wiley & Sons, Inc.

- Grant, K. E., Compas, B. E., Stuhlmacher, A. F., Thurm, A. E., McMahon, S. D., & Halpert, J. A. (2003). Stressors and child and adolescent psychopathology: Moving from markers to mechanisms of risk. *Psychological Bulletin*, 129, 447-466.
- Grant, K. E., & McMahon, S. D. (2005). Conceptualizing the role of stressors in the development of psychopathology. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 3-31). Thousand Oaks, CA: Sage Publications.
- Hampel, P., & Petermann, F. (2006). Perceived stress, coping, and adjustment in adolescents. *Journal of Adolescent Health*, 38, 409-415.
- Hankin, B. L., & Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin*, 127, 773-796.
- Hankin, B. L., Mermelstein, R., & Roesch, L. (2007). Sex differences in adolescent depression: Stress exposure and reactivity models. *Child Development*, 78, 279-295.
- Hawker, D. S., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial adjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry*, 41, 441-455.
- Hollingshead, A. B. (1975). Four factor index of social status. Unpublished manuscript, Yale University.
- Hyde, J. S., Mezulis, A. H., & Abramson, L. Y. (2008). The ABCs of depression: Integrating affective, biological, and cognitive models to explain the emergence of the gender difference in depression. *Psychological Review*, 115, 291-313.
- Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-stress models. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 32-46). Thousand Oaks, CA: Sage Publications.
- Ivanova, M. Y., Achenbach, T. M., Rescorla, L. A., Dumenci, L., Almqvist, F., Bilenberg, et al. (2007). The generalizability of the youth self-report syndrome structure in 23 societies. *Journal of Consulting and Clinical Psychology*, 75, 729-738.
- Jaser, S. S., Langrock, A. M., Keller, G., Merchant, M. J., Benson, M. A., Reeslund, K., et al. (2005). Coping with the stress of parental depression II: Adolescent and parent reports of coping and adjustment. *Journal of Clinical Child and Adolescent Psychology*, 34, 193-205.
- Jose, P., & Huntsinger, C. (2005). Moderation and mediation effects of coping by Chinese American and European American adolescents. *Journal of Genetic Psychology*, 166, 16-43.

- Kagan, J., & Fox, N. A. (2006). Biology, Culture, and Temperamental Biases. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., Vol. 3, pp. 167-225). New York: John Wiley & Sons, Inc.
- Kaslow, N. J., Adamson, L. B., & Collins, M. H. (2000). A developmental psychopathology perspective on the cognitive components of child and adolescent depression. In A. J. Sameroff, M. Lewis & S. M. Miller (Eds.), *Handbook of developmental psychopathology*, 2nd Ed. (pp. 491-510). New York: Plenum Press.
- Keltner, D., Moffitt, T. E., & Stouthamer-Loeber, M. (1995). Facial expressions of emotion and psychopathology in adolescent boys. *Journal of Abnormal Psychology*, 104, 644-652.
- Kessler, R. C., Avenevoli, S., & Merikangas, K. R. (2001). Mood disorders in children and adolescents: An epidemiologic perspective. *Biological Psychiatry*, 49, 1002-1014.
- Kirschbaum, C., & Hellhammer, D. H. (1994). Salivary cortisol in psychoneuroendocrine research: Recent developments and applications. *Psychoneuroendocrinology*, 19, 313-333.
- Khatri, P., Kupersmidt, J. B., & Patterson, C. (2000). Aggression and peer victimization as predictors of self-reported behavioral and emotional adjustment. *Aggressive Behavior*, 26, 345-358.
- Kochenderfer-Ladd, B., & Skinner, K. (2002). Children's coping strategies: Moderators of the effects of peer victimization? *Developmental Psychology*, 38, 267-278.
- Krueger, R. F., Caspi, A., Moffitt, T. E., & Silva, P. E. (1998). The structure and stability of common mental disorders (DSM-III-R): A longitudinal-epidemiological study. *Journal of Abnormal Psychology*, 107, 216-227.
- La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology*, 34, 49-61.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. New York: Springer.
- Loeber, R., Burke, J. D., Lahey, B., B., Winters, A. & Zera, M. (2000). Oppositional defiant and conduct disorder: A review of the past 10 years, part I. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 1468-1484.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99-128.
- Masten, A. S., & Curtis, W. J. (2000). Integrating competence and psychopathology: Pathways toward a comprehensive science of adaptation in development. *Development and Psychopathology*, 12, 529-550.

- Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. (2001). *Sex differences in antisocial behavior: Conduct disorder, delinquency, and violence in the Dunedin Longitudinal Study*. Cambridge, UK: Cambridge University Press.
- Muthén, L.K. and Muthén, B.O. (1998-2007). *Mplus User's Guide*. Fifth Edition. Los Angeles, CA: Muthén & Muthén
- Nansel, T. R., Craig, W., Overpeck, M., Saluja, G., & Ruan, J. (2004). Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of Pediatrics and Adolescent Medicine*, 158, 730-736.
- Naumann, J., Richter, T., Christmann, U., & Groeben, N. (2008). Working memory capacity and reading skill moderate the effectiveness of strategy in learning from hypertext. *Learning and Individual Differences*, 18, 197-213.
- Nichols, T. R., Graber, J. A., Brooks-Gunn, J., & Botvin, G. J. (2006). Sex differences in overt aggression and delinquency among urban minority middle school students. *Journal of Applied Developmental Psychology*, 27, 78-91.
- Nock, M. K., Kazdin, A. E., Hiripi, E., Kessler, R. C. (2007). Lifetime prevalence, correlates, and persistence of oppositional defiant disorder: Results from the National Comorbidity Survey Replication. *Journal of Child Psychology and Psychiatry*, 48, 703-713.
- Nolen-Hoeksema, S. (1994). An interactive model for the emergence of gender differences in depression in adolescence. *Journal of Research on Adolescence*, 4, 519-534.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, 109, 504-511.
- Petersen, A. C., Sarigiani, P. A., & Kennedy, R. E. (1991). Adolescent depression: Why more girls? *Journal of Youth and Adolescence*, 20, 247-271).
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*, 36, 717-731.
- Preacher, K. J., & Hayes, A. F. (2006). Asymptotic and resampling strategies for assessing and comparing indirect effects in simple and multiple mediator models. Manuscript submitted for publication.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Assessing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185-227.

- Prinstein, M. J. (2007). Assessment of adolescents' preference- and reputation-based popularity using sociometric experts. *Merrill-Palmer Quarterly*, 53, 243-261.
- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child Psychology*, 30, 479-491.
- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child Psychology*, 30, 479-491.
- Quiggle, N. L., Garber, J., Panak, W. F., & Dodge, K. A. (1992). Social information processing in aggressive and depressive children. *Child Development*, 63, 1305-1320.
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., Stouthammer-Loeber, M., et al. (2006). The reactive-proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, 32, 159-171.
- Rohde, P., Lewinsohn, P. M., & Seeley, J. R. (1991). Comorbidity of unipolar depression: II. Comorbidity with other mental disorders in adolescents and adults. *Journal of Abnormal Psychology*, 100, 214-222.
- Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist*, 41, 813-819.
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., Vol. 3, pp. 99-166). New York: John Wiley & Sons, Inc.
- Rudolph, K. D., Dennig, M. D., & Weisz, J. R. (1995). Determinants and consequences of children's coping in the medical setting: Conceptualization, review, and critique. *Psychological Bulletin*, 118, 328-357.
- Rudolph, K. D., & Hammen, C. (1999). Age and gender as determinants of stress exposure, generation, and reactions in youngsters: A transactional perspective. *Child Development*, 70, 660-677.
- Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health*, 30, 3-13.
- Sandler, I. N., Tein, J., West, S. G. (1994). Coping, stress, and the psychological symptoms of children of divorce: A cross-sectional and longitudinal study. *Child Development*, 65, 1744-1763.
- Sandstrom, M. J. (2004). Pitfalls of the peer world: How children cope with common rejection experiences. *Journal of Abnormal Child Psychology*, 32, 67-81.

- Schippell, P. L., Vasey, M. W., Cravens-Brown, L. M., & Bretveld, R. A. (2003). Suppressed attention to rejection, ridicule, and failure cues: A unique correlate of reactive but not proactive aggression in youth. *Journal of Clinical Child and Adolescent Psychology*, 32, 40-55.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp.290-312). San Francisco: Jossey-Bass.
- Somerfield, M. R., & McCrae, R. R. (2000). Stress and coping research: Methodological challenges, theoretical advances, and clinical applications. *American Psychologist*, 55, 620-625.
- Sontag, L. M., Graber, J. A., Brooks-Gunn, J., & Warren, M. P. (2008). Coping with social stress: Implications for psychopathology in young adolescent girls. *Journal of Abnormal Child Psychology*, 36, 1159-1174.
- Stice, E., & Gonzales, N. (1998). Adolescent temperament moderates the relation of parenting to antisocial behavior and substance use. *Journal of Adolescent Research*, 13, 5-31.
- Storch, E. A., Nock, M. K., Masia-Warner, C., & Barlas, M. E. (2003). Peer victimization and social-psychological adjustment in Hispanic and African-American children. *Journal of Child and Family Studies*, 12, 439-452.
- Tanaka, J. S. (1987). How big is big enough?: Sample size and goodness of fit in structural equation models with latent variables. *Child Development*, 58, 134-146.
- Tolan, P. H., Gorman-Smith, D., Henry, D., Chung, K., & Hunt, M. (2002). The relation of patterns of coping of inner-city youth to psychopathology symptoms. *Journal of Research on Adolescence*, 12, 423-449.
- Underwood, M. K. (2003). *Social aggression among girls*. New York: Guilford Press.
- Wadsworth, M. E., Raviv, T., Compas, B. E., & Connor-Smith, J. K. (2005). Parent and adolescent responses to poverty-related stress: Tests of mediated and moderated coping models. *Journal of Child and Family Studies*, 14, 283-298.
- Wheaton, B. (1985). Models for the stress-buffering functions of coping resources. *Journal of Health and Social Behavior*, 26, 352-364.
- Wicks-Nelson, R., & Israel, A. C. (2008). *Abnormal Child and Adolescent Psychology* (7th ed). Upper Saddle River, NJ: Allyn and Bacon/Prentice Hall.
- Williams, K., & McGillicuddy-De Lisi, A. (2000). Coping strategies in adolescence. *Journal of Applied Developmental Psychology*, 20, 537-549.

Zahn-Waxler, C. (2001). The development of empathy, guilt, and internalization of distress: Implications for gender differences in internalizing and externalizing problems. In R. Davidson (Ed.), *Anxiety, depression, and emotion: Wisconsin Symposium on Emotion* (Vol. 1, pp. 222-265). New York: Oxford Press.

## BIOGRAPHICAL SKETCH

Lisa Michelle Sontag was born on November 25, 1981 in Philadelphia, Pennsylvania, to Dr. Marc R. Sontag and Mrs. Robin J. Sontag. She has one younger brother, Brian Sontag.

Lisa received her Bachelor of Science degree in psychology from Tulane University in 2000. At Tulane, Lisa graduated with departmental and university honors and completed a senior thesis which examined the relationship between psychosocial development and body image during mid-adolescence. In the fall of 2006, Lisa completed her Master's in psychology at the University of Florida, which integrated multiple dimensions and indicators of stress including negative peer experiences, pubertal timing, and cortisol reactivity in order to identify factors that place some young adolescent girls at greater risk for symptoms of anxiety/depression and aggression. Lisa recently received national recognition and support for her dissertation research from the American Psychological Foundation/Council of Graduate Departments of Psychology (APF/COGDOP, 2006). In the spring of 2009, Lisa received her Ph.D. in psychology from the University of Florida. Shortly after, Lisa began a postdoctoral training fellowship at Cincinnati Children's Hospital examining the role of hormones in the connection between puberty, stress, and psychopathology in young adolescent girls and boys. In the future, Lisa hopes to continue research examining mechanisms underlying risk for psychopathology and illuminate prevention and intervention efforts designed to reduce the occurrence of emotional and behavioral problems among adolescent girls and boys.