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Parenting Influences on Depression: A Moderated Mediation Model

A Dissertation

Presented to

the Faculty of Arts and Humanities

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In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

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ABSTRACT

Little is known about the developmental processes through which parenting factors may influence clinical depression among youth. This study investigated whether parenting influences the onset of clinical depression through the mediating mechanism of negative attributional style, particularly under conditions of high stress, in a community sample of children and adolescents ($N = 289$). Results supported a moderated mediation model in which low levels of observed parent positive regard and sensitivity to distress during a youth stressor task were indirectly associated with an increased likelihood of experiencing an episode of depression over an 18 month period, through the mediating influence of youth negative attributional style, but only for youth who also experienced a high number of peer stressors. These findings elucidate mechanisms through which parenting may contribute to risk for depression during the transition into and across adolescence.

TABLE OF CONTENTS

Chapter One: Introduction 1
 Cognitive Vulnerability for Depression: Negative Attributional Style..... 4
 Parenting and Associations with Cognitive Vulnerability and Depression 4
 Parenting in Stress-Inducing Contexts..... 6
 Aspects of Positive Parenting: Parent Positive Regard and Sensitivity to Distress 8
 Limitations of Prior Research 11
 Integrated Moderated Mediation Model 14
 Summary of Current Study 14

Chapter Two: Methods 16
 Participants..... 16
 Procedure 16
 Measures 18

Chapter Three: Results..... 22
 Descriptive Statistics..... 22
 Overview of Statistical Approach..... 23
 Conditional Indirect Effect of Parent Positive Regard on Youth Clinical Depression 25
 Conditional Indirect Effect of Parent Sensitivity to Distress on Youth Clinical Depression 26
 Alternative Models..... 26

Chapter Four: Discussion..... 28
 Strengths, Limitations, and Directions for Future Research..... 34

References..... 38

Appendix 1..... 52

Appendix 2..... 56

CHAPTER ONE: INTRODUCTION

Theory and research on the etiology of depression have increasingly focused on the role of family environments, particularly parenting factors, in the development of child and adolescent depressive symptoms and disorders (Sheeber, Hops, & Davis, 2001). Specifically, evidence suggests that exposure to low levels of positive, supportive parenting is associated with increased risk for depression (Sheeber et al.). Although this research is helpful in identifying low positive parenting as a risk factor associated with a high probability of depression among youth, very little is known about the developmental processes or mechanisms through which parenting behaviors may influence the etiology of depression. Developmental models of parenting posit that inadequate caregiving responses to youth, particularly during exposure to threatening or stressful situations, contribute to problems with youth learning to independently and effectively manage stress, which in turn increases risk for psychopathology (Ainsworth & Bell, 1970; Bowlby, 1977; Moore & Calkins, 2004). Similarly, depression researchers in a separate line of work have hypothesized that problematic parenting is an important predictor of negatively biased cognitive responses to stress (Alloy et al., 2001; Garber & Flynn, 2001; Hankin et al., 2009). In particular, the inferential feedback hypothesis proposes that parenting behaviors which implicitly or explicitly convey negative information about stressors are especially influential in the formation of biased interpretations of stress (Alloy et al., 2001). When taken together, it can be inferred from work in both developmental and clinical areas of research that youth may rely on parental caregiving behaviors to help interpret and respond to threatening or stressful events. Thus, exposure to parenting that fails to provide adequate care or support to youth, particularly during

stressful experiences, may contribute to negative appraisals of stressors which then may lead to increased risk for psychopathology, especially depression.

Given that parenting behaviors which convey information about stressors is hypothesized to be especially influential in the formation of cognitive vulnerability and risk for depression, it is important to assess parenting behaviors within relevant contexts, such as during stressful situations. However, studies that investigate parenting in response to child exposure to stress, often through observations of parenting behaviors during child laboratory stressor tasks, have primarily been conducted among infants and young children (e.g, Propper & Moore, 2006). As a result, very little is known about whether parenting behaviors directed towards youth during stressful experiences relate to cognitive biases and risk for depression among older children and adolescents.

Depression researchers have further hypothesized that exposure to a high number of stressors, in addition to parenting, is another risk factor in the development of depressogenic cognitive biases (Garber & Flynn, 2001; Hankin et al., 2009; Rose & Abramson, 1992). It is thought that over time, repeated exposure to stressors may contribute to beliefs associated with low self-esteem and helplessness, and thus lead to a more stable negative cognitive vulnerability for depression. Moreover, it is implicit in developmental theories on the role of parenting in child responses to stress, as well as the inferential feedback hypothesis, that youth who receive problematic parenting when faced with stressors, and also experience a high number of stressors, are at especially high risk for developing vulnerability to psychopathology. Yet, there is a paucity of studies that have examined how parenting might interact with stressors to predict youth risk for depression, so little is known about whether exposure to a high number of stressors may influence the association between problematic parenting and risk for depression.

It is especially important to examine how parenting may interact with stressors to influence vulnerability for depression during the transition from late childhood into and across

adolescence, given multiple changes during this developmental period which may set the stage for increased depression risk. First, the transition into adolescence is characterized by transformations in parent-child relationships, including increased conflict with parents (Collins, Laursen, Mortensen, Luebker, & Ferreira, 1997; Laursen, Coy, & Collins, 1998), and decreases in positive, supportive qualities in relationships with parents (Furman & Buhrmester, 1992; Kim, Conger, Lorenz, & Elder, 2001; McGue, Elkins, Walden, & Iacono, 2005). Second, youth experience an increase in stressors during this period, particularly peer-related stressors, which coincides with the increase in importance of peer relationships (Furman & Buhrmester, 1992; Hankin, Mermelstein, & Roesch, 2007; Rudolph & Hammen, 1999). Third, as self-concept and beliefs about self-competency stabilize during the transition into adolescence, there is evidence that cognitive vulnerability may also emerge during this time (Cole et al., 2008; Wigfield & Eccles, 2002). In particular, findings suggest that negative attributional style, one type of cognitive vulnerability, becomes more trait-like around late middle childhood and early adolescence (Cole et al., 2008; Hankin, 2008). These developmental trends occur alongside a rise in rates of depression. Depression rates first begin to increase in early adolescence, and continue to grow throughout adolescence until they reach rates found in adulthood (Angold, Costello, & Worthman, 1998; Hankin et al., 1998). Thus, the transition into and across adolescence is a critical developmental period associated with changes in parenting and exposure to stressors, which may contribute to a more stable negative attributional style and risk for depression.

This study addressed major gaps in knowledge about mechanisms through which parenting may influence the development of depression among youth during the transition into and through adolescence. In this study I propose and test a model in which parenting interacts with stressors to predict depression through the mediating role of cognitive vulnerability (i.e. moderated mediation model, see Figure 1). Furthermore, this study measured aspects of observed positive parenting while parents interacted with their children during a social-evaluative

laboratory stressor task for youth. I speculated that exposure to deficient levels of observed positive parenting during a social stressor task may influence youth attributions about the causes of stressful social situations. If these youth are then also exposed to high levels of stressors, particularly in the social domain (e.g., interpersonal peer stressors), then they may be more likely to develop a more stable cognitive vulnerability, namely a general negative attributional style, which in turn may put them at a higher risk for developing clinical depression.

Cognitive Vulnerability for Depression: Negative Attributional Style

Cognitive theories of depression posit that biases in the way one attends to, perceives, interprets, and remembers information contribute to vulnerability for the development and maintenance of depressive disorders (Beck, 1967; Clark & Beck, 1999). Helplessness and hopelessness models of depression emphasize a particular type of interpretation bias, referred to as negative attributional style, in which an individual attributes negative events to internal, stable, and global causes (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978). Negative attributional style is thought to be a relatively stable and habitual way of thinking about the cause of negative events that predisposes individuals to depression. A number of studies provide support for negative attributional style as an important cognitive vulnerability for depression among youth (Abela & Hankin, 2008; Lakdawalla, Hankin, & Mermelstein, 2007; Hankin, Snyder, & Gulley, in press). The current study explores negative attributional style as one possible mechanism through which parenting, in interaction with stressors, may influence depression.

Parenting and Associations with Cognitive Vulnerability and Depression

As children begin to transition to adolescence, research indicates that relationships with parents undergo a period of adjustment in response to youth maturational changes (Collins et al., 1997; Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Studies suggest that parent-child conflict increases, and parental warmth decreases (Kim, Conger, Lorenz, & Elder, 2001; McGue,

Elkins, Walden, & Iacono, 2005), while youth begin to spend more time with peers and less time with parents (Larson et al.). However, despite some changes in the parent-child relationship, research suggests that parents continue to be a major source of influence and support during adolescence (Steinberg, 2001). Importantly, parents have been shown to play an essential role in the development of depression: adolescents who have more supportive, positive relationships with parents experience lower levels of later depressive symptoms (Sheeber, Hops, Alpert, Davis, & Andrews, 1997), and are at a decreased risk for developing clinical levels of depression (Seeley, Stice, & Rohde, 2009; Stice, Ragan, & Randall, 2004), whereas youth exposed to low levels of support and positive parenting from parents are at greater risk for depression (see review by Alloy et al., 2006).

However, as noted previously, there is a dearth of research on the mechanisms that can explain how parenting factors might contribute to depression. A growing body of literature suggests that parenting behaviors may influence the development of depression through the formation of cognitive biases as youth learn to process information about the self and their experiences through interactions with their parents (Sheeber, Hops, & Davis, 2001). Parental behaviors that convey information about the meaning of negative experiences in particular may play an especially important role in the development of cognitive vulnerability for depression among youth (Alloy et al., 2001; Crossfield, Alloy, Gibb, & Abramson, 2002).

A number of studies have used self-report questionnaire methods to examine the association between parenting and cognitive vulnerability. These studies show that youth who experience low levels of warmth and approval from parents, and/or high levels of parental rejection and criticism, are more likely to develop a poor self-image and a negative cognitive style (Alloy et al., 2001; Garber & Flynn, 2001; Hall, Peden, Rayens, & Beebe, 2004; Ingram, Overbey, & Fortier, 2001; Ingram & Ritter, 2000; Koestner, Zuroff, & Powers, 1991). Only a small handful of studies have linked parenting, cognitive vulnerability, and depression within a full mediational

model to test whether cognitive vulnerability mediates the associating between parenting and depression among youth (Alloy et al., 2001; Liu, 2003; Randolph & Dykman, 1998; Whisman & Kwon, 1992). These studies also used self-report questionnaire methods to support the hypothesis that problematic parenting, particularly low parental warmth, contributes to depression via cognitive vulnerability, including negative attributional style. However, there is still little known about what specific parenting behaviors, in what contexts, are most influential in the formation of negative attributional style and risk for depression.

Parenting in Stress-Inducing Contexts

There is a long history of theory and research that suggests that one of the primary functions of positive parenting behaviors is to protect children from stressful or threatening situations (Ainsworth & Bell, 1970; Bowlby, 1977). Moreover, evidence suggest that if parents fail to appropriately respond during times of potential threat, then children will be more likely to develop ineffective responses to stress which then places them at a greater risk for psychopathology (Conradt & Ablow, 2010; Goldberg, Grusec, & Jenkins, 1999; Ginger A Moore & Calkins, 2004). Research has shown that relationships with parents characterized by positive qualities can buffer against the effects of stress on youth depressive symptoms, even into adolescence (Ge, Lorenz, Conger, Elder, & Simons, 1994; Ge, Natsuaki, Neiderhiser, & Reiss, 2009; Hazel, Oppenheimer, Technow, & Hankin, 2013; Natsuaki et al., 2007). The mechanisms of this stress-buffering effect are poorly understood, but one possibility is that parenting behaviors contribute to more adaptive appraisals of stress, consistent with developmental models of stress response and the inferential feedback hypothesis (Alloy et al., 2001). It is especially crucial to understand how parenting behaviors may relate to youth cognitive response to stress within stressful contexts during the transition into adolescence, when an increase in stressors during this developmental period may tax the ability for youth to independently and effectively respond to stress (Yap, Allen, & Sheeber, 2007).

In order to understand how parenting behaviors may contribute to cognitions about stress, it is important to assess parenting in relevant contexts. A number of studies have used observational methods to examine how parenting may relate to child distress in response to stressors among samples of infants and young children (Conradt & Ablow, 2010; Crockenberg & Leerkes, 2004; Kiel & Buss, 2010; Ginger A Moore & Calkins, 2004; Spinrad, Stifter, Donelan-McCall, & Turner, 2004). Among infants, one study found that context moderates associations between parent and child behaviors, and suggested that high stress contexts reveal the strongest associations between parenting and child's ability to regulate emotion (Maas, Vreeswijk, & van Bakel, 2013; Miller, McDonough, Rosenblum, & Sameroff, 2002). Such observational research examining parenting in stress-inducing contexts for older children and adolescents is almost non-existent. Instead, the most commonly used paradigm used in observational studies of parent-child interactions among adolescents is a conflict resolution task in which parents and children discuss a source of disagreement. Although studies using this conflict resolution paradigm have yielded important findings about family processes associated with adolescent risk for depression (Allen et al., 2006; Dietz et al., 2008; Park, Garber, Ciesla, & Ellis, 2008; Pineda, Cole, & Bruce, 2007; Sheeber, Allen, Davis, & Sorensen, 2000), it is essential to assess parenting behaviors in other contexts during the transition into and across the adolescent developmental period. Moreover, the few observational studies of adolescents that have assessed parenting behavior toward youth across multiple paradigms (e.g., conflict resolution, and planning fun event task) have found differential effects for parenting on risk for depression depending on context (McMakin et al., 2011; Schwartz et al., 2011). Therefore, it is likely that parenting behaviors associated with youth cognitive vulnerability and depression during the transition into and through adolescence are different in contexts that primes for conflict than in stress-inducing contexts that primes for parental caregiving behaviors in response to youth distress.

Aspects of Positive Parenting: Parent Positive Regard and Sensitivity to Distress

Because current models of associations between specific, observed parenting behaviors and youth response to stress are based on studies of infants and young children, it is unknown what parenting behaviors in stress-inducing contexts may be most predictive of youth cognitive vulnerability and thus risk for later depression among older children and adolescents. However, studies on the antecedents to cognitive vulnerability, and observational research on predictors of infant stress reactivity, can both provide suggestions about what particular aspects of parenting might be most relevant in adolescent cognitive responses to stressors. It can be inferred from theory and research on the origins of negative attributional style that deficits in positive parenting, such as low levels of affection and warmth, may directly or indirectly communicate to youth that stressors occur because of stable and global self-characteristics (Alloy et al., 2001; Alloy, Abramson, Smith, Gibb, & Neeren, 2006). Observational studies among young children have further identified that low levels of positive regard (e.g., deficient affection and praise) and low levels of parental sensitive behaviors (e.g., unresponsiveness to child cues) are associated with dysfunctional responses to stressors (Blair, Granger, Willoughby, & Kivlighan, 2006; Calkins, 1994; G.A. Moore et al., 2009; Propper et al., 2008).

Recently, researchers have made distinctions between two types of parental sensitive behaviors: sensitivity to distress, and sensitivity to non-distress (Leerkes, Blankson, & O'Brien, 2009; Leerkes, Weaver, & O'Brien, 2012). Based on principles from attachment theory, the developmental literature posits that parent sensitivity to distress is represented by prompt and appropriate parent responses to child bids for safety, protection, or care, such as child expressions of negative emotion (e.g., crying; Bowlby, 1977; Goldberg, Grusec, & Jenkins, 1999; Leerkes et al., 2009; 2012). On the other hand, parent sensitivity to non-distress includes parent prompt and appropriate responses to general social gestures, verbalizations, or other behaviors typically characterized by either neutral or positive affect (e.g., smiles, conversational comments, play

behavior, etc.). Proponents of this distinction have argued that because one of the primary functions of a parental sensitivity is to protect against threats to a child's security, parental sensitive responses to child bids for protection and support are likely to be more predictive of social-emotional adjustment than sensitivity to non-distress. Evidence supports the idea that sensitivity to distress, rather than non-distress, has especially important implications for the development of social competence and emotional regulation abilities (Leerkes et al., 2009; Leerkes et al., 2012).

In the current study, I used observational methods to assess for each type of parental sensitivity, as well as parental positive regard, during a youth stressor task. I reasoned that during stressful situations, youth who receive inadequate praise, affection, and other esteem building communications from parents (i.e. low parental positive regard), may be more likely to make negative and self-referent attributions about the causes of stressors. Similarly, I thought that youth who receive insufficient responsiveness and support from parents in stress-inducing contexts, particularly when exhibiting distress (i.e. low parental sensitivity to distress), may have difficulty managing stress and may be more likely to make biased interpretations about the meaning of negative experiences. I further hypothesized that exposure to high levels of stressors would interact with parenting received in stressful contexts to predict cognitive vulnerability.

The Role of Peer Stressors in Models of Cognitive Vulnerability and Depression

Cognitive theorists of depression have posited that when a negative event occurs, an individual is motivated to understand its causes and meaning (Garber & Flynn, 2001; Rose & Abramson, 1992). Furthermore, exposure to multiple stressors may lead to cognitions associated with personal responsibility, helplessness, and low self-esteem. It is thought that through repetition of event-specific cognitive attributional biases, a more general negative attributional style is formed. Evidence from studies of children and adolescents support the hypothesis that negative events and stressors are associated with cognitive vulnerability for depression (Garber &

Flynn, 2001; Nolen-Hoeksema et al., 1992; Rudolph, Kurlakowsky, & Conley, 2001; see review by Hankin et al., in press). Moreover, negative attributional style has been shown to mediate the association between negative events and depressive symptoms among older children (Gibb & Alloy, 2006).

However, little attention has been given to what domains of stressors may be most relevant to the formation of cognitive vulnerability. Additionally, much of the empirical research on the associations between stressors and cognitive vulnerability have examined the effects of exposure to maltreatment, rather than exposure to other kinds of typical stressors for youth (Gibb et al., 2001; Feiring, Taska, & Lewis, 1998; Hankin, 2005; Rose, Abramson, Hodulik, Halberstadt, & Leff, 1994; Gibb, Alloy, Walshaw et al., 2006; Gibb & Abela, 2008). Given that the transition into adolescence is a critical period for the stabilization of attributional style and an increased risk for depression, it is important to give attention to more commonly experienced stressors that might be especially developmentally salient around this time.

The significance of peer relationships intensifies during the transition to adolescence as youth experience more frequent interactions with peers (Buhrmester & Furman, 1987), an expansion of peer networks (Prinstein & La Greca, 2002), and greater intimacy within close friendships (Furman & Buhrmester, 1992). Consistent with these developmental changes, evidence suggests that youth encounter a greater number of peer stressors as the peer group becomes a more salient context for socialization, identity development, and emotional experiences around the adolescent period (Hankin et al., 2007; Ladd & Troop-Gordon, 2003; Larson & Ham, 1993; Rudolph & Hammen, 1999). Peer stressors also are a powerful predictor of depressive symptoms during this time (Hankin et al., 2007; Rudolph, 2002; Rudolph, Flynn, Abaied, Groot, & Thompson, 2009).

There is also developing evidence that peer stressors, more than other types of stressors, interact with problematic parenting to predict risk for depression (Hazel et al., 2013; Mezulis et

al., 2006; but see Bilsky et al., 2013 for null findings), perhaps through the mediating factor of negative attributional style. Hazel and colleagues (2013) recently found evidence that low positive relationships with parents interacted with peer stressors to predict greater levels of depressive symptoms during late childhood and across the transition into adolescence, but did not find the same interaction effect for non-peer stressors. Mezulis et al. (2006) also found that peer stressors, rather than other types of stressors, more consistently interacted with negative parenting to predict negative cognitive style among youth. Importantly, negative parenting was assessed in two different ways in this study, first using self-report questionnaire methods of parenting, and then by using observational methods of parenting during an achievement stressor for youth, using a subsample of participants. Therefore, this was the first and only study to date to use observational methods to examine parenting in a stress-inducing context in interaction with youth stressors to predict negative cognitive style. The parenting x peer stressors interaction was significant in this study when questionnaire methods were used, and approached significance when observational methods were used. The failure for the interaction to reach full significance when using observational assessments could have been a result of using a smaller, subsample of youth. It is also possible that if parenting were assessed in a context that is more consistent with a social stressor, rather than an achievement stressor, then this would lead to more precise measurement of relevant, context-specific parenting behaviors, leading to stronger interaction effects when examining peer/social stressors as moderators. The current study used observational assessments of parenting during a social-evaluative stressor task to best assess the interaction between context relevant parenting behaviors and peer stressors predicting depressive symptoms through negative attributional style.

Limitations of Prior Research

Research examining associations between parenting and cognitive vulnerability and its mediating role in depression is limited in important ways. First, researchers have almost

exclusively used self-report questionnaire methods in studies investigating associations between parenting and cognitive vulnerability for depression (but see Cox, Mezulis, & Hyde, 2010; Jaenicke et al., 1987, and Mezulis, Hyde, & Abramson, 2006 for exceptions). This is problematic given that multiple meta-analyses have found that the method used to assess parenting moderates the effect of parenting on child outcomes, including child depression (McLeod, Weisz, & Wood, 2007; McLeod, Wood, & Weisz, 2007; Rothbaum & Weisz, 1994). Weaknesses of questionnaire methods may reduce the accuracy of findings for several reasons: 1) exclusive use of questionnaires can lead to shared method variance that can inflate associations, 2) depressed individuals' biased perceptions of self and others can lead to the overreporting of negative behaviors on questionnaires (Millikan, Wamboldt, & Bihun, 2002; Najman et al., 2000; Rudolph & Clark, 2001), and 3) parenting questionnaires typically measure global, decontextualized constructs that aggregate information across time and situations, which may lead to imprecise measurement of parenting (Holden & Edwards, 1989). This latter weakness is especially significant when investigating the relation between parenting and youth attributional style. Given that cognitive theories of depression suggest that parenting behaviors are especially influential in the formation of youth attributional style when they can convey information about stressors (e.g., Alloy et al., 2001), it is important to carefully assess parenting behaviors in specific, ecologically relevant contexts, such as during stressful situations.

Another limitation of prior research is that observational studies have not typically controlled for child effects on depression, particularly in studies of older children and adolescents. Given the interrelatedness of parent and child behaviors during interactions with one another, child behaviors could account for the effect of parenting on youth risk for depression. In particular, there is a well documented association between youth affect and depression (Compas, Connor-Smith, & Jaser, 2004; Stark, Kaslow, & Laurent, 1993), including evidence that depressed youth are more likely to exhibit negative affect, and less likely to exhibit positive

affect, during observed parent-child interactions (McMakin et al., 2011; Sheeber, Allen, Davis, & Sorensen, 2000). Given that parent affect is highly correlated with youth behaviors (Kim et al., 2001), it is unclear whether parenting behaviors predict risk for depression above and beyond the influence of child affect on depression.

Finally, a large majority of prior studies have only examined youth depressive symptoms as an outcome, rather than clinical levels of depression. Therefore, it is unclear whether findings showing that cognitive vulnerability is a mediator of the association between parenting and depressive symptoms generalize to more severe, clinically significant levels of depression. The two studies that did examine onsets of a clinical depressive disorder as the youth outcome variable used college samples of young adults to investigate how cognitive vulnerability mediated the association between self-reported parenting and depression (Alloy et al., 2001; Spasojevic & Alloy, 2002). As a result, little is known about how cognitive vulnerability might mediate associations between environmental risk and the development of clinical depression across the transition into and through adolescence, when youth are particularly vulnerable to developing clinical depressive episodes.

This study addressed limitations of prior research by using observational methodology to assess aspects of positive parenting during a specific, ecologically valid context. In particular, assessments measured observed parenting behaviors during a laboratory stressor task for youth to examine the influence of parenting in stress-inducing contexts on the risk for depression during the transition into and across adolescence. Negative and positive child affect were also measured during the observed stressor task in order to control for potential child effects. Additionally, semistructured interviews were used to assess for the onset of a depressive episode among youth over the course of the 18 month study. Therefore findings from this study are able to address gaps in knowledge about when and how parenting may influence clinically significant depression among youth.

Integrated Moderated Mediation Model

Prior studies have focused on how poor parenting and stressors may each be independently associated with cognitive vulnerability, and/or how each of these factors independently predicts depression through cognitive vulnerability (Alloy et al., 2001; Cole & Turner, 1993; Gibb & Alloy, 2006; Liu, 2003; Randolph & Dykman, 1998; Whisman & Kwon, 1992). Only two known studies to date have statistically tested whether the interaction between parenting factors and stressors predict depressogenic cognitions among youth (Bilsky et al., 2013; Mezulis, Hyde, & Abramson, 2006), and neither one of these studies focused on negative attributional style specifically. Therefore, despite theoretical implications that a high number of stressors exacerbate the effects of problematic parenting, there is still a lack of attention to how the interaction between parenting factors and stressors might relate to cognitive vulnerability, including negative attributional style.

Integrating parenting and stressors into models of cognitive vulnerability may more fully elucidate the conditions under which youth may form a more general negative attributional style, which may in turn place them at an increased risk for depression. Specifically, youth who receive ineffective or inadequate parenting during stressful experiences may be more likely to make negative attributions about the causes of stressors. If youth are given opportunities to solidify these negative attributions through repeated exposure to stressors, they may be especially at risk for developing a more stable negative attributional style. Thus, the integrated moderated mediation model tested in this study posits that there is an indirect effect of parenting on depression, in which parenting behaviors influences depression through negative attributional style, but that this effect is conditional upon exposure to high levels of stressors.

Summary of Current Study

This is the first study to use observational methods to assess theoretically significant aspects of positive parenting during a social-evaluative stressor for youth during the transition into and

across adolescence, and to examine whether deficits in observed positive parenting interact with peer stressors to predict depression through the mediating role of negative attributional style. I hypothesized that youth who tend to receive low levels of positive regard and sensitivity to distress from parents when experiencing stressors, and who also experience a high number of peer stressors, would be more likely to have a general negative attributional style which would in turn put them at a high risk for experiencing depression. I further hypothesized that sensitivity to non-distress would not be associated with depression through negative attributional style, regardless of number of peer stressors. Finally, I hypothesized that non-peer stressors would not moderate the indirect effect of parent positive regard or parent sensitivity to distress on depression through negative attributional style. Thus, the current study tested whether parent sensitivity to distress and positive regard each are associated with clinical depression through negative attributional style, and whether this indirect effect is moderated by peer stressors. Additionally, the current study tested an alternative model in which parent sensitivity to non-distress interacted with peer stressors to predict depression through negative attributional style, as well as alternative models in which non-peer stressors moderated the indirect effect of the parenting variables on depression through negative attributional style.

CHAPTER TWO: METHODS

Participants

Children and adolescents were part of a larger 3 year longitudinal study on risk factors for the development of depression among youth. Participants were recruited for the larger study by brief information letters sent home directly by the participating school districts to families with a child in public school. The short letter stated that we were conducting a study on social and emotional development in children and adolescents and requested that interested participants call the laboratory to receive more detailed information on the study.

Participants were 289 youth ranging in age from 7 to 17 ($M = 12.70$, $SD = 2.42$). The sample was approximately evenly divided by sex (43% boys, 57% girls). The present sample, drawn from the general community of youth attending public schools, was representative of both the broader population of the particular geographical area and the school districts from which the sample was drawn, including socioeconomic status, ethnicity, and race. Ethnicity was as follows: Caucasian, 70%; African American, 5%; Latino, 7%; Asian/Pacific Islander, 4%; other/mixed ethnicity and race, 14%. Parents of the youth were predominantly mothers (86%). Median annual parental income was \$77,000, and 19% of the youth received free/reduced lunch at school.

Procedure

Youth and their parents completed measures for the current study as part of the larger 3 year longitudinal study that consisted of 3 laboratory visits (at baseline, 18 months, and 36 months), as well as brief phone follow-ups that occurred at 6 month intervals between the laboratory visits. Due to time constraints, only 183 youth and their parents were able to complete the psychosocial

laboratory challenge at baseline of the larger study, whereas the remaining 106 youth and their parents completed the challenge at the 18 month laboratory visit. The procedure was similar across the baseline and 18 month visits for youth included in the current study. At both visits, parents provided informed written consent for their participation and for their child; youth provided written assent. Parents and youth completed a battery of questionnaires, including measures of peer stressors and negative attributional style as part of the assessment. Parents also provided information about basic demographics, including family income, qualification for free/reduced school lunch, and child ethnicity. Youth participated in the laboratory challenge while parents were present, and parent-child interactions were videotaped during this task. Additionally, youth were administered a semi-structured diagnostic interview to assess for current depression. Given that the same measures of stressors and negative attributional style were administered along with the psychosocial laboratory challenge at both the baseline and 18 month visits, data from baseline measures administered to the 183 participants that completed the laboratory challenge at baseline were combined with the corresponding 18 month visit measures administered to the 106 youth that completed the challenge at 18 months. Thus, data of all 289 participants were combined and included in Time 1 of the current study's analyses.

Brief phone follow-up assessments were conducted every 6 months between laboratory visits to assess youths' clinical depression, using the same semi-structured diagnostic interview for depression used at the laboratory visits. Time 2 in the current study included the combination of diagnostic interview data collected at 6 months from first 183 youth who completed laboratory challenge at baseline, and data collected at 24 months from remaining 109 youth who completed challenge at 18 months. Time 3 included combination of 12 month and 30 month follow-ups in the same way, and Time 4 included 18 and 36 month follow-ups. It should be noted that the 18 month and 36 month assessments of depression were administered as part of the longer laboratory

visits conducted at these time points. Therefore, the current study included 4 waves of data (Time 1, 2, 3, and 4) over a 1.5 year time frame.

Measures

Parent and child behaviors during stressor task. Parent and child behaviors were observed and coded during the videotaped 5 minute youth psychosocial challenge. During this task, youth were instructed to pretend to audition for a reality television show about kids, and were told that their speeches would be evaluated by judges. Youth then gave a speech to the camera for 2 minutes about why they should be chosen for the show. Parents sat behind the child during the speech, and were told that although the speech was for the child to perform, they could provide support as needed. After the youth completed the speech, a research assistant came into the room and instructed the parent and youth to sit and wait while the video of the speech was viewed and scored by judges. Youth and the child were then left alone for another 3 minutes during this time. Youth and parents were debriefed at the end of the assessment period about the stressor task. During the debriefing, they were told that the task was designed to help understand different ways people respond to stress and that their speeches would not be evaluated. This task was included in Time 1 in analyses for the current study..

All parent and child constructs were coded by reliable, independent raters throughout the entire 5 minutes of the videotaped psychosocial challenge. One global code was given for each parenting and child construct on a scale between 1 and 5 (1 = *not at all characteristic of individual's behavior during interaction* and 5 = *highly characteristic of individual's behavior during interaction*). Parent constructs coded were parent positive regard, sensitivity to distress, and sensitivity to non-distress. Parents who exhibited high levels of positive regard demonstrated genuine affection, praise, and enthusiasm towards their child throughout the interaction. Specifically, these parents exhibited warm and enthusiastic tone of voice while communicating frequent expressions of praise and approval. Parents who were sensitive to their child's distress

responded promptly and appropriately to their child's cues signaling distress. Youth signs of distress included more obvious signs of distress (e.g., crying, frustration) or more subtle bids for parent support while experiencing the stressor (e.g., looking behind shoulder at parent when stuck, asking for help, etc.). Parents were sensitive to their child's non-distress if they responded appropriately and promptly to their child's general social gestures and verbal comments. All parenting observational codes were based on validated parent-child observational coding systems that have been used previously and reflect theoretically grounded dimensions of positive parenting (Leerkes et al., 2009; NICHD Early Child Care Research Network, 1999).

Child constructs coded were positive affect and negative affect. Youth were coded as expressing positive affect if they exhibited positive affect in their voice (e.g., cheerful, buoyant tone, or laughing), face, (e.g., smiling), or body (e.g., relaxed body facing camera). Similarly, youth were coded as expressing negative affect if they exhibited negative affect in their voice (e.g., irritated, dysphoric, or nervous tone), face (e.g., frowning, scowling, poor eye contact), or body (e.g., clenched fists, tense body, or facing away from camera). Youth who scored high on either one of the affect scales demonstrated the target affect in all three domains (voice, face, and body) consistently throughout task, or exhibited high intensity in at least one of the domains consistently. Approximately 20% of videotaped stressor tasks were double coded for parent and child behaviors (intraclass correlation coefficient [ICC] ≥ 0.70).

Sixty-three parents (22%) did not receive a code for sensitivity to distress because their child did not exhibit any signs of distress throughout the stressor task, and therefore these parents were excluded for analyses examining the sensitivity to distress variable. 8 parents (3%) did not receive a code for sensitivity to non-distress because their child did not show signs of non-distress during the stressor, and so these parents were excluded whenever sensitivity to non-distress was used in analyses.

Stressors. Eight items from the Adolescent Life Events Questionnaire (ALEQ; Hankin & Abramson, 2002) identified *a priori* as having to do with peer relationships (e.g., “Feeling pressure by friends”, “Fighting with or problems with a friend”, “Friend is criticizing you behind your back”) were summed to form a scale of peer stressor exposure. Each item was rated on a scale from 0 (“never”) to 4 (“always”) reflecting how often that experience had happened to the participant in the last 3 months. Possible scores ranged from 0 to 32 for this scale. The remaining 29 items from the ALEQ were summed to form a scale of non-peer stress (e.g., “Getting bad grades on progress reports”, “Death of a relative”, “Financial troubles or money problems”, “Arguments or fights between parents”). The broader ALEQ has been widely used in previous multi-wave, longitudinal studies on multiple continents (e.g., Abela et al., 2011; Calvete, Orue, & Hankin, 2012; Hankin, Stone, & Wright, 2010), and the peer and non-peer stressor subscales have also been used previously (Hazel et al., 2013). These data show the ALEQ to be a reliable and valid predictor of prospective elevations in depressive symptoms in children and adolescents as young as 3rd grade (Hankin, Jenness, Abela, & Smolen, 2011). This measure was also included in Time 1 of the current study.

Negative attributional style. The Adolescent Cognitive Style Questionnaire (ACSQ; Hankin & Abramson, 2002) was used to measure inferences about causes of negative events. The ACSQ presents the adolescent with negative hypothetical events in achievement and interpersonal domains and asks the youth to make inferences about the causes about the event (internal– external, stable–unstable, and global–specific), consequences of the event, and characteristics about the self. The ACSQ has demonstrated excellent internal consistency reliability, good test–retest reliability, and a factor structure consistent with hopelessness theory (i.e. separate factors for inferences about causes, consequences, and self-characteristics; Hankin & Abramson, 2002). For this study, the causal inferences factor was used to measure negative

attributional style. Each item dimension is rated from 1 to 7. Average item scores on the ACSQ were used in this study, with higher scores indicating a more negative attributional style. This measure was included in Time 1 in analyses for the current study.

Depression diagnoses. The Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (KSADS-PL; Kaufman et al., 1997) was used to assess for the presence of a *DSM-IV* (American Psychiatric Association, 1994) diagnoses of major (MDD) or minor (mDD) depressive disorder among youth. The KSADS is a semi-structured interview designed specifically to arrive at the diagnosis of mood disorders, and other psychiatric disorders, in children and adolescents. It is the most frequently used, most studied diagnostic interview with youth and has demonstrated strong evidence of reliability and validity (Kaufman et al., 1997; Klein, Dougherty, & Olino, 2005). Diagnostic interviewers completed an intensive 40 hour training program for administering the KSADS interview and for assigning DSM-IV diagnoses. At the initial laboratory visit (Time 1 in the current study), the youth were interviewed for a current depressive disorder, and at every follow-up were interviewed for a depressive episode that occurred any time during the 6 month period following the last assessment. Youth were categorized as having a depressive disorder if they met criteria for a minor probable, minor definite, major probable, major definite, or dysthymic depressive episode. Inter-rater reliability for the K-SADS, based on 15% of the sample interviews ($n=55$) was good ($\kappa = .91$). A dichotomous variable was then calculated to use as our overall measure of youth clinical depression. Specifically, youth were given a score of 0 if they never endorsed a depressive episode over the course of the 1.5 year study (no current episode at Time 1, and no episodes reported at follow-ups at Time 2, 3, or 4), or a 1 if they endorsed 1 or more episodes of depression at Time 1 or any of the follow-ups over the course of the stud.

CHAPTER THREE: RESULTS

Descriptive Statistics

Means and standard deviations for primary continuous variables by gender are presented in Table 1. T-tests examining gender differences revealed a trend for girls to experience greater peer stressors compared to boys, $t(287) = -1.88, p = .06$. Girls also exhibited higher levels of positive affect than boys $t(287) = -3.73, p < .001$. There were no gender differences for other primary variables, including parenting behaviors, non-peer stressors, and attributional style (see Table 1). 49 youth (17 %) experienced a clinical depressive episode within the 1 ½ year period of the study. Approximately twice as many girls (N=33) than boys (N=16) experienced a depressive episode, and this gender difference approached statistical significance, $\chi^2(1) = 2.7, p = .10$.

Bivariate correlations among primary variables are presented in Table 2. Notably, there was a significant negative association between parent positive regard and child attributional style ($r = -.13, p < .05$). The association between parent sensitivity to distress and child attributional style was slightly smaller, but did not reach traditional levels for statistical significance, ($r = -.10, p = .13$). There was no association between parent sensitivity to non-distress and attributional style ($r = -.03, p = .59$). Additionally, both peer and non-peer stressors were significantly positively correlated with child attributional style ($r = .23$ and $r = .33, p < .01$)

Age effects were observed for almost all of the primary variables (see Table 2). Parents provided lower levels of positive regard and sensitivity to distress to older youth compared to younger youth ($r = -.26, p < .01$, and $r = -.15, p < .05$). Older youth experienced higher levels of non-peer stressors, and there was also trend for older youth to experience greater peer stressors

than younger youth ($r = .10, p = .08$). Finally, older youth reported higher levels of negative attributional style.

As expected, older youth were significantly more likely to have had an episode than younger youth ($r = .32, p < .001$). Both peer and non-peer stressors were associated with a greater likelihood of having a depressive episode ($r = .21$ and $.30$ respectively, $p < .001$). Youth with higher levels of negative attributional style were also more likely to have a depressive episode ($r = .18, p < .01$)

Overview of Statistical Approach

The SPSS macro PROCESS (Hayes, 2013) was used to test the hypothesized model (see Figure 2 for model in path diagram form). PROCESS was chosen for its ability to easily integrate mediation and moderation analyses into a single, unified model. PROCESS uses a regression based path-analysis and bootstrapping procedures, consistent with modern approaches to testing mediation and moderated mediation recommended by quantitative methodologists (MacKinnon, 2004; Pollack, VanEpps, & Hayes, 2012; Shrout & Bolger, 2002). These recent approaches to mediation emphasize an explicit estimation of the indirect effect and inferential tests such as bootstrapping, which results in a more quantitative, robust, and accurate test of mediation (Hayes, 2013). Additionally, because modern mediation analysis can formally quantify the indirect effect, these approaches avoid other assumptions that have recently been deemed unnecessary. For example, there is growing consensus among methodological experts that an indirect effect can exist in the absence of a significant association between the independent variable (IV) and dependent variable (DV; e.g., Hayes, 2009; MacKinnon, 2008; Rucker et al., 2011; Shrout & Bolger).

In path analysis, the components of the model are used to calculate the conditional indirect effect (i.e. moderated mediation effect), which addressed our primary research question of whether parenting is associated with youth clinical depression through youth negative

attributional style, and if this indirect effect is moderated by youth exposure to peer stressors.

The first component of the hypothesized model estimates whether the effect of the IV (in this case parenting), on the mediator (negative attributional style), is moderated by another variable (exposure to peer stressors), controlling for main effects (See path a_3 , Figure 2). Second, path b in the model estimates the association between the mediator and the DV (clinical depression) after controlling for the IV. Third, path c' estimates the direct effect in this model, which is the association between the IV and DV controlling for the mediator. Finally, the total effect is simply the association between IV and DV, without controlling for the mediator, labeled as c (not pictured).

The indirect effect is estimated by multiplying a_1 by b . If either path a_1 or b is moderated, then the indirect effect is also moderated. Therefore, the conditional indirect effect was estimated in the current analyses as $(a_1 + a_3 \text{peer stressors})b$, where peer stressors was the moderating variable. For dichotomous outcomes variables such as used in this study, PROCESS estimates the direct and indirect effects, as well as path from the mediator to the outcome, using logistic regression. Otherwise, ordinary least squares (OLS) regression is used to estimate effects. A 95 percent bias-corrected bootstrapping confidence interval based on 10,000 bootstrap samples was calculated to determine the significance of the indirect effect. The same model was tested separately for each primary parenting variable (parent positive regard, parent sensitivity to distress, and parent sensitivity to non-distress). Age and sex were each initially included separately in the model to see if either of these variables further moderated the parenting x peer stressors interaction predicting negative attributional style. However, none of the resulting 3-way interactions were significant, and so these were removed from the final model. Observed child negative affect and positive affect during the stressor task were entered as covariates to control for possible child effects in all models. All continuous predictor variables were centered to reduce multicollinearity.

Conditional Indirect Effect of Parent Positive Regard on Youth Clinical Depression

Table 3 shows path coefficients for the model testing the conditional indirect effect of parent positive regard on youth clinical depression through youth negative attributional style, contingent on exposure to peer stressors. First, results showed that exposure to peer stressors significantly moderated the association between parent positive regard and youth attributional style, consistent with our hypothesis (a_3 , see Table 3). This interaction is depicted in Figure 3. Simple slope analyses in PROCESS indicated that at low levels of exposure to peer stressors (1 SD below the mean), there was no association between parent positive regard and youth negative attributional style (effect = .02, $p = .83$). However, at high levels of exposure to peer stressors (1SD above the mean), there was a significant negative association between parent positive regard and youth negative attributional style (effect = -.20, $p < .01$), suggesting that low levels of parent positive regard contribute to a negative attributional style for youth who also experience high levels of peer stressors. Second, results showed that youth who experienced high levels of negative attributional style were more likely to experience clinical depression over the course of the study ($b = .52$, $p < .01$).

Given that peer stressors moderated the association between parent positive regard and youth negative attributional style, then any existing indirect effect of parent positive regard on youth clinical depression through negative attributional style must also be moderated. Analyses estimating the conditional indirect effect indeed revealed that peer stressors moderated the association between parent positive regard and clinical depression, through the mediating variable of youth negative attributional style. At low levels of exposure to peer stressors, the bootstrap confidence interval for the indirect effect (-.01) contained zero (-.09 to .06), indicating that negative attributional style did not mediate the association between parent positive regard and youth clinical depression. However, at high levels of exposure to peer stressors, the bootstrap confidence interval for the indirect effect (-.08) was entirely below zero (-.21 to -.02), indicating

that low levels of positive regard was significantly associated with youth clinical depression through youth negative attributional style among youth who also experienced high levels of peer stressors.

Conditional Indirect Effect of Parent Sensitivity to Distress on Youth Clinical Depression

As can be seen in Table 4, analyses yielded a very similar pattern of results when parent sensitivity to distress replaced positive regard as the IV in the moderated mediation model.

Parent sensitivity to distress significantly interacted with exposure to peer stressors to predict negative attributional style (a_3). The graphical depiction of this interaction (Figure 4) is almost identical to the interaction observed in the previous model. Simple slopes analyses indicated that there was no association between parent sensitivity to distress and youth negative attributional style at low levels of exposure to peer stressors (effect = .01, $p = .90$). However, at high levels of peer stressors, parent sensitivity to distress was significantly negatively associated with youth negative attributional style (effect = -.21, $p = .001$). Negative attributional style was also significantly positively associated with clinical depression, consistent with the previous model (b).

Peer stressors moderated the indirect effect as expected. At low levels of peer stressors, the bootstrap confidence interval for the indirect effect (.01) contained zero (-.09 to .13), indicating that this effect was nonsignificant. However, at high levels of peer stressors, the bootstrap confidence interval was below zero, indicating that parent sensitivity to distress on youth was significantly associated with clinical depression through negative attributional style (indirect effect = -.13, confidence interval from -.32 to -.03).

Alternative Models

Conditional indirect effect of parent sensitivity to non-distress on youth clinical depression.

We also tested whether peer stressors moderated the indirect effect of parent sensitivity to non-distress on youth clinical depression through youth negative attributional style. As in

previous models, negative attributional style was associated with youth clinical depression ($b = .52, p < .01$). However, analyses showed that peer stressors did not interact with parent sensitivity to non-distress to predict youth negative attributional style ($a_3 = .02, p = .29$), nor did peer stressors moderate the indirect effect. Bootstrap confidence intervals for the indirect effect contained zero for low levels of peer stressors (indirect effect = $.02$, confidence interval from $-.07$ to $.16$) and high levels of peer stressors (indirect effect = $-.06$, confidence interval from $-.21$ to $.02$), indicating that mediation effects across levels of peer stressors was nonsignificant.

Non-peer stressors as moderator.

We conducted analyses using non-peer stressors instead of peer stressors as the moderating variable to investigate whether the conditional indirect effect held for other types of stressors. However, neither positive regard interacted with non-peer stressors to predict negative attributional style ($a_3 = .003, p = .34$), nor did parent sensitivity to distress interact with non-peer stressors ($a_3 = .002, p = .60$). There was also no significant interaction effect for parent sensitivity to non-distress ($a_3 = .005, p = .30$). Moreover, all of the bootstrap confidence intervals for the indirect effect contained zero for all levels of non-peer stressors, for all of the parenting variables.

CHAPTER FOUR: DISCUSSION

Theory and research have suggested that when problematic parenting conveys negative information about stressors, youth learn to develop negative responses and interpretations of stressful experiences, which can place them at risk for developing depression. Additionally, it is thought that repeated exposure to stressors can lead to stable, negatively biased cognitions about negative events. As an increase in stressors during the transition into and across adolescence may overburden youths' capacity to independently and effectively manage stressors, it is essential to understand how parenting factors affect youth cognitive appraisals of stress during this developmental period. However, prior research on the associations between parenting, cognitive vulnerability, and depression is limited by an over reliance on questionnaire methods, a lack of attention to parenting in specific contexts, and a general neglect of the potential moderating role of stressors. Additionally, very little is known about developmental processes through which parenting might contribute to clinical levels of depression, rather than subclinical depressive symptoms, and whether parenting uniquely influences depression above and beyond child effects. Findings from the current study supported a moderated mediation model in which low levels of parent positive regard and sensitivity to distress during a youth stressor task were indirectly associated with onsets of youth clinical depressive episodes through the mediating influence of youth negative attributional style, but only for youth who also experienced a high number of peer stressors. Thus, these findings elucidate the mechanisms through which exposure to problematic parenting might contribute to risk for depression during the critical developmental period into and through adolescence

Specifically, findings suggest that youth who do not receive adequate levels of positive regard, such as praise and affection, from their parents in stressful contexts, or fail to receive sensitive, prompt, and appropriate responses to signs of their distress, are more likely to make stable, global, and self-blaming attributions about the causes of negative experiences, particularly when these youth also encounter a high number of peer stressors. I speculate that inadequate positive regard from parents, which fails to communicate approval for youth characteristics, actions, or abilities during stressful experiences, may promote negative interpretations about the causes and meaning of stressors. Similarly, theory suggests that insensitive parents that do not appropriately respond to child distress may fail to facilitate a sense of efficacy and competence, which can lead to negative cognitions about the environment (Bohlin, Hagekull, & Rydell, 2000; Bowlby, 1977; Leerkes et al., 2009). Thus, youth who do not receive sufficient positive regard and/or sensitivity to distress from parents during times of stress may have difficulty developing positive self-competency beliefs, and begin to develop negatively biased appraisals of stress. If these youth are also repeatedly exposed to a high number of stressors, they may begin to form more fixed negative cognitions which contribute to stable, global, and internal attributions about why negative experiences occur.

Findings from this study are consistent with the inferential feedback hypothesis, which posits that feedback from parents that explicitly or implicitly conveys negative information about stressors contributes to cognitive vulnerability for depression (Alloy et al., 2001; Crossfield et al., 2002). Findings also suggest the importance of observing parenting behaviors during stress-inducing contexts for youth. If parenting behaviors that convey information about stressors are particularly influential in the formation of cognitive vulnerability, assessments that can capture parenting behaviors during stressful experiences for youth may have more utility in advancing research on the relation between parenting and youth negative cognitive style. Furthermore,

results corroborate prior research by Mezulis and colleagues (2006) suggesting that it is likely the combination of receiving inadequate parenting, and experiencing a large number of stressors, especially peer stressors, that contributes to cognitive vulnerability for youth.

Results are also in line with theoretical models of depression that posit that exposure to problematic parenting contributes to depression during adolescence (Garber & Flynn, 2001; Sheeber et al., 2001). However, few prior studies have investigated processes through which parenting might influence onsets of clinically significant depression over time across the adolescent developmental period. Our test of the hypothesized moderated mediation model suggests that deficient positive parenting in response to youth exposure to stressors may initiate developmental pathways contributing to depression. Exposure to other environmental factors, such as peer stressors, may then strengthen and maintain these pathways by interacting with deficient parenting to contribute to negatively biased cognitions about stressors, which in turn may contribute to clinical depression.

Although findings suggested that inadequate parenting in the face of stress, in combination with high numbers of stressors, indirectly influences youth depression, a statistically significant main effect association between parenting on clinical depressive episodes was not observed in this study. Although previous studies have found significant correlations between parenting and depressive symptoms (Schwartz et al., 2012; Sheeber et al., 1997; see Alloy et al., 2006 and McLeod et al., 2007), as well as clinical depression (e.g., Dietz et al., 2008; Puig-Antich et al., 1985; 1993; Sheeber & Sorensen, 1998; Sheeber et al., 2000), there may be several methodological reasons why this study did not show a significant effect of parenting on youth depression. First, the majority of studies that find associations between parenting factors and clinical levels of depression have used case-control or group-comparison designs, in which a group of currently depressed youth is compared to controls on measures of parenting at a single

time point (McLeod et al.). Thus, less is known about the extent to which parenting is associated with clinically significant depression over a period of time in a community sample of youth. Second, a large majority of the group-comparison design studies have used self-report measures of parenting, which have been shown to yield larger effects compared to observational assessments, perhaps due to negative biases associated with depression, on top of inflated correlations due to mono-method designs (McLeod et al.). Therefore, the use of observational methods in the current study may have made it even more difficult to find a statistically significant association between parenting and youth depression. On the other hand, these methods may also have contributed to a less biased, and more accurate estimation of this effect. However, there is one known study to date by Schwartz and colleagues (2011) that found that observed maternal parenting behaviors is associated with the onset of clinical depressive episodes over 2-3 years among a community sample of youth. Of note, this study used laboratory paradigms to assess parenting that are typically used in studies of parenting and depression among older children and adolescents (e.g., conflict resolutions task), but did not assess parenting in response to child exposure to stress. Therefore, it is possible that parenting in stress-inducing contexts is more likely to indirectly influence depression through cognitive responses to stress or other mediating mechanisms, rather than influence depression more directly. Alternatively, it is possible that the micro-analytic observational coding system used in Schwartz et al.'s study, rather than a global coding system used in this study, accounted for discrepancies observed in the strength of the association between parenting and youth clinical depression.

I also tested an alternative model in which parent sensitivity to non-distress interacted with peer stressors to predict clinical depression through negative attributional style. As expected, and in contrast to findings with sensitivity to distress, sensitivity to non-distress did not interact with peer stressors to predict depression through negative attributional style. An

emerging body of research has provided evidence that components of parental sensitivity are distinct constructs, and that sensitivity to distress, rather than non-distress, is more predictive of emotional adjustment for children (Leerkes et al., 2009; Leerkes et al., 2012). Our pattern of results supports the idea that parent sensitive responses to youth non-distress (e.g, conversational statements or other social gestures), may have less influence on youth vulnerability to depression. Evidence from infant studies suggests that parent sensitivity to non-distress may be important for other aspects of child development, such as language ability (Leerkes et al., 2009). Among older children and adolescents, I speculate that this type of sensitivity could continue to be important in a number of different areas, such as general cognitive /intellectual ability, moral development, social skills, or other domains of development. On the other hand, parenting in response to child distress may be especially influential in how youth interpret and appraise stressful experiences, which has important implications for the development of depression. Findings further underscore the importance of assessing parenting behaviors in contexts that are likely to prime for youth distress when investigating how parenting might be associated with vulnerability for depression.

Additionally, given the growing significance of peer relationships across the transition into adolescence, and recent evidence suggesting that peer stressors may more strongly and consistently interact with aspects of parent-child relationships to predict cognitive vulnerability (Mezulis et al., 2006) and depressive symptoms (Hazel et al., 2013) among youth, I hypothesized that peer stressors would interact with parenting variables to predict risk for depression. Findings supported that peer stressors interact with parent sensitivity to distress and positive regard to predict vulnerability for depression. Additionally, the alternative models in which non-peer stressors interacted with these parenting variables was not supported. However, it is not clear from our analyses why peer stressors in particular might have a moderating effect on parenting, especially given that there was a main effect of both peer and non-peer stressors on

negative attributional style. One possibility is that the way in which youth respond to and interpret peer stressors are more amenable to parental influence than other kinds of stressors. Due to their interpersonal nature, peer stressors (e.g., peer conflict, peer rejection) may produce especially thorny problems with complex and ambiguous causes and solutions. Thus, behavior and cognitive reactions to these stressors may be more affected by variability in levels of support and guidance received from parents, whereas relatively minimal levels of parental support could be adequate for other types of less complex, non-peer stressors. In addition, developmental theory posits that parenting, particularly parenting in the face of youth stress, contributes to youth cognitions about their social environment in particular (Bowlby, 1977; Calkins, 1994). Thus, problematic parenting may be more likely to influence how youth interpret other negative experiences within the social environment (i.e. peer stressors), and thus may be more likely to affect how peer stressors contribute to stable cognitive biases. It is also important to take into consideration that parenting was purposefully measured during a socially relevant stressor task in this study, and it is possible that parenting measured in this particular context has an especially strong influence on how other social stressors relate to youth negative attributional style. Alternatively, the strong moderating effect of peer stressors on parenting factors may be more consistent with a “dual-hit” interpretation, in which problems in both the interpersonal domains of parent-child and peer relationships contributes to especially high risk for depression, compared to problems in only one of these domains. It will be important to continue to replicate the specificity of the moderating effect of peer stressors in more studies of parenting and depression, especially in light of a recent study that produced null findings for a parenting x peer victimization interaction predicting depressive symptoms and cognitions (Bilsky et al., 2013). It is unclear why this study yielded null findings, but could be due to assessing for peer victimization rather than general peer stressors, and/or differences in the measures used for

parenting and cognitive biases. However, if evidence continues to support the unique moderating effect of peer stressors, researchers should investigate the reasons for this more carefully.

Finally, we did not find that youth age or gender further moderated our main finding. This lack of moderation effects suggests that a combination of problematic parenting and exposure to peer stressors is equally detrimental for both boys and girls across the transition into and through adolescence. However, the overall pattern of results indicate that older adolescents, particularly girls, may be most at risk for experiencing this particular combination of risk factors. Specifically, age effects demonstrated that older youth generally were exposed to lower levels of positive regard and sensitivity to distress from parents during the stressor task, while also encountering more stressors. Prior studies have shown similar trends in the worsening of parent-child relationships, including decreases in positive aspects of parenting (Kim, Conger, Lorenz, & Elder, 2001; Laursen et al., 1998; McGue, Elkins, Walden, & Iacono, 2005) as youth progress through adolescence. Moreover, studies have documented a rise in stressors during the transition into and across adolescence (Ge et al., 1994; Hankin & Abela, 2005; Hankin et al., 2007). Additionally, girls in this study encountered higher numbers of peer stressors than boys, which is also consistent with previous research (Hankin et al., 2007; Rudolph, 2002; Rudolph & Hammen, 1999). Thus, it seems that older adolescents, particularly older girls, are most at risk for simultaneously experiencing low levels of positive parenting and high levels of peer stressors, which may help to explain the higher depression rates among this group of youth (Hankin et al., 1998; Hankin & Abramson, 2001).

Strengths, Limitations, and Directions for Future Research

Several aspects of this study provide for a more rigorous and innovative test of primary hypotheses, which helps to enhance confidence in findings and inform understanding of etiological processes in the development of adolescent depression. This study used observational

methods to carefully assess aspects of parenting behavior during an ecologically relevant laboratory stressor, which addressed weaknesses of prior mono-method, questionnaire studies that assess parenting in nonspecific contexts. Analyses in this study controlled for the potentially confounding effects of child affect on vulnerability for depression. Additionally, the study used repeated measures of diagnostic clinical interviews to prospectively assess for onsets of clinical depression over time, given that most studies examining the mediating influence of cognitive vulnerability have focused on depressive symptoms only. Finally, it used an integrated moderated mediation model for a more comprehensive test of the interplay among multiple risk factors and how they work together to influence clinical depression across the transition into adolescence.

Despite several strengths of this study, future research is needed to address limitations. This was a partially prospective study, but multiple constructs were still assessed at one time point, which limits interpretations about temporal ordering of risk factors. We theorized that parenting and peer stressors likely precede cognitive vulnerability, but it is possible that negatively biased interpretations of interpersonal interactions and stressors leads to problems in relationships with parents and peers, in line with stress generation and interpersonal theories of depression (Hammen, 1999; Joiner & Coyne, 1999, Rudolph, Flynn, & Abaied, 2008). It is also probable that there are transactional, rather than uni-directional associations, between environmental factors and youth characteristics that contribute to risk for depression (Cicchetti & Schneider-Rosen, 1984; Rudolph et al., 2008). Therefore, future research is needed to disentangle potential longitudinal, transactional associations among primary variables.

Future research may also benefit from making further distinctions among categories of stressors. Although we differentiated peer stressors from other types of stressors, it is unclear whether effects are the same for achievement stressors versus health stressors or other kinds of

non-peer stressors. It is also important to note that we only examined parenting in one very specific context in this study. Although this study advances knowledge on the way in which observed parenting in response to youth stress is related to youth clinical depression, I could not compare whether the effect of parenting during our laboratory stressors task was much different than the effects of parenting during other contexts (e.g. conflict discussion task, planning fun event). It should be the goal of future research to begin to compare the effects of parenting across different contexts, to try to better understand what parenting behaviors, during what types of parent-child interactions, have the greatest effect on youth psychopathology. Alternatively, recent research from a dynamic systems perspective have posited that it may not be so much the content of parenting within one type of situation that is most relevant for youth psychopathology, but rather the overall flexibility or rigidity of parenting across many contexts that matters (Granic & Patterson, 2006; Hollenstein, Granic, Stoolmiller, & Snyder, 2004). In other words, rigid, inflexible parenting that is unable to adapt to multiple and changing contexts may be especially detrimental to youth outcomes, and more impactful than any particular parenting behavior in any one specific instance. It is essential that future studies begin to use more precise and specific assessments of parenting to investigate how the context in which parenting occurs might affect the way in which parenting behaviors relate to youth cognitive vulnerability and risk for depression.

Finally, it is important to acknowledge that there are likely multiple and varied developmental pathways to depression (Cicchetti & Rogosch, 1996; Cicchetti & Toth, 1998). There is abundant evidence that there are likely other moderating and mediating factors that affect the way in which parenting influences depression. Specifically, parenting may affect emotion regulation, physiological stress responses, and problem-solving abilities, all of which could mediate the association between parenting and depression (Mezulis, Cox, & Hyde, 2010;

McKernon et al., 2001; Propper & Moore, 2006; Sheeber et al., 2000; Yap et al., 2010).

Additionally, there are a myriad of variables that might affect how youth perceive and interpret stress, such as genetics, temperament, and neurobiological factors, and all of these could be considered in future integrative models of parenting, cognitive vulnerability, and depression among adolescents. Thus, in line with a developmental psychopathology perspective of depression, it is important for future research to continue to explore how the interplay of multiple factors may contribute to the equifinality of the development of depression.

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APPENDIX 1

Table 1. Descriptive statistics for primary variables

Variable	Overall	Boys	Girls	<i>t</i> or χ^2
Parent positive regard	2.53 (1.28)	2.45 (1.26)	2.59 (1.30)	-.92
Parent sensitivity to distress	3.60 (1.02)	3.50 (.99)	3.69 (1.03)	-1.42
Parent sensitivity to non-distress	3.61 (.91)	3.62 (.94)	3.60 (.89)	.20
Peer stressors	5.57 (4.75)	4.98 (4.22)	6.03 (5.08)	-1.88 [†]
Non-peer stressors	16.65 (11.57)	16.60 (11.44)	16.69 (11.71)	-.06
ACSQ	3.20 (.87)	3.24 (.87)	3.17 (.87)	.66
Age	12.70 (2.42)	12.73 (2.49)	12.68 (2.34)	.16
Depression	.17 (.38)	.13 (.34)	.20 (.40)	2.70 [†]
Child negative affect	1.46 (.36)	1.49 (.41)	1.43 (.32)	1.42
Child positive affect	3.05 (.90)	2.83 (.91)	3.22 (.90)	-3.73**

Note. ** $p < .01$. [†] $p \leq .10$

Table 2. Bivariate associations among primary variables.

Variable	1	2	3	4	5	6	7	8	9
1. Parent positive regard	-								
2. Parent sensitivity to distress	.51*	-							
3. Parent sensitivity to non-distress	.31*	.49*	-						
4. Peer stressors	.07	.04	.01	-					
5. Non-peer stressors	-.08	-.07	-.08	.62*	-				
6. ACSQ	-.13*	-.10	-.03	.23*	.33*	-			
7. Depression	-.09	.06	-.02	.21*	.30*	.18*	-		
8. Age	-.26*	-.15*	-.04	.10 [†]	.42*	.34*	.32*	-	
9. Child negative affect	.10	-.14*	-.08	.00	-.07	-.17*	-.11	-.21*	-
10. Child positive affect	.19*	.19*	.14*	.07	-.05	.04	.02	.02	.40*

Note. * $p < .05$. [†] $p \leq .10$

Table 3. Regression coefficients for conditional indirect effects model with parent positive regard.

Predictor	Outcome					
	Negative Attributional Style			Clinical Depression		
	→	Coeff.	SE	→	Coeff.	SE
Parent positive regard	a_1	-.09*	.04	c'	-.16	.14
Peer stressors	a_2	.05***	.01	-	-	-
Child negative affect	-	-.42**	.16	-	-.90	.64
Child positive affect	-	-.02	.06	-	.00	.20
Parent positive regard x peer stressors	a_3	-.02*	.01	-	-	-
Negative attributional style	-	-	-	b	.52**	.20

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

Table 4. Regression coefficients for conditional indirect effects model with parent sensitivity to distress.

Predictor	Outcome					
	Negative Attributional Style			Clinical Depression		
	→	Coeff.	SE	→	Coeff.	SE
Parent sens. to distress	a ₁	-.09 †	.05	c'	.25	.20
Peer stressors	a ₂	.05***	.01	-	-	-
Child negative affect	-	-.42*	.16	-	-.80	.70
Child positive affect	-	-.03	.06	-	-.21	.23
Parent sens. to distress x peer stressors	a ₃	-.02*	.01	-	-	-
Negative attributional style	-	-	-	b	.68**	.25

Note. *** $p < .001$. ** $p < .01$. * $p < .05$. † $p \leq .10$

APPENDIX 2

Figure 1. Conceptual moderated mediation model in which the effect of parenting on youth clinical depression is moderated by peer stressors. Negative attributional style is the proposed mediator of the conditional effect of parenting on youth depression.

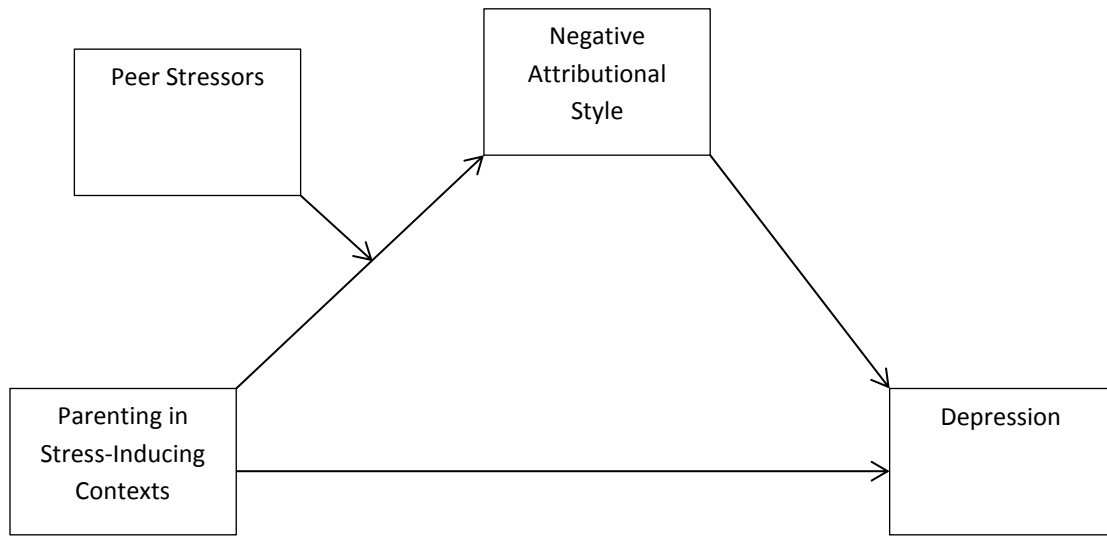


Figure 2. The conceptual model in Figure 1 represented in the form of a path model corresponding to the regressions estimated and reported in Tables 3 and 4.

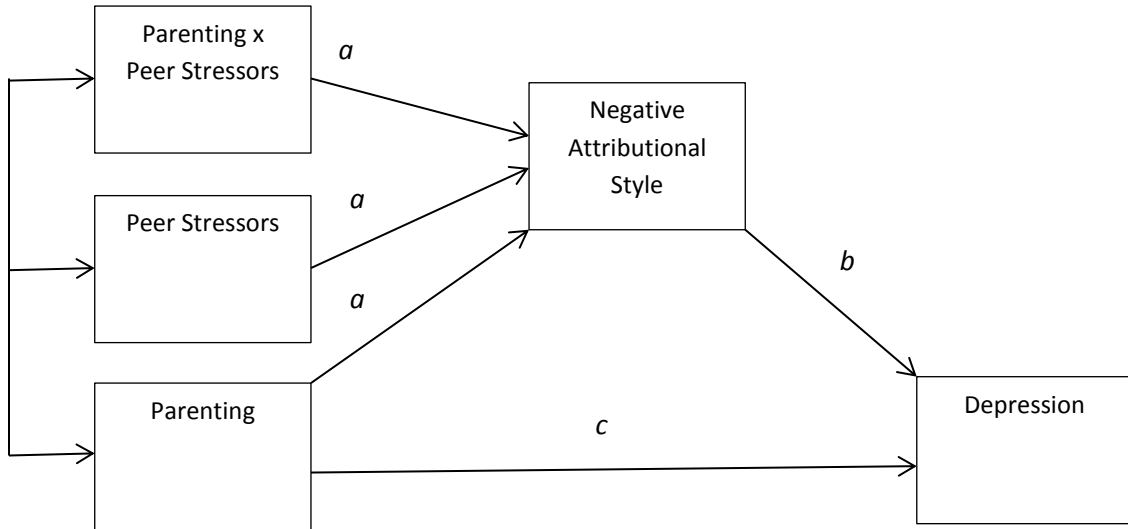


Figure 3. The interaction for parent positive regard x peer stressors predicting youth negative attributional style.

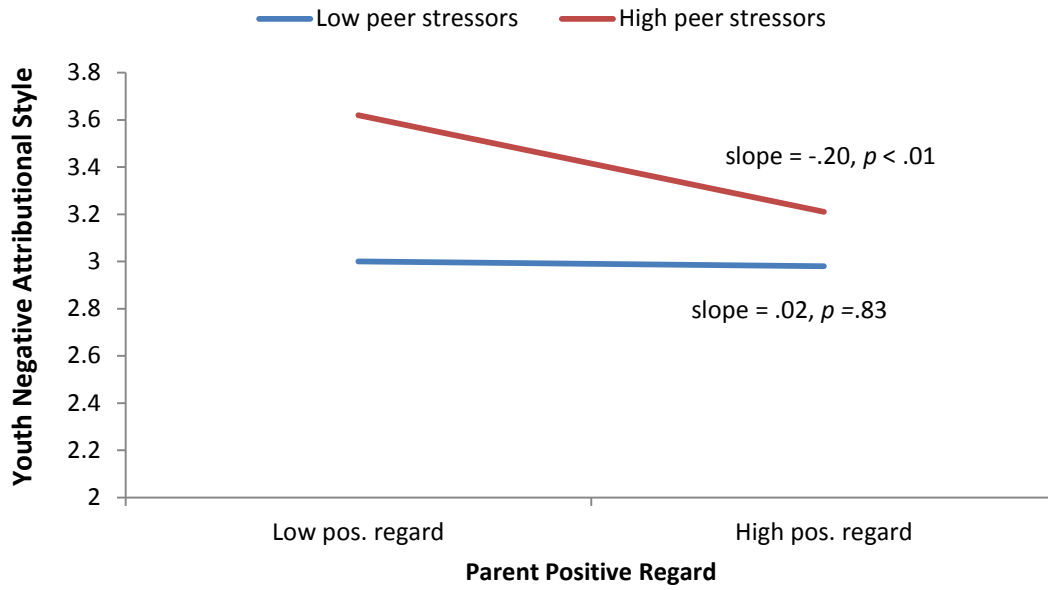


Figure 4. The interaction for parent sensitivity to distress x peer stressors predicting youth negative attributional style.

