NEGATIVE COGNITIVE STYLE AND ITS CORRELATES

IN CHILDREN AND ADOLESCENTS AT

VARIED RISK FOR DEPRESSION

By

Jennifer E. P. Dunbar

Dissertation

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Psychology

August, 2015

Nashville, Tennessee

Approved:

Bruce E. Compas, Ph.D.

Judy Garber, Ph.D.

Steven D. Hollon, Ph.D.

Linda G. Ashford, Ph.D.

ABSTRACT

The current study examined correlates of child negative cognitive style in a sample of 115 children and adolescents (age 9 to 15-years-old) and their mothers with varied depression histories. The present study also developed a new interview measure to quantify cognitive vulnerability for depression (specifically generality of causal attributions) in children and parents (the Child Cognitive Style Interview or CCSI, and the Parent Cognitive Style Interview or PCSI). The CCSI and PCSI were conducted with a subset of 60 mother-child dyads from the full sample in the current study. Findings from the present study indicate the CCSI and PCSI are positively related to questionnaire measures of negative cognitive style and with depressive symptoms. This study also provides evidence of positive associations between maternal and child cognitive vulnerability for depression as well as positive associations between maternal negative inferential feedback and child cognitive vulnerability for depression. Withdrawn and harsh parenting behaviors were not related to child cognitive vulnerability for depression. The current study also provides evidence that the associations between maternal variables (i.e., maternal negative inferential feedback and maternal generality of causal attributions) and child negative cognitive style are moderated by maternal current depressive symptoms, such that these associations are stronger at higher levels of maternal depressive symptoms. Finally, the current study provides an extension of prior findings of positive associations between cognitive vulnerability for depression and depressive symptoms in children and adults. Implications of these findings, strengths and limitations of the current study, and future directions for this research are also discussed.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Similar to most inventors, Thomas Edison experienced many failed attempts in his work to invent the light bulb, and as a result, he had a unique perspective to offer regarding the experience of failure. He has been quoted as saying, "I have not failed. I have just found 10,000 ways that won't work," and, "Many of life's failures are people who did not realize how close they were to success when they gave up." These quotations are often used as inspiration to sustain motivation despite life's unavoidable failures. In addition to providing motivation and inspiration, these quotes also beg the question: What caused Thomas Edison to keep trying, despite his many failures? Others in a similar situation may have given up in the face so much failure (or even after the first failed invention) or may have arrived at a very different interpretation of failure and its implications for the self, the world, and the future. How did Thomas Edison develop these rather optimistic interpretations of his many failures?

We all eventually learn that failures and stressful events are inevitable experiences throughout life. Reactions to stressful situations can be categorized as behavioral, physiological, emotional, and cognitive (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001), all of which merit attention in understanding how stressful and failure experiences are related to risk for psychopathology. Cognitive processes related to stressful events may play a particularly important role in the development of psychopathology. Specifically, cognitions can affect all other aspects of stress responses (emotions, physiological arousal, behaviors), and since cognitions represent a modifiable reaction to stressful situations and failures, they are often a target

1

for interventions and therapies. Cognitive processes in response to stress include selective attention to aspects of the situation while it occurs, thoughts about the causes and consequences of the situation, thoughts about one's self or the future following the event, and memories for the event after it occurs (Lakdawalla, Hankin, & Mermelstein, 2007).

Research has examined each of these processes, often with a focus on the many ways people interpret stress and failure events, and how the nature of these cognitive processes may predispose some individuals for psychopathology, specifically depression. Extensive research has examined many types of *cognitive vulnerability for depression*, conceptualized as a negative way of thinking about the self, the world, and the future, and typically studied through the ways people interpret failure or stressful events. Cognitive vulnerability for depression has been examined across the lifespan (in children, adolescents, and adults), in samples free of psychopathology, in samples experiencing mood disorders, and in those who may be at an increased risk for depression, such as children of depressed parents. Past studies have examined how cognitive vulnerability for depression is related to and predictive of depression, depression onset, and depressive symptoms, and how cognitive vulnerability for depression may develop in children and adolescents. One context that seems particularly relevant for examining possible developmental factors of cognitive vulnerability for depression is in children of depressed parents, as they are at an increased risk for depression.

In the following sections I discuss the literature on cognitive vulnerability for depression in children of depressed parents, theory and methodology in research on cognitive vulnerability for depression in children and adolescents, associations between cognitive vulnerability and depression in children and adolescents, and hypothesized

correlates that may give rise to cognitive vulnerability for depression in childhood and adolescence. Additionally, methodological issues from this literature that are relevant to the current study will be highlighted, followed by the aims and hypotheses of the current study.

Children of Depressed Parents: A High Risk Population

Depression is a highly prevalent psychological disorder (16.5% lifetime prevalence in the U.S.; Kessler et al., 2003) that creates significant impairment in the lives of those who suffer from it, including their relationships with family, colleagues, and friends. This impairment in family relationships extends to the parent-child relationship and can negatively affect children whose parents have depression. Offspring of depressed parents are at greater risk of developing depression and other psychological disorders than children whose parents have not experienced depression. Regarding psychopathology in general, children of depressed parents have been shown to experience a two to six-fold higher risk of developing psychopathology in longitudinal studies, ranging from mood and anxiety disorders to substance dependence (e.g., Weissman, Wickramaratne, Nomura, Warner, Pilowsky, & Verdeli, 2006). In a meta-analytic review, Goodman, Rouse, Connell, Broth, Hall, and Heyward (2011) determined the weighted mean effect size for the cross-sectional association between maternal depression and children's internalizing symptoms to be $r = .23$, between maternal depression and child externalizing symptoms to be $r = .21$, and between maternal depression and child symptoms of general psychopathology to be $r = .24$ (Goodman et al., 2011). Additionally, a more severe and chronic course of parental depression yields an even

greater likelihood of development of psychopathology in the children (Beardslee, Gladstone, & O'Connor, 2011).

Specifically regarding depression diagnoses, research has demonstrated a cumulative rate as high as 65% of children of depressed parents developing depression by adulthood and this depression develops earlier than in children of parents without a depression history (e.g., Weissman et al., 2006). In addition to psychopathology diagnoses, children of depressed parents are also more likely to exhibit cognitive vulnerability for depression (e.g., biased information processing, negative attributional style) than children of parents without depression (e.g., Garber & Robinson, 1997; Jaenicke et al., 1987; Joorman, Talbot, & Gotlib, 2007). Thus, these children are at risk for a wide range of psychological problems (Goodman et al., 2011).

Based on the well-established high prevalence rates of depression in the general population and an estimated 10 to 15 million American children under the age of 18 years-old living with a parent who has had a depressive episode in the past year (England & Sim, 2009), combined with the robust findings of increased risk for children of depressed parents, extensive research has focused on processes of risk for the children in these families. With a better understanding of the ways in which risk is conferred to children of depressed parents, prevention efforts can be stronger and more effective. There are several pathways through which parental depression contributes to risk for children, including biological and genetic factors, characteristics of interpersonal relationships, and psychological risk factors. The current study will focus on the psychological risk factor of cognitive vulnerability for depression.

Cognitive Vulnerability for Depression

Cognitive vulnerability for depression has been conceptualized in several ways (detailed below), but generally can be described as cognitive processes affecting the way people attend to, interpret, and recall negative or stressful events that put people at risk for depression (Lakdawalla et al., 2007). For the purposes of this study, the concept of *negative cognitive style* will be emphasized. Negative cognitive style is defined as a generally negative mode of thinking about causes, consequences, and the implications for one's self after the occurrence of a negative or failure event (Hankin & Abramson, 2002). The review that follows places the current study in the context of past research by summarizing existing theories and methodologies, findings of possible developmental precursors, methodological issues and unanswered questions in research on cognitive vulnerability for depression in children and adolescents.

Theories of cognitive vulnerability for depression. The literature on cognitive vulnerability for depression has an extensive history with various theories regarding what types of cognitive processes may make a person vulnerable to depression and specifically how these processes may lead to depression. Despite the variety of models for cognitive vulnerability that research has demonstrated to be related to depression, no single model seems to fully capture risk for depression (Jacobs, Reinecke, Gollan, & Kane, 2007). Table 1 provides additional information regarding the terminology, theories, and measurement of many types of cognitive vulnerability for depression that guide many studies of these processes in children and adolescents.

Much of this work began with studies of adults, and one of the first models of cognitive vulnerability for depression was proposed by Beck. According to Beck's theory

(1967, 1983), if an individual has depressogenic schemata (organized sets of dysfunctional attitudes), these will be activated when the individual experiences negative events which may then lead to the development of the negative cognitive triad (see Table 1), and greater risk for depression. Studies with adolescents examining the negative cognitive triad have yielded mixed support for Beck's theory (e.g., Abela & Sullivan, 2003; Lewinsohn, Joiner, & Rhode, 2001).

Another form of cognitive vulnerability is explained by the concept of learned helplessness. When exposed to uncontrollable, aversive stimuli (e.g., electric shocks, loud noise), humans and animals sometimes fail to learn to escape the situation when given the opportunity to escape at a later time; this phenomenon is called learned helplessness (Abramson, Seligman, & Teasdale, 1978; Hiroto, 1974). According to the helplessness theory, individuals will begin to expect situations to be uncontrollable, will lose motivation to respond, and will develop depressed affect and ultimately helplessness (Abramson et al., 1978). Beck's theory and the helplessness theory both state that their specific conceptualization of cognitive vulnerability for depression is a proximal, sufficient cause of depression (Abela & Skitch, 2007; Seligman, 1975).

The hopelessness theory of depression developed as a result of a revision of the original helplessness model of depression. The concept of hopelessness is broader than the original helplessness model, in that it includes depressogenic inferential styles that lead to increases in depressive symptoms following negative or failure events in addition to a sense of helplessness (Abramson, Metalsky, & Alloy, 1989). The depressogenic inferential styles emphasized by this theory include causal attributions for stressful or failure events that are stable and global as well as negative inferences for consequences

6

and negative inferences for the self following a stressful or failure event. Together, these three cognitive processes make up the construct of *negative cognitive style* that will be emphasized in the current study (Hankin & Abramson, 2002).

There are several reasons why negative cognitive style was selected to conceptualize cognitive vulnerability for depression in the current study. First, by including all three of these concepts (i.e., negative attributional style, negative inferences for consequences, and negative inferences for self), negative cognitive style is broader and more inclusive than many other constructs of cognitive vulnerability for depression. Second, negative cognitive style has been studied in several samples of children and adolescents (e.g., Mezulis, Funasaki, & Hyde, 2011) and has demonstrated good discriminant validity in its associations with depression in children and adolescents (e.g., Hankin & Abramson, 2002). Third, a measure with good psychometric properties (the Adolescent Cognitive Style Questionnaire; Hankin & Abramson, 2002) has been developed specifically to quantify negative cognitive style in children and adolescent samples, which will be discussed in greater detail in later sections. For the purposes of clarity, in the discussion that follows, the term *negative cognitive style* will be used to refer to the conceptualization of cognitive vulnerability for depression that includes negative causal attributions, negative inferences for consequences and negative inferences for self following a stressful event or failure. On the other hand, the term *cognitive vulnerability for depression* will be used broadly to refer to the many other cognitive processes that have been hypothesized as a risk factor for depression (e.g., dysfunctional attitudes, negative cognitive triad, negative attributional style, and certain information processing constructs).

As previously mentioned, negative cognitive style includes negative causal attributions, but in some studies, the causal attributions it includes differ slightly from the widely studied construct of *negative attributional style* (which includes internal, stable, and global causal attributions; see Table 1 for definitions). In their explication of the hopelessness theory of depression, Abramson and colleagues (1989) hypothesized that stable and global attributions for negative events are most strongly linked to hopelessness depression, and thus, the hopelessness theory of depression de-emphasizes the internal dimension of causal attributions. Abramson et al. (1989) also propose that internal attributions alone are not necessarily maladaptive because it is possible that an internal attribution may lead to different behavior in the future (e.g., if you receive a low grade on an exam and you attribute that to low effort in your studying, you will be more likely to study harder next time). The combination of stable and global attributions for negative events is referred to as *generality of causal attributions* in research that emphasizes the hopelessness theory of depression, and many studies have collapsed across internal and external dimensions to combine all stable and global attributions when quantifying negative cognitive style.

Despite the fact that some studies based on the hopelessness theory perspective have excluded internal attributions, others have included and measured them. Specifically, in a large sample of clinically depressed adolescents, Becker-Weidman, Reinecke, Jacobs, Martinovich, Silva, and March (2009) found an internal attributional style to explain the causes of negative or stressful events to be one of several predictors (e.g., need for social approval and family problems) of hopelessness. Also, and particularly relevant for the current research, in the study that validated the Adolescent

8

Cognitive Style Questionnaire (ACSQ), Hankin and Abramson (2002) included internal attributions in their total score of negative cognitive style. Thus, the current study will also include internal attributions in its conceptualization and questionnaire measure of negative cognitive style.

Methods for measuring cognitive vulnerability for depression. One consequence of the many different conceptualizations of cognitive vulnerability for depression is the development and use of a wide variety of methodologies and measures. The most frequently used measures involve child or adolescent self-report on questionnaires, as cognitive processes are generally conceptualized as internal, covert experiences that would be difficult for others (such as parents or teachers) to report. Some questionnaires ask directly about a child's specific type of cognitive vulnerability for depression (e.g., the Children's Dysfunctional Attitudes Scale; Abela & Sullivan, 2003), while others provide the child or adolescent with several hypothetical failure situations that typically fall into the categories of academic or social stress (e.g., getting a bad grade on a report card or not being chosen for a team) and then ask the child or adolescent how he or she would think about causes and/or consequences of these events (e.g., ACSQ; Hankin & Abramson, 2002).

Interview measures represent a less frequently used methodology for assessing cognitive vulnerability for depression, but it is gaining more application, especially with younger samples of children. The Children's Attributional Style Interview (CASI; Conley, Haines, Hilt, & Metalsky, 2001) is one such interview measure. In this interview, children are given several hypothetical events that are represented in pictures. Children are provided in-depth instruction regarding the format of the questions and are then asked

9

to spontaneously generate a causal attribution for each hypothetical event. This interview is interactive in that it requires the children to manipulate a sliding pointer on a scale to represent their responses to questions regarding the internality, stability, and globality of their causal attribution for each event. The CASI appears to be well validated and demonstrates good reliability (alphas range from .78-.83) for children ages 5 to 10 years old. Negative attributional style measured by the CASI related to greater depressive symptoms cross-sectionally and interacted with stress and self esteem to predict increases in depressive symptoms (Conley et al., 2001). Other studies using the CASI have found similar results (e.g., Bruce, Cole, Dallaire, Jacquez, Pineda, & LaGrange, 2006; Weitlauf & Cole, 2012).

Another methodology for capturing cognitive vulnerability for depression involves laboratory tasks that measure information processing. Examples of information processing that may indicate cognitive vulnerability for depression include negative interpretations of ambiguous stimuli, such as blends of neutral and negative words, and attentional bias for negatively valenced emotional information (e.g., Dearing & Gotlib, 2009; Joorman et al., 2007). Information processing is also assessed via word recall tasks, whereby a child or adolescent views a list of positive and negative words and is asked to indicate which of the words describe him or herself. The child or adolescent is then asked to recall as many words as possible. Measures of positivity and negativity of self-schema are derived from the words selected to describe the individual and the recalled words (e.g., Self Referent Encoding Task; Hammen, 1988).

Association between cognitive vulnerability and depression in children and adolescents. Using these varied theories and methods, studies have examined the

association between cognitive vulnerability for depression and depressive symptoms and depression diagnoses in children in the general population and in children of depressed parents. In general, these studies have yielded a robust, consistent finding of significant positive associations between cognitive vulnerability for depression and symptoms of depression (moderate to large correlations) and a main effect for cognitive vulnerability for depression in predicting depressive symptoms in cross-sectional multi-variate analyses with children in the general population and with children of depressed parents (e.g., Abela & Skitch, 2007; Abela, Skitch, Adams, & Hankin, 2006; Gladstone & Kaslow, 1995; Hankin & Abramson, 2002). Also, as described in a quantitative review by Lakdawalla et al. (2007), in prospective studies, cognitive vulnerability for depression is predictive of depressive symptoms measured at a later time, typically yielding medium effect sizes in adolescents and small effect sizes in children. Studies have also examined discriminant validity, and have found that cognitive vulnerability for depression is only related to depression and not related to externalizing disorders (e.g., Hankin & Abramson, 2002).

Similarly, prospective studies of children of depressed parents also provide evidence of significant interactions between stress and cognitive vulnerability for depression predicting depressive symptoms over time (i.e., the diathesis-stress model; Abela et al., 2006; Abela & McGirr, 2007; Abela & Skitch, 2007). Gender differences are another a consistent finding in the literature of children of depressed parents, with several studies indicating stronger associations between cognitive vulnerability and depression in girls than in boys (e.g., Abela & McGirr, 2007).

On the whole, past research with children and adolescents (in the general population and those whose parents have depression history) supports positive associations between cognitive vulnerability for depression and depressive symptoms and supports an interaction between stress and cognitive vulnerability in predicting depression. These robust findings provide additional significance to the ongoing and multifaceted study of cognitive vulnerability for depression in childhood and adolescence.

Correlates of cognitive vulnerability for depression in children and adolescents. Another significant aspect of this research is the study of developmental origins of cognitive vulnerability for depression. Studies have examined several hypothesized correlates that may contribute to the development of cognitive vulnerability for depression in children (e.g., negative childhood experiences, parenting behaviors, parents' cognitive styles, peer rejection, and attachment). In the same way that depression has a complex etiology, negative cognitive style likely has many developmental factors, some of which may interact or affect one another, perhaps in a model reflecting equifinality. Thus, studies of the development of negative cognitive style and other types of cognitive vulnerability for depression will likely necessitate the inclusion of many different hypothesized mechanisms as opposed to one single mechanism (Bruce et al., 2006; Hankin, 2012; Hankin, Oppenheimer, Jenness, Barrocas, Shapero, & Goldband 2009). It is possible that relationships with others outside the family serve as an additional context for the development of children's cognitive vulnerability for depression (e.g., teachers, friends, peers), but the current study will focus on correlates that represent potential processes in which cognitive vulnerability for depression may be

transmitted from parents to children. It is important to note that the long-term goal of this research is to study and elucidate the development of cognitive vulnerability for depression in children and adolescents over time, but in the present study, as in many prior studies, these hypothesized processes are being examined and analyzed as correlates of cognitive vulnerability for depression in children and adolescents.

Three of these correlates will be the focus of the current study: mothers' own negative cognitive style serving as a model for their children, maternal negative inferential feedback (i.e., direct communication of negative causal attributions and negative inferences from parents to children), and parenting (i.e., withdrawn and harsh parenting behaviors). Studies examining these three correlates of cognitive vulnerability for depression will be discussed in the following sections. A literature search yielded a total of 19 studies examining one or a combination of these hypothesized developmental mechanisms. Five searches were conducted using the PsycInfo database and every search included the following search terms as keywords: cognitive vulnerability, negative cognitive style, children, and adolescents. In addition to those keywords, separate searches were conducted that included each of the following key words: parent/parenting, model/modeling, inferential feedback, communication, and develop/development. The initial searches produced 175 articles, and 156 were excluded for this study for several reasons. Examples of excluded articles include those that only included infants or preschoolers, those that only tested cognitive vulnerability for depression in parents or adults and not in children, that examined cognitive vulnerability for disorders or problems other than depression (e.g., anxiety, teen alcohol use), or those that focused on

correlates of cognitive vulnerability other than the ones included in the present study (e.g., child abuse and neglect, peer rejection).

The findings from the 19 identified studies vary in many ways, such as the conceptualizations of cognitive vulnerability for depression, the age of children and adolescents in the studies, and the methodologies and measures used. Prior to describing these studies further, it is important to note that several studies (6 out of 19) utilized college students and their parents and thus obtained retrospective reports of some of the correlates of cognitive vulnerability for depression. Although these studies included the parents of these college students, this research design may be problematic and will be explored in greater detail in the section on methodological issues.

Modeling parents' cognitive vulnerability for depression. In his research on modeling and social learning, Bandura asserted that humans do not learn solely through consequences of their behavior and trial-and-error, but that learning through observations and modeling others is a critical process in human development (Bandura, 1971). In addition to modeling behaviors, others have hypothesized that children may also model their parents' patterns of thinking (e.g., Alloy et al., 2001). Studies aiming to examine potential correlates of cognitive vulnerability for depression that include a modeling hypothesis often interpret a significant positive correlation between a parent's cognitive vulnerability for depression and a child's cognitive vulnerability for depression (e.g., negative attributional style) as evidence of underlying modeling processes.

Six studies examined the modeling hypothesis for cognitive vulnerability for depression. Overall, support for children modeling parents' cognitive vulnerability for depression has been inconsistent, with two studies finding partial support for the

modeling hypothesis. In studies that included multiple conceptualizations of cognitive vulnerability for depression, findings of positive associations between parent and child cognitive vulnerability for depression differed based on the conceptualization of cognitive vulnerability for depression studied.

Specifically, Blount and Epkins (2009) found a significant positive correlation for parent and child negative cognitive triad, but not for parent and child negative attributional style, and a similar pattern appeared in a study by Alloy et al. (2001). Findings may also differ within a study based on parent gender, such as positive correlations between mothers' and offspring's cognitive vulnerability for depression and no significant correlations between fathers' and offspring's cognitive vulnerability for depression (e.g., Alloy et al., 2001). Moderators of the modeling hypothesis have also been tested and include amount of time the child spends with the parent and parental depressive symptoms, with stronger associations between parent and child cognitive vulnerability for depression at higher levels of time spent together and higher levels of parental depressive symptoms (Blount and Epkins, 2009). On the other hand, 4 studies failed for find support for the modeling hypothesis (e.g., Garber & Flynn, 2001; Griffith, Oliver, & Katz, 2003; Oliver & Berger, 1992; Stark, Schmidt, & Joiner 1996).

In summary, evidence for the modeling hypothesis as a potential developmental process and correlate of cognitive vulnerability for depression in children is inconsistent, and findings seem to vary based on timing of assessments (cross-sectional or prospective), parent gender, amount of time spent together, and parent depressive symptoms. Garber and Flynn (2001) concluded that a modeling process is likely not the

sole explanation for the development of cognitive vulnerability for depression, but that the parent-child relationship is an important context for its development.

Another consideration in work on the modeling hypothesis is whether a child can truly model a parent's cognitive vulnerability, as thought processes are covert to a great extent. Parents may not directly share their thought patterns with their children, making cognitive vulnerability to depression less outwardly observable to children, and thus possibly less likely to be transferred from parent to child via modeling alone (Garber & Flynn, 2001). No study to my knowledge has attempted to directly measure a modeling process for cognitive vulnerability for depression (e.g., through experimental tasks, observations, or directly asking children if they model their parents' cognitions). Regardless, if the modeling hypothesis does gain more support, it could have implications for interventions, as it may be helpful to teach parents skills for modeling more positive ways of thinking to their children or to include ways a parent can prevent him or herself from sharing his or her own negative cognitions with his or her children (Blount & Epkins, 2009).

Negative parental inferential feedback. Another way in which children may develop cognitive vulnerability for depression is that their parents may directly communicate depressogenic thought processes to their children following stressful or failure situations their children experience directly. Stable and global causal attributions and statements about expected negative consequences characterize *negative parental inferential feedback* about events that children experience (Crossfield, Alloy, Gibb, & Abramson, 2002). This concept has been included in 5 studies of offspring and their parents and represents a more direct way in which negative ways of thinking may be

transferred from parents to children than the modeling hypothesis; thus, some studies have concluded that negative inferential feedback is likely a more powerful developmental mechanism than modeling (e.g., Alloy et al., 2001).

In their review, Alloy, Abramson, Smith, Gibb, and Neeren (2006) conclude that the majority of studies examining negative parental inferential feedback find evidence that it is related to cognitive vulnerability for depression in offspring. However, similar to the findings of the modeling hypothesis, the findings for negative parental inferential feedback also show inconsistency (typically differing based on parent or child report of negative parental inferential feedback or the inclusion of stress as a moderator).

Specifically, one study found positive relations between parent self-report of negative parental inferential feedback and offspring cognitive vulnerability for depression (Alloy et al., 2001), and 3 studies found positive associations when child/offspring report of negative parental inferential feedback was utilized (Alloy et al., 2001; Oliver, Murphy, Ferland, & Ross, 2007; Stark et al., 1996). In 2 studies, the positive association between parental negative inferential feedback and child cognitive vulnerability for depression was stronger when included in interaction with children's stress levels (e.g., Crossfield et al., 2002; Mezulis, Hyde, & Abramson, 2006). In other words, at higher levels of stress and higher levels of parental negative inferential feedback, children/offspring reported higher levels of cognitive vulnerability for depression.

In summary, it appears that the concept of parental negative inferential feedback may be a promising future direction in research on the correlates and development of cognitive vulnerability, but findings differ based on offspring versus parent report of negative parental inferential feedback and inclusion of an interaction with offspring's

stress levels in analyses. Moreover, 3 of these studies were conducted with college student samples, so results from these studies are based on retrospective recall of negative parental inferential feedback that would have occurred when during offspring's childhood. Future studies will need to consider these aspects of this research, which will be examined in greater detail in the section about methodological issues.

Parenting behaviors. Ingram (2003) stated, "the idea that problematic parent–child interactions produce vulnerability to depression is a theme that occurs across cognitive models," (p. 80). Specifically, researchers have hypothesized that certain parental behaviors (e.g., frequent rejection, criticism and control and infrequent expressions of warmth and acceptance towards the child) may increase the likelihood of a child developing cognitive vulnerability for depression (e.g., Bruce et al., 2006; Garber & Flynn, 2001; Hankin et al., 2009). Parenting conveys information to children that may then be incorporated into children's patterns of thoughts and beliefs about themselves (Bruce et al., 2006).

For example, if a child regularly hears negative messages from his or her parents (above and beyond negative parental inferential feedback), he or she may internalize those messages, which may lead to the development of a negative cognitive style or other cognitive vulnerability for depression (Jaenicke et al., 1987; Murray Woolgar, Cooper, & Hipwell, 2001). Studies have shown over-controlling or inadequate parenting to be related to higher levels of self-criticism in offspring (Ingram, 2003). In their review, Alloy et al. (2006) found that parenting characterized by "affectionless control" is consistently positively related to depression in offspring (p. 26). Such parenting behaviors may be linked to children's depression through the development of cognitive

vulnerability for depression in these offspring, and in fact, studies examining the associations between these parenting behaviors and various types of cognitive vulnerability for depression have typically found small to medium effects (Alloy et al., 2006). Findings from 9 studies that examined parenting as a potential developmental origin of cognitive vulnerability for depression are highlighted next.

As with the previously described research, the findings for parenting as it relates to offspring cognitive vulnerability for depression vary (and this variation seems to be partially based on measurement method). Specifically, using questionnaire measures of more global conceptualizations of parenting, a study by Bruce et al. (2006) found a positive association between negative parenting and child cognitive vulnerability for depression and a negative association between positive parenting and child cognitive vulnerability for depression. Three studies measured more specific problematic parenting behaviors via questionnaires (e.g., hostile and coercive behaviors, psychological control, criticism, and perfectionistic expectations for child behavior) and found positive associations with child cognitive vulnerability for depression (Cole, Warren, Dallaire, LaGrange, & Ciesla, 2007; Garber & Flynn, 2001; Gamble & Roberts, 2005). One study examined parental care (i.e., warm, sensitive parenting behaviors) and found a negative association with offspring cognitive vulnerability for depression (Whisman & Kwon, 1992). By splitting out findings for fathers and mothers, Alloy et al. (2001) only found a positive association between low levels of fathers' acceptance and warmth and their offspring's cognitive vulnerability for depression. On the other hand, two studies found no evidence of a relation between parenting and child cognitive vulnerability for depression using questionnaire measures of parenting (Mezulis et al., 2006; Oliver &

Berger, 1992), and 2 studies found no evidence of these associations when using observed parenting behaviors (Hankin et al., 2009; Mezulis et al., 2006).

In summary, the evidence suggests that parenting represents an important possible correlate of cognitive vulnerability for depression in children and adolescents. However, similar to the previously reviewed research, findings have been inconsistent.

Parental depression as a moderator of correlates of child cognitive vulnerability for depression. As research continues to examine the development of cognitive vulnerability for depression, it is important to examine the conditions under which these different correlates may function or situations in which their associations with child cognitive vulnerability for depression may be more apparent. One of these conditions may be parental depression. Research has shown children of depressed parents to have greater levels of cognitive vulnerability for depression than children in the general population (e.g., Garber & Robinson, 1997; Jaenicke et al., 1987; Joorman, Talbot, & Gotlib, 2007). Researchers who focus on parental depression have hypothesized some factors that may put children of depressed parents at greater risk of developing negative patterns of thinking (e.g., exposure to depressive behaviors and depressed mood and modeling negative cognitions; Goodman & Gotlib, 1999).

How might parental depression affect or moderate each of the previously discussed correlates of child cognitive vulnerability for depression? One could imagine that a parent who is depressed, or who has a history of depression may generally experience more negative cognitions about his or her own life and may express these negative cognitions around his or her child, thus increasing the likelihood the child will model negative ways of thinking. The previously explained findings from Blount and

20

Epkins (2009) seem to support this notion, as that study found a stronger association between child and parent cognitive vulnerability for depression at higher levels of parental depressive symptoms.

Additionally, a parent who is depressed may be more likely to interpret events in the child's life in a more depressogenic way and may have a harder time censoring more negative explanations or interpretations of events in the child's life. This increased level of negative thinking about events the child experiences and this difficulty censoring communication to the child may therefore cause a depressed parent to be more likely to directly communicate those negative cognitions to his or her child (i.e., demonstrating more parental negative inferential feedback).

Furthermore, the associations between depression and parenting behaviors have been widely studied, providing evidence that depressed parents utilize and demonstrate relatively less warmth and structure and more neglecting and intrusive behaviors with their children. These behaviors often continue between depressive episodes as well, so children may be exposed to these types of parenting behaviors even when their parents are not in a depressive episode (Lovejoy, Graczyk, O'Hare, & Neuman, 2000).

It has been hypothesized that a more chronic or unremitting level of parental criticism or harsh parenting behaviors, as has been demonstrated in research on parental depression, may be linked to cognitive vulnerability for depression (e.g., Riskind & Alloy, 2006). As was noted in the previous summaries of findings of correlates of child cognitive vulnerability for depression, many studies controlled for parental depressive symptoms in analyses (e.g., Garber & Flynn, 2001) or included parental depressive symptoms as a moderator (e.g., Blount & Epkins, 2009). Assessing the possible ways in

which parental depression (symptoms and diagnoses) may affect findings represents an additional critical aspect of this burgeoning area of research.

Methodological issues in research on cognitive vulnerability for depression and its correlates. Despite a long history of research on cognitive vulnerability for depression and its developmental origins, there are still important methodological issues that warrant attention in future research. Methodological issues in previous studies of cognitive vulnerability for depression in children include (a) the use of inappropriate measures (i.e., those with inadequate reliability or those created for adults), (b) questionnaires vs. interviews for measuring cognitive vulnerability for depression, (c) questionnaires vs. observations for measuring parenting behaviors, and (d) the timing of measurement of correlates that may represent developmental precursors of cognitive vulnerability for depression in children and adolescents.

Limitations of measures of cognitive vulnerability. Regarding methodological issues, Lakdawalla et al. (2007) highlight some concerns with measures of cognitive vulnerability for depression in children and adolescents. One widely used measure is the Children's Attributional Style Questionnaire (CASQ, Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). However, in many studies, the CASQ has demonstrated poor reliability. The internal consistency reliability of the causal attributions on this measure (i.e., internal, stable, and global attributions) has ranged from .13 to .56, and internal consistency estimates for the composite negative attributions has ranged from .42 to .67 (Cole et al., 2008; Lakdawalla et al., 2007). Interestingly, despite noting these low reliabilities, researchers continue to utilize this measure. This is problematic, as lower internal consistency reliability of a measure sets a lower ceiling for

the possible correlation values that can result in analyses using that measure. The widespread use of the CASQ has been hypothesized as a possible reason for inconsistent findings of the diathesis-stress hypothesis in child samples (Cole et al., 2008).

Using measures intended for adults that are not developmentally appropriate for children can also affect findings. Specifically, the use of adult measures has yielded smaller effect sizes in prospective studies between cognitive vulnerability and depression in younger children (e.g., Cole et al., 2008; Conley et al, 2001; Lakdawalla et al., 2007). The utilization of measures with adequate psychometric properties that have been developed specifically for use with children and adolescents will be essential for future studies of cognitive vulnerability for depression, its correlates, and its potential developmental origins.

Questionnaires vs. interviews for measuring cognitive vulnerability for depression. In addition to finding a developmentally appropriate measure with good psychometric properties, it is also important to consider the method used to measure cognitive vulnerability for depression in children and adolescents. According to Gibb and Abela (2008), think-aloud methods of assessing cognitive vulnerability for depression (i.e., those that ask participants to verbally generate responses) represent a promising methodology because these methods may be easier for participants to understand (e.g., an interviewer can clarify confusion and re-word questions for participants) and may allow for the generation of more participant responses than those obtained from a forced choice questionnaire. However, others have expressed some concerns about using interviews to assess cognitive vulnerability for depression, specifically that with spontaneously generated attributional and inferential cognitions, some participants may verbally

describe many different cognitions they have, while others may not provide as much information in a spontaneous way, perhaps because of less awareness or insight into their own thought processes (Bugental, Johnston, New, & Silvester, 1998). Those participants who provide less information may be thinking certain ways (e.g., making internal, stable, and global causal attributions) but may not verbally report on their cognitive processes. Despite these concerns, the use of interviews has been described as a potentially advantageous method for assessing negative cognitive style, especially in children who may need to help of an interviewer to describe or report on their complex thought processes (e.g., the Children's Attributional Style Interview; Conley et al., 2001).

Observations vs. questionnaires for measuring parenting. Another methodological issue with bearing on the current study is the method of measurement of parenting behaviors. Many studies that include parenting behaviors as a correlate and potential developmental origin of cognitive vulnerability for depression in offspring measure parenting via questionnaires (Ingram, 2003). A small number of studies of parenting and child cognitive vulnerability for depression have utilized videotaped observations of parenting behaviors coded by independent raters. This method may be more methodologically sound, as it is less subjective and less affected by biased reporting compared to parent self-report or child-report of parenting behaviors (Alloy et al., 2006). Moreover, using observations decreases shared method variance that occurs when a study design includes the use of questionnaire measures for both offspring cognitive vulnerability for depression and parenting. Thus, it may be advantageous to use observation measures of parenting in studies of child and adolescent cognitive vulnerability for depression (Lakdawalla et al., 2007).

Timing of measurement of correlates of cognitive vulnerability. Yet another

methodological issue is the timing of measurement of parenting and negative parental

inferential feedback to offspring. Several studies have examined parenting and negative

parental inferential feedback in samples of college-age offspring (e.g., Alloy et al., 2001;

Oliver et al., 2007). This study design may be problematic because asking participants to

retrospectively report on these processes may be less accurate due to reliance on memory

or due to biases in recall (Alloy et al., 2006). Anytime a process can be measured at the

time it occurs, the participants' reports on that process will likely be more accurate and

less subject to difficulties with recall. Measuring parental inferential feedback to children

during childhood and adolescence should help resolve some of these issues (Alloy et al.,

2001).

The Current Study

The primary aim of the present study is to examine negative cognitive style and

several potentially important correlates in a sample of children and their mothers who

have a wide range of depression history. The correlates included in the present study

were drawn from research on hypothesized processes or mechanisms that may predispose

children and adolescents to developing negative cognitive style. A second central goal of

the present study is to examine associations between negative cognitive style and

depressive symptoms in this sample of mothers and their children. In addition to testing

the nature of these associations, a third central goal of the current study is to develop a

new interview measure of child and parent cognitive vulnerability for depression that can

be used to augment current measures used in research on cognitive vulnerability for

depression and its correlates in children and parents.

My first hypothesis focuses on the correlates of children's negative cognitive style. I hypothesize that maternal negative cognitive style, maternal negative inferential feedback, and withdrawn and intrusive parenting will be positively related to children's negative cognitive style. My second hypothesis pertains to the ways in which maternal depressive symptoms may modify the associations tested in my first hypothesis. Thus, I hypothesize that the positive associations between these correlates and child negative cognitive style will be stronger at higher levels of maternal depressive symptoms. These analyses will be conducted using a multi-informant (child and mother report) and multi-method (questionnaires, interviews, and observations) design. Third, replicating prior research, I hypothesize that maternal negative cognitive style will be positively related to maternal depressive symptoms. Fourth, also replicating previous findings, I hypothesize that child negative cognitive style will be positively related to child depressive symptoms. These hypotheses will be tested using questionnaire and interview measures of child and maternal negative cognitive style and questionnaire measures of depressive symptoms, from both child and mother report.

METHOD

Participants

Table 2 provides demographic data for the full study sample. The full sample consisted of 115 mother-child dyads. A subset of the full sample completed the same measures as the full sample plus the interview developed for this study to measure generality of causal attributions and consisted of 60 mother-child dyads. This subsample

will henceforth be called the interview sample. Recruitment was conducted to incorporate a wide range of maternal history of major depressive disorder, including current depression (at the time of the interview; $n = 5$), past depression in the child's lifetime ($n = 48$), past depression prior to the child's lifetime ($n = 4$), and no depression history ($n = 58$). These distributions were similar in the interview sample, with 2 mothers with current depression at the time of the interview, 20 mothers with past depression in the child's lifetime, 1 mother with past depression prior to the child's lifetime, and 37 mothers with no depression history.

The next set of descriptions pertains to the full sample of mothers for this study. Specifically, mothers were between ages of 29 and 62-years-old ($M = 41.72$, $SD = 5.99$). Sixty-eight percent of mothers were Euro-American, 26.3% were African American, 2.6% were Asian American, 4.4% were Hispanic or Latino, 0.9% were American Indian or Alaska Native, and 1.8% were more than one race or other racial or ethnic background. Annual household income for the families ranged from below $10,000 to over $200,000, with mean annual income of $74,730. Education levels for the mothers ranged from less than high school to completion of some graduate education: 0.9% of the mothers had not completed high school, 5.2% had a high school education, 33.9% had received a degree from a technical school or had completed at least one year of college, 33.0% had received a degree from a 4 year college, and 27.0% had completed at least one year of graduate education or completed a graduate degree. Sixty-five percent of mothers were married or had a domestic partner, 18.3% were divorced or annulled, 6.1% were separated, 8.7% had never married, and 2.6% were widowed.

The children in the full sample included 64 boys and 51 girls between the ages of 9 and 15-years-old ($M = 12.34$, $SD = 1.88$). In the interview sample, there were a total of 30 boys and 30 girls. Sixty-seven percent of children in the full sample were Euro-American, 26.1% were African American, 2.6% were Asian American, 6.1% were Hispanic or Latino, and 4.3% were more than one race or other racial or ethnic background. If a mother had more than one child in the targeted age range, the oldest eligible child participated in the study. There were no significant differences in any of the previously described demographic characteristics for mothers or children in the interview sample compared to the full sample.

Measures

Child variables.

Child negative cognitive style. The ACSQ provides the child with hypothetical negative or failure situations based on common experiences of childhood and adolescence. The original measure contains 12 situations. In the current study, only four hypothetical situations were presented, similar to a previous study of children in this age range (Dunbar et al., 2013). Examples of hypothetical events included "You get a bad report card for the semester," and "You don't get chosen for an extracurricular activity (such as a sports team, club, or play) that you want to be a part of." The original measure includes several situations more commonly experienced by older adolescents; these were deemed to be less appropriate for the younger children in this sample so were excluded (e.g., those pertaining to working part-time, applying to college, and dating).

Following each hypothetical event, the child is asked to write in what he/she believed to be the cause of the hypothetical experience. The child then ranks on a scale

of 1 to 7 whether the event happened because of something about him or herself (internal

causal attribution), whether the reason the event occurred will cause that same event to

continue happening (e.g., the reason for the bad report card this time will cause more bad

report cards; stable causal attribution), and whether the reason the event occurred will

cause problems in other aspects of the child's life (e.g., the reason for the bad report card

this time will cause problems in the child's home or social life; global causal attribution).

These first three items measure attributional style, with higher scores representing

a more negative attributional style (i.e., internal, stable, and global causal attributions for

negative events). The additional two items ask the child to rate whether other negative

events will occur because this event occurred (inferences for negative consequences) and

whether the negative event means something is wrong with him or herself (negative

inferences for the self), again on a scale of 1 to 7, with higher scores representing more

negative expectations and inferences. The mean of all items for all the hypothetical

events was used to yield the total negative cognitive style score on the ACSQ.

The ACSQ has demonstrated high internal consistency reliability in prior studies

(e.g., α = .95; Hankin & Abramson, 2002) and good reliability in the present study (α =

.85), which is considerably higher than other measures of cognitive vulnerability in youth

that had lower internal consistency reliabilities (e.g., the Children's Attributional Style

Questionnaire; Seligman et al., 1984). The factor structure of the ACSQ and its fit to the

model hypothesized by the hopelessness theory of depression has been well supported

using structural equation modeling (Hankin & Abramson, 2002).

Previous studies have also examined external, unstable, and specific attributions

for positive events to measure negative attributions or a combination of attributions about

positive and negative events to produce an overall composite negative attributional style

(e.g., Becker-Weidman et al., 2009; Gladstone, Kaslow, Seeley, & Lewinsohn, 1997).

For the purpose of this study, only causal attributions for negative events were used as a

representation of negative attributions, as these have been shown to have a stronger

relation to depression than attributions for positive events (e.g., Alloy et al., 2000).

Child generality of causal attributions. A second measure of children's cognitive

vulnerability for depression was developed specifically for this study, the Child Cognitive

Style Interview (CCSI). To further capture negative cognitions using a method that could

augment the ACSQ, this interview was created to measure child negative cognitive style

specifically regarding his or her performance on a lab-based public-speaking task and

regarding a previous stressor of his or her choice. Based on the standardized false

feedback (i.e., a low score given to the child immediately following his/her performance

on a speech given in the lab), this public-speaking task was designed to be interpreted by

the child as a mildly stressful and/or failure experience in the lab setting. After receiving

this false negative feedback, children completed the CCSI, which included questions

about their causal attributions for their performance on the speech and for a previous

challenging or stressful event that involved the child's mother.

The CCSI is more open-ended than questionnaire measures for cognitive

vulnerability for depression (e.g., ACSQ; Hankin & Abramson, 2002), as there is no

forced choice, and children spontaneously generate verbal responses. Children's

responses during the CCSI were audio recorded and then coded. The first step in coding

the CCSI was to transcribe all causal attributions for performance on the speech task and

to transcribe all causal attributions for the prior stressor listed by the child. Care was

taken to ensure that each individual causal attribution was transcribed as a separate unit with distinct content. To this end, any statement that seemed to be a re-stating of a previously mentioned attribution or a consequence of a causal attribution was considered an elaboration and was not coded as a separate attribution. For example, in the statement: "I forgot what to say, so my mom reminded me", being reminded is a consequence of forgetting what to say, so "I forgot what to say" is the causal attribution that was coded as the child's reasoning for his low score on the speech, and "my mom reminded me" is considered the elaboration, which was transcribed but not coded.

These transcribed causal attributions were then coded on the dimensions of internality, stability, and globality. The internality dimension included the categories of internal, external, external "mom", and dual. Internal referred to anything about the child him or herself, external was anything outside of the child or about the task itself, and external "mom" was anything about the child's mother. The external category also included attributions that were about the child's mother, such that any attributions coded as external "mom" were also coded as external. For example, if a child provided 2 attributions about the task itself (categorized as external), and 1 attribution about his mother (which would be categorized as external and external "mom), that child would have a total of 3 external attributions, and 1 external "mom" attribution. Several children provided attributions about themselves and their mothers together, using the word "we", such as "We did not stay on task while preparing my speech." The dual category was added to capture such attributions.

Next, each attribution was coded as stable or unstable. Clear examples of stable attributions included terms such as "always" or "never" (e.g., "I always forget what to

31

say when I am talking"). Unstable attributions included attributions that clearly referred to the time or day the speech was completed or the previous stressor occurred, such as "I could not remember what to say during my speech". Follow up questions were asked by the interviewer to clarify attributions, and the answers to these questions could provide information regarding the stability of an attribution. For example, one child described her difficulty with feeling nervous while doing public speaking as the cause of her lower score on the speech. In response to the follow-up questions, this child proceeded to explain how this difficulty with anxiety would lead her to have trouble if she ever ran for student council in middle school, when giving oral presentations in college, and even when doing presentations someday when she has a job in the workforce. This attribution was thus coded as stable because of the long-lived nature of its effect on her. Although at first glance, this example may not sound like a stable attribution, the way in which this child described its future outcomes led to it being coded as stable.

Assessing the globality of causal attributions was the most difficult of the three dimensions to determine, as children often did not directly mention globality or specificity of a causal attribution, thus requiring a bit of inference on the part of the coder. Clear examples of globality included words like "everything" or "all", such as "I am terrible at everything" or "I mess up all kinds of things", as these presumably would lead to problems in many areas of that child's life. However, these types of statements were rarely made.

For reliability purposes, any attributions referring to public speaking, giving speeches, or speaking in front of other people were coded as specific, not global. The only exception to this rule occurred if a child elaborated on the other aspects of his or her

life that he or she thought a certain cause may affect. As with the stable/unstable dimension, a child's responses to follow-up questions could also help with deciding if an attribution was global or specific. If a child indicated in his/her responses to the follow-up questions that he/she thought that a reason or cause he/she listed would affect various other areas of his/her life, that attribution would be coded as global.

The total and percentage for each dimension was calculated for the causal attributions for the speech task and for the prior stressor separately and then a grand total was calculated for the attributions regarding the speech and prior stressor combined. Additionally, the total and percentage for all three dimensions combined were calculated for the speech task and for the prior stressor separately and combined (e.g., number and percentage of internal, stable, global causal attributions; number and percentage of external, unstable, specific causal attributions). Totals and percentages were also calculated for the implications for self (positive, negative, and neutral categories) and inferences for consequences (also positive, negative, and neutral categories). No questions directly asked about the child's inferences for consequences and implications for the self, but a portion of the children spontaneously mentioned and discussed these. Any such statements were coded as negative, neutral, or positive. See the CCSI, CCSI Coding Manual and CCSI Coding Sheet for additional detailed information regarding the coding of these interviews (Appendices A, C, and D).

The first author and two trained advanced undergraduate research assistants completed coding on all CCSIs. Training involved reading and understanding the coding manual (developed for use with the CCSI in this study), meeting with the first author to review concepts associated with cognitive vulnerability for depression, and achieving

75% overall reliability on 3 interviews with previously established codes. On all interviews that were coded independently, the undergraduate research assistants and the first author met regularly to discuss causal attributions that were difficult to categorize. Consensus was reached through these discussions and through consultation with a fourth expert coder. Any examples that were deemed uncertain or impossible to code by the independent coders were also discussed with the fourth expert coder to attempt to categorize them. Twenty-three percent of the CCSIs were coded by the first author and another member of the CCSI coding team for reliability. Regarding the reliability of transcribing identical attributions for this portion of double-coded interviews 73.6% of causal attributions transcribed were identical. Many times when coders had discrepant attributions, it was a matter of combining or splitting attributions, such that the coders may have transcribed the content identically, but one coder had a single attribution, while the other had two separate attributions. For example, one coder wrote "I kept repeating a lot of stuff. I needed to come up with more things to say" as one long attribution, and the other wrote those two sentences split into two separate attributions. Although the content in these is identical, the number of attributions would be counted as discrepant. Reliability of categories assigned to identical attributions was also calculated for this sub-set of double-coded interviews. These ranged from 90.6% for the global/specific dimension to 96.9% for the internal/external dimension. See Table 3 for additional details of reliability of CCSI coding.

       Child depressive symptoms. The Child Behavior Checklist (CBCL) and the Youth Self-Report (YSR) assessed children's symptoms of depression. Both of these measures have well-established reliability and validity (Achenbach & Rescorla, 2001). The

Affective Problems scale was used in the current analyses as an index of children's

depressive symptoms. Items on the YSR Affective Problems scale include "I am

unhappy, sad, or depressed", "There is very little I enjoy", "I cry a lot", "I feel worthless

or inferior". The same items are included on the CBCL Affective Problems scale, but

written about the child. In the current study, the Affective Problems scale demonstrated

acceptable internal consistency for mother report on the CBCL ($\alpha = .74$). However,

internal consistency was not as high on the child self-report on the YSR ($\alpha = .66$) as on

the CBCL. As in previous studies (e.g., Compas et al., 2009; Dunbar et al., 2013), in

order to have complete data on all children in the sample, 9 and 10 year-old children

completed the YSR. The internal consistency for the YSR Affective Problems scale was

similar with this younger age group to that of the full sample ($\alpha = .62$). Raw scores on the

CBCL and YSR scores were used in all analyses to maximize variance (i.e., converting

raw scores to T scores leads to a loss of some variability).

Mother variables.

Maternal negative cognitive style. Maternal negative cognitive style was

measured using the Parent Cognitive Style Questionnaire (PCSQ; Alloy et al., 2001).

This measure is very similar to the ACSQ. It also provides the respondent with

hypothetical negative and/or failure situations (8 were used in the current study) that a

parent may experience, such as having a bad evaluation at work, difficulties with a

spouse or partner, and not getting along with her son or daughter. As on the ACSQ, the

mother is first asked to write in the reason she believes this event occurred. Also similar

to the ACSQ, the first three questions pertain to attributional style (internal, stable, and

global attributions), the fourth question is about inferences for consequences, and the fifth

question pertains to negative inferences for the self. All items are rated 1 to 7, with higher

scores indicating more negative cognitive style. The mean of all items across all

hypothetical situations was used to quantify total negative cognitive style in the mothers.

The PCSQ has also demonstrated good reliability and validity in previous studies (e.g.,

Alloy et al., 2001), and in this study, internal consistency was excellent ($\alpha = .94$).

Maternal generality of causal attributions. Mother generality of causal attributions was

measured through the Parent Cognitive Style Interview (PCSI), developed for this study.

The format and questions on this interview were very similar to those for the CCSI, and

each mother completed this interview after witnessing her child's speech and hearing the

false negative feedback her child received from the research assistant. The same coding

procedures were followed for the PCSI as for the CCSI (as previously discussed).

The majority of the questions ask for mothers' causal attributions and

interpretations of the child's performance on the speech task and a previous stressor. The

same rules were applied regarding transcribing attributions on the PCSI and for coding

these attributions into the same dimensions and categories as described above:

internal/external, stable/unstable, and global/specific. Also, each attribution was then

coded on all three dimensions (e.g., internal, stable, global, etc.) to create total scores and

percentages of attributions that fit in each category.

Additionally, information gathered from mothers' responses to follow-up

questions was often used to aid in determining if an attribution was stable or global, as

described above regarding the CCSI coding. Also as explained in the section above about

the CCSI coding, if the mother mentioned expectations of future consequences she would

experience, or implications for herself as a result of the speech task or as a result of the

prior stressor, these statements were coded as positive, negative, or neutral, based on their content. Questions to assess these elements of cognitive style were not directly asked in the PCSI, but statements that fit into these categories were sometimes spontaneously mentioned by mothers.

One way in which coding for the PCSI differed from the CCSI coding is that in the internal/external category, attributions that were about the child were coded as internal to child and attributions the mother made about her self were coded as internal "self". For example, "My daughter does not know how to give speech" was coded as internal to child, and "I was not encouraging enough for my son" was coded as internal "self".

Similar to the CCSI, a portion of the PCSIs were double coded (13%). For the PCSI, 63.2% of causal attributions transcribed were identical. As with CCSI, typically the reason for inconsistently transcribed attributions was a matter of combining or splitting two statements into one or two attributions. Despite the fact that the content in such statements was identical, these combined and split attributions had to be counted as discrepant between two coders. Regarding the categorization of attributions into the dimensions on the PCSI, the percent agreement ranged from 91.7% for the internal/external dimension to 100% for the stable/unstable dimension. Additional details regarding the reliability of PCSI coding are available in Table 4. See Appendix B for the PCSI script and Appendix E for the PCSI Coding Sheet. The manual for coding the PCSI is in Appendix C, which includes procedures for coding for both the CCSI and PCSI.

Maternal negative inferential feedback. Mothers' communication of negative cognitions to their children following negative or failure events the children experience

37

(i.e., negative inferential feedback) was measured using the Parental Attributions for Child Events (PACE; Alloy et al., 2001). This self-report questionnaire provides the mother with twelve hypothetical negative or failure events that might occur in her child's life (e.g., "My child runs for class president and loses", "Everyone in his/her class is invited to a party, except for my child"). For each hypothetical event, the mother is asked to select one of four causal attributions, each pertaining to a different category of attribution (e.g., internal, stable, and global) she would have communicated to her child and to select one of two consequences (one positive, one negative) she would have communicated to her child if that event had occurred. In addition to selecting the messages she would be most likely to say, the mother also rates each causal attribution and each consequence on the likelihood (0 to 100 percent scale) she would communicate each one to her child following the hypothetical negative event. The types of causal attributions the mother can select are: internal-stable-global, external-stable-global, external-unstable-specific, and internal-unstable-specific.

From the mothers' responses, this measure yields several options for capturing parental negative inferential feedback communicated to their children: a total number of each type of causal attribution and each type of consequence and mean percentages of the likelihood the mother would communicate each type of causal attribution and each type of consequence to her child across all twelve situations. The response that represents communication of negative attributional style is the internal-stable-global cause and expectations for negative consequences represent another element of negative cognitive style that mothers may communicate to their children. In the current study, two scores will be used to represent negative maternal inferential feedback: the mean percentage

likelihood the mother would communicate internal-stable-global causes, and the mean percentage likelihood the mother would communicate negative consequences (across all twelve hypothetical events). Internal consistency in past studies has ranged from $\alpha = .69$ to $\alpha = .94$ (e.g., Crossfield et al., 2002; Oliver et al., 2007). For this study, internal consistency for maternal feedback of internal, stable, global causal attributions was $\alpha = .87$ and internal consistency for maternal feedback of expectations for negative consequences was $\alpha = .87$.

Maternal depression history. Mothers' past and current depressive episodes were assessed with the Structured Clinical Interview for DSM (SCID; First, Spitzer, Gibbon, & Williams, 2001), a semi-structured diagnostic interview used to assess current and previous episodes of psychopathology according to DSM-IV criteria (American Psychiatric Association, 1994).

Maternal current depressive symptoms. The Beck Depression Inventory (BDI-II; Beck, Steer, Ball, & Ranieri, 1996; Steer, Brown, Beck, & Sanderson, 2001) provided a self-report measure of current maternal depressive symptoms, at the time of the interview. This widely used measure has high internal consistency ($\alpha = .91$) and test-retest reliability as well as good validity (Beck et al., 1996; Steer et al., 2001), and in the current study, internal consistency was excellent ($\alpha = .93$).

Mother and child observation tasks.

Maternal parenting behaviors during observation tasks. Mothers' parenting behaviors in the observation tasks were quantified using the Iowa Family Interaction Ratings scales (IFIRS) to code videotaped interactions between each child and his or her mother (Melby & Conger, 2001). Mothers and children participated in three 10-minute-

long, video-taped interaction tasks in this study, two discussions (called the peer task and

family task in the discussion that follows) and the public-speaking task mentioned

previously.

The codes within the IFIRS (a global coding system) utilize content of

conversation, emotional affect, and non-verbal behavior to yield scores (Melby &

Conger, 2001). There are multiple codes in the system, but those of interest for this study

are neglecting/distancing and reverse coded child monitoring, listener responsiveness,

and quality time (which were used to form a withdrawn parenting composite, α = .65, as

used in Gruhn et al., 2015) and hostility, intrusiveness, guilty coercion, and inconsistent

discipline (which were combined to create a harsh parenting composite, α = .77, also used

in Gruhn et al., 2015). See Table 5 for additional information and definitions of the codes

used in these composites. All codes have a 9-point scale, 1 representing "not at all

characteristic" and 9 representing "mainly characteristic." Coders focus on frequency and

intensity of non-verbal behaviors and verbal statements to assign each participant a score

on all codes.

Two independent raters (doctoral students in clinical psychology and trained

advanced undergraduate research assistants) coded each mother-child interaction. Coders

completed extensive training to learn the codes in the IFIRS system and to become

reliable with previously coded interactions and with other coders. After completing

coding on each parent-child interaction, the two coders met to determine consensus codes

for any codes that differed by two or more points on the 1 to 9 scale. Consensus was

obtained for discrepant codes by the coders discussing their notes for each code and

referring to the coding manual to verify their examples. Training in the use of IFIRS

consists of approximately 35 hours of instruction and practice including reading and studying the manual, completing a written content test, coding previously coded interactions to test for reliability, and regular meetings with a team of experienced coders. Once a newly trained coder achieves agreement with 75% of codes on an interaction with previously established scores, he/she can then code independently. Coders attended meetings throughout the duration of the study during which recently coded interactions were discussed and questions were clarified to prevent drift between coders. Inter-rater reliabilities (intra-class correlations; ICC) for each code and mean percent agreement between the two coders are provided in Table 6. The overall mean percent agreement between the two coders was 74.2% for the family task and 77.9% for the peer task. Inter-rater reliabilities ranged from $ICC = .29$ for quality time on the peer task to $ICC = .86$ for hostility. Of note, the low intra-class correlation for quality time on the peer task is very likely due to significantly reduced variance on this code. On the peer task, most mothers were rated as "1" (i.e., not at all characteristic) on the 1 to 9 scale for quality time, due to this discussion topic not lending itself to mothers and children talking about shared activities (which is a main component of this code). Additional details regarding reliability of the IFIRS coding can be found in Table 6.

  Selection of stressor topics for the video-taped discussion tasks. The stressor items on the peer stress and family stress versions of the Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) were used to provide the mothers and children a list of stressors to choose topics for their videotaped discussions (one peer task and one family task), which are discussed in greater detail below.

Procedure

Participant recruitment was initiated in April 2011 and concluded in December 2013. Upon expressing interest in the study, mothers completed a brief screening interview over the phone for mother and child exclusion criteria. Exclusion criteria for mothers included schizophrenia or schizoaffective disorder and bipolar I or bipolar II disorder. Exclusion criteria for children incorporated developmental disorders (e.g., autism spectrum disorders, Asperger's disorder) and schizophrenia or schizoaffective disorder. Finally, any mother-child dyad that was monolingual in a non-English language was also excluded. If determined eligible from the phone-screen interview, the mother and her oldest eligible child participated in the in-person interviews and lab tasks in one visit to our lab. Mothers and children completed questionnaires from home prior to the lab visit.

During the lab visit, mothers completed the SCID to assess current depression and depression history while children completed a cognitive testing battery. After the interview and testing, mothers and children participated in the three videotaped interaction tasks together: two discussion-based tasks (one about the child's peer stress and one about family stress), and a simulated public-speaking task. Prior to beginning each discussion task, the mother and child selected the topic from one of two lists of stressful situations (from the peer stress and family stress versions of the RSQ that mothers and children completed prior to the lab visit; Connor-Smith et al., 2000). The order of the discussion topics (i.e., peer-related and family-related) was counterbalanced. For both discussion topics, the mother and child were instructed to talk to each other for ten minutes, and to discuss these topics as they normally would if the child approached

the mother to have a conversation at home about similar stressors. Prior to beginning

each discussion task, the mother and child each completed a brief emotion rating.

Mothers and children were provided a cue card with prompts and questions to guide their

discussion for each topic. These prompts included a brief overview of the chosen topic

(who, what, when, etc.), their feelings about the situation, what the child and mother

think about the situation, its causes and consequences, and what the child and mother

should do or have previously done to try to cope with it.

Following completion of the two discussion tasks, mother–child dyads

participated in the third observation task, a public-speaking task designed to assess

mother–child interactions and causal attributions in a mildly emotionally arousing

situation. This task is similar to the task used in studies by Kortlander, Kendall, and

Panichelli-Mindel (1997) and Cobham, Dadds, and Spence (1999). The task was split

into two 5-minute-long sections. The first 5 minutes were the preparation period, in

which the child and mother worked together to help determine the content and prepare

the presentation for the child's speech. After this preparation phase, the child and mother

completed brief emotion ratings again. The child then completed a 5-minute-long speech

about him or herself, with the research assistant acting as a judge for the child's speech,

grading him or her on a scale of 1 to 10 compared to other children his or her age (1

being worst and 10 being best). To further increase the mother and child's desire to

perform well on this task, they were told they could each win an additional $10 if the

child scored a 7 or higher on the 1 to 10 scale. After the preparation period, the child was

instructed to stand up and give his or her speech into the camera. The mother remained in

the room for the child's speech, seated behind the child, while the research assistant sat in

front of the child, next to the camera. To avoid inadvertently providing positive feedback to the child and to increase the evaluative nature of the experience, research assistants were trained to express minimal emotion during the child's speech and to pretend to be taking notes and scoring the speech while the child spoke.

After the child completed his or her speech, the child and mother were asked to wait a moment for the research assistant to complete the scoring. The mother and child were then told that the child received a score of 5 on the 1-to-10 scale (1 being the worst, 10 being the best), regardless of the quality of the speech given. This procedure was intended to simulate a mild failure experience in the lab setting. The mother and child were then split into separate rooms and again completed emotions ratings. The two research assistants then interviewed the child and mother separately about their cognitions (i.e., causal attributions, expectations for consequences, and implications for the self) regarding this public-speaking test and the score the child received. These interviews were audio recorded.

Following these interviews, the mother and child were debriefed together to reveal the deception of the public-speaking test. In this debriefing, the research assistants informed the child and mother that the public-speaking portion of the study was intentionally carried out the same way for all participants, with every child receiving a "failing" score of 5 on the 1-to-10 scale, and that no one ever receives a 7 or higher. Research assistants also praised the child's effort and performance, reassuring him/her that giving a speech in front of an unfamiliar person while being videotaped and evaluated is an intimidating task for most children. The mother and child were given compensation for their time in the lab visit, including the additional $10 each they

believed they had to earn in the public-speaking task. Mothers then received a packet of information regarding parent-child communication, parenting strategies, how depression may affect parenting, and some recommended books. Each family was provided a total of $100 for participation ($60 for the mother, and $40 for the child).

Doctoral students in clinical psychology received extensive training for diagnostic interviewing with the mother and for cognitive testing with the child. Trained doctoral students and undergraduate research assistants conducted the videotaped interaction tasks, public speaking task, and the interviews following the public speaking task. Supervision for the interviews and the cognitive testing was provided by a licensed clinical psychologist. The Institutional Review Board at Vanderbilt University approved all procedures for this study.

Data Analytic Plan

Power analyses. Power analyses were conducted using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). These analyses were conducted for the full sample size of 115 and also for the interview sample size of 60. Power analyses indicated that with power set at .80 and alpha set at .05 (two-tailed), there is adequate power to detect correlations of $r = .25$ and larger as significant in a sample size of 115, and adequate power to detect correlations of $r = .34$ and larger as significant in a sample size of 60. Power analyses also indicated in a sample size of 115 (again with power at .80 and alpha at .05), there is adequate power to detect $R^2 = .14$ or larger as significant for the largest regression model tested (total of 8 predictors) and adequate power to detect $R^2 = .11$ or larger as significant for the smallest regression model tested (total of 4 predictors). Additionally, in a sample of 60, again with power set at .80 and alpha set at .05 (two-

tailed), there is adequate power to detect $R^2 = .29$ or larger as significant for the largest

regression model tested (total of 8 predictors) and adequate power to detect $R^2 = .22$ or

larger as significant for the smallest regression model tested (total of 4 predictors).

Therefore, the final full sample size of the current study ($N = 115$) and interview sample

size ($n = 60$) are adequate for the plan of analyses.

Preliminary analyses. Preliminary analyses were conducted using IBM SPSS

Statistics, Version 21 to derive means, standard deviations, ranges, and reliability of

scores on all measures and to assess skewness and kurtosis and check for outliers.

Preliminary analyses also included quantifying variables from coding of observations and

interviews using newly developed coding schemes and establishing reliability of this

coding (see Tables 3, 4, 6, and 7 for details).

Correlational analyses. Bivariate Pearson correlations were also conducted using

IBM SPSS Statistics, Version 21 to provide initial information about the relations

between the questionnaire measures of negative cognitive style (ACSQ and PCSQ) and

the interview to examine generality of causal attributions developed for this study (CCSI

and PCSI). Bivariate Pearson correlations were also used to examine existence and

strength of associations between the hypothesized correlates (maternal negative cognitive

style, maternal negative inferential feedback, observed parenting behaviors) and child

negative cognitive style, and between the hypothesized correlates and child generality of

causal attributions (as presented in the first hypothesis). Bivariate Pearson correlations

were also used to test the association between negative cognitive style and depressive

symptoms for mothers and children (as presented in the third and fourth hypotheses).

Multiple linear regression analyses. Multiple linear regression analyses were also conducted in IBM SPSS Statistics, Version 21 to test models predicting child cognitive vulnerability based on multiple predictors (as presented in the first hypothesis). In order to test the second hypothesis, multiple linear regression analyses were used to test possible interactions between the correlates of interest and current maternal depressive symptoms in predicting child cognitive vulnerability. These moderation analyses were conducted by mean-centering variables and creating interaction terms from their products. For each interaction tested, the main effects of the two variables were entered as a first step with the interaction term as the second step. The PROCESS macro for SPSS (Hayes, 2013) was used to calculate values of variables to plot interaction effects in figures for visualization.

RESULTS

Descriptive Statistics

Means and standard deviations for all variables are presented in Table 7. The mean on the ACSQ ($M = 2.79$, $SD = 0.91$) was comparable to that found in prior research using the ACSQ in samples of children of comparable age (e.g., Dunbar et al., 2013; Hankin & Abramson, 2002). The mean of the PCSQ ($M = 3.54$, $SD = 1.01$) was also similar to that found in prior studies of adults (e.g., Haeffel et al., 2008). The mean on the BDI-II was 9.98 ($SD = 9.68$), which is considered indicative of minimal depression. Of note, 72.2% of the mothers in the full sample had BDI-II scores indicative of minimal depression (0 to 13), 13.0% had scores that are indicative of mild depression (14 to 19),

9.6% had scores indicative of moderate depression (20 to 28), and 5.2% had scores that indicate severe depression (29 to 63).

The mean *T* score on the YSR Affective Problems scale was 55.45, and the mean *T* score on the CBCL Affective Problems scale was 55.28. These scores indicate moderate elevations in symptoms in this sample of children (i.e., approximately one-half standard deviation above the normative mean on both measures), but these mean scores are still below the clinical cutoff of 70. A small subgroup of the full sample of children scored at or above the clinical cutoff of 70 (98th percentile) on the YSR (*n* = 5; 4.4% of the sample) and CBCL (*n* = 8; 7.0% of the sample). In the general population, 2 percent of children would score at or above a 70 on this scale, so these percentages are higher than the normative sample. Of note, of the five children scoring at or above the clinical cutoff on the YSR, three of them had a mother with depression history and all eight of the children scoring at or above the clinical cutoff on the CBCL had a mother with depression history. It is expected that the children of depressed mothers would be at a higher risk for depression and thus may exhibit greater levels of affective problems, as seen in these results.

Supplementary Initial Analyses

Correlation analyses were conducted to examine bivariate associations between variables of interest. Results of correlation analyses are presented in Tables 8 and 9. Overall, the majority of the correlations range from small to medium in magnitude. In addition to the findings related to hypothesis testing (described below), some additional noteworthy correlations were statistically significant in the current study. Although they do not pertain to my hypotheses, these analyses warrant brief discussion. First, mothers'

self-reported negative cognitive style was positively correlated with mothers' generality of causal attributions measured via interview ($r = .28$, $p < .05$), and the positive correlation between children's self-reported negative cognitive style and children's generality measured via interview approached significance ($r = .23$, $p = .07$), as seen in Table 9. Mothers' self-reported negative cognitive style also positively correlated with maternal feedback of expectations for negative consequences ($r = .19$, $p < .05$) and the positive correlation between mothers' self-reported negative cognitive style and maternal feedback of internal, stable, global causal attributions approached significance ($r = .18$, $p = .05$), as seen in Table 8. Similarly, maternal generality of causal attributions measured via interview correlated positively with maternal feedback of expectations for negative consequences ($r = .33$, $p < .05$) and the correlation between maternal generality of causal attributions measured via interview and feedback of internal, stable, global causal attributions also approached significance ($r = .24$, $p = .06$), as seen in Table 9. Additionally of interest, as displayed in Table 8, maternal negative inferential feedback was positively correlated with observed withdrawn parenting behaviors (feedback of internal, stable, global causal attributions, $r = .25$, $p < .01$; feedback of expectations for negative consequences, $r = .20$, $p < .05$).

Hypothesis 1

Correlation analyses were conducted to begin to test hypotheses. Linear multiple regression analyses were also conducted for hypothesis testing and moderation analyses. Results of correlation analyses are presented in Tables 8 and 9 and results of regression analyses are presented in Tables 10 through 13 and Tables F1 through F5 (in Appendix F). As predicted by my first hypothesis concerning the correlates of child negative

49

cognitive style, mothers' self-reported negative cognitive style measured via

questionnaire ($r = .19$, $p < .05$) and mothers' generality of causal attributions measured

via interview ($r = .32$, $p < .05$) were positively correlated with child self-reported

negative cognitive style measured via questionnaire (see Tables 8 and 9). Also, as

displayed in Table 8, both types of maternal negative inferential feedback (feedback of

internal, stable, global causal attributions, $r = .21$, $p < 0.05$; feedback of expectations for

negative consequences, $r = .27$, $p < .01$) were positively related to child self-reported

negative cognitive style. Mothers' observed withdrawn ($r = .03$, *n.s.*) and intrusive

parenting behaviors ($r = .04$, *n.s.*) were not significantly correlated with children's self-

reported negative cognitive style.

When correlation analyses were conducted using children's generality of causal

attributions measured via interview in place of children's self-reported negative cognitive

style to further examine my first hypothesis, none of the hypothesized correlates were

significantly associated with the children's generality score. These results are displayed

in Table 9.

Regression analyses were conducted to test two separate models related to my

first hypothesis: one model that included all correlates as predictors of children's self-

reported negative cognitive style and a second model with all correlates as predictors of

children's generality of causal attributions measured via the interview. Results of these

regression analyses are presented in Block 2 of Table F1 in Appendix F. When

controlling for children's age and gender and maternal depressive symptoms, none of the

hypothesized correlates were significant predictors of children's self-reported negative

cognitive style (mother self-reported negative cognitive style, $\beta = .11$, *n.s.*; maternal

feedback of internal, stable, global causal attributions, $\beta = -.03$, *n.s.*; maternal feedback of

expectations for negative consequences, $\beta = .27$, *n.s.*; withdrawn parenting, $\beta = -.06$, *n.s.*;

intrusive parenting, $\beta = .03$, *n.s.*).

The same pattern of findings occurred when using the generality scores on the

child and mother interview in place of the questionnaire measures of child and mother

self-reported negative cognitive style to test this full model. Results of these analyses are

also presented in Block 2 of Table F1 in Appendix F. Again, when controlling for

children's age and gender and maternal depressive symptoms, none of the hypothesized

correlates were significant predictors of children's generality of causal attributions

measured via interview (mother generality, $\beta = -.10$, *n.s.*; maternal feedback of internal,

stable, global causal attributions, $\beta = -.08$, *n.s.*; maternal feedback of expectations for

negative consequences, $\beta = .26$, *n.s.*; withdrawn parenting, $\beta = .03$, *n.s.*; intrusive

parenting, $\beta = .07$, *n.s.*).

Hypothesis 2

Multiple linear regression analyses were conducted to examine how maternal

depressive symptoms may moderate the associations between each of the hypothesized

correlates and children's negative cognitive style. Results of these analyses are presented

in Tables 10 and 11 and Tables F2 through F5 (in Appendix F). In regression analyses

examining the interaction between maternal depressive symptoms and mothers' self-

reported negative cognitive style predicting self-reported child negative cognitive style,

neither the main effects (mothers' self reported negative cognitive style $\beta = .16$, *n.s.*;

maternal depressive symptoms $\beta = .09$, *n.s.*) nor their interaction ($\beta = -.07$, *n.s.*) were

significant predictors. The same analyses were run with generality of causal attributions

51

measured via interview in place of negative cognitive style for children and mothers. The main effects of maternal generality and maternal depressive symptoms were not significant ($\beta = -.02$, *n.s.*; $\beta = .04$, *n.s.*), nor was their interaction ($\beta = .05$, *n.s.*). These results are presented in Block 1 (main effects) and Block 2 (interaction) of Table F2 in Appendix F.

Two separate regression equations were tested to examine the interaction between maternal depressive symptoms and the two scales of maternal negative inferential feedback (feedback of internal, stable, global causes and feedback of expectations for negative consequences) predicting child self-reported negative cognitive style. In one of these equations, the overall model was significant (F = 3.89, $p < .05$) and accounted for approximately 7% of the variance in child self-reported negative cognitive style (Table 10; main effects presented in Block 1, interaction presented in Block 2). In this regression analysis, the main effect for maternal feedback of internal, stable, global causal attributions was significant ($\beta = .27$, $p < .01$), as was its interaction with maternal depressive symptoms ($\beta = .20$, $p < .05$) in predicting child self-reported negative cognitive style. However, the main effect for maternal depressive symptoms was not significant ($\beta = .15$, *n.s.*). See Figure 1 for a visual representation of this significant interaction.

In the second of these equations (also displayed in Table 10) with maternal feedback of expectations for negative consequences in place of maternal feedback of internal, stable, global causal attributions, a similar pattern emerged, such that the main effect of maternal feedback of expectations for negative consequences ($\beta = .27$, $p < .01$; presented in Block 1) and the interaction between maternal depressive symptoms and

maternal feedback of expectations for negative consequences (β = .18, p < .05; presented in Block 2) were positively related to child self-reported negative cognitive style, but the main effect of maternal depressive symptoms was not a significant predictor (β = . 11, *n.s.*; presented in Block 1). This second model was also significant (F = 4.95, p < .01) and accounted for approximately 9% of the variance in child self-reported negative cognitive style. See Figure 2 for a visual representation of this interaction.

Two additional regression equations were tested using children's generality of causal attributions measured via interview as the outcome to further examine the main effects and possible interaction between maternal depressive symptoms and both scales of maternal negative inferential feedback (feedback of internal, stable, global causal attributions and feedback of expectations for negative consequences). These analyses can be found in Table F3 in Appendix F, with the main effects presented in Block 1 and the interactions presented in Block 2. In the first of these analyses, the main effects for maternal feedback of internal, stable, and global causal attributions (β = .11, *n.s.*) and maternal depressive symptoms (β = .03, *n.s.*) were not significant, nor was their interaction (β = -.07, *n.s.*). In the second of these analyses, the same pattern emerged, such that maternal feedback of expectations for negative consequences (β = .16, *n.s.*), maternal depressive symptoms (β = .05, *n.s.*), and their interaction (β = -.05, *n.s.*) were not significant predictors of children's generality of causal attributions measured via interview.

Regression analyses also tested the interaction between maternal depressive symptoms and observed parenting in predicting child self-reported negative cognitive style. These analyses are presented in Table F4 in Appendix F, with main effects

presented in Block 1 and interactions presented in Block 2. Parenting was not a significant main effect (withdrawn parenting $\beta = .02$, *n.s.*; intrusive parenting $\beta = .03$, *n.s.*) nor was depressive symptoms ($\beta = .12$, *n.s.* in both equations) in predicting child self-reported negative cognitive style. Moreover, the interactions between parenting and maternal depressive symptoms were not significant (withdrawn parenting by maternal depressive symptoms $\beta = .04$, *n.s.*; intrusive parenting by maternal depressive symptoms $\beta = -.01$, *n.s.*) in predicting child self-reported negative cognitive style.

The same pattern was found when using the child generality score on the interview as the outcome variable in place of child self-reported negative cognitive style. These results are presented in Table F5 in Appendix F, with main effects presented in Block 1 and interactions presented in Block 2. The main effects of parenting (withdrawn parenting $\beta = .16$, *n.s.*; intrusive parenting $\beta = .14$, *n.s.*) and maternal depressive symptoms ($\beta = .05$, *n.s.; $\beta = -.01$, *n.s.*, respectively), and the interactions between parenting and maternal depressive symptoms were not significant predictors of child generality of causal attributions measured via interview (withdrawn parenting by maternal depressive symptoms, $\beta = -.18$, *n.s.*; intrusive parenting by maternal depressive symptoms, $\beta = -.11$, *n.s.*).

Since maternal generality of causal attributions measured via interview was positively correlated with child self-reported negative cognitive style ($r = .32$, $p < .05$), a final set of regression analyses tested the interaction between maternal depressive symptoms and maternal generality of causal attributions measured via interview in predicting child self-reported negative cognitive style (presented in Table 11; main effects in Block 1 and interaction in Block 2). This overall model was significant ($F =$

5.49, $p < .01$) and accounted for approximately 19% of the variance in child self-reported negative cognitive style. The main effect of maternal depressive symptoms was a significant predictor of child self-reported negative cognitive style ($\beta = .25, p < .05$) and the interaction between maternal depressive symptoms and maternal generality of causal attributions was a significant predictor of child self-reported negative cognitive style ($\beta = .27, p < .05$). In this model, the main effect of maternal generality of causal attributions was not a significant predictor ($\beta = .20, n.s.$). Figure 3 provides a visual representation of this significant interaction.

Hypothesis 3 and Hypothesis 4

My third and fourth hypotheses were also tested using a combination of correlation and regression analyses. Regarding my third hypothesis and presented in bivariate correlation analyses in Tables 8 and 9, mothers' total negative cognitive style correlated positively with mothers' depressive symptoms ($r = .45, p < .001$), but mothers' generality of causal attributions did not correlate with mothers' depressive symptoms ($r = .16, n.s.$). Similarly, as stated in my fourth hypothesis and displayed in Table 8, children's self-reported negative cognitive style correlated positively with children's self-reported depressive symptoms on the YSR ($r = .38, p < .001$). The correlation between children's self-reported negative cognitive style and children's depressive symptoms via mother report on the CBCL did not reach statistical significance ($r = .17, p = .108$). Additionally regarding my fourth hypothesis, as presented in Table 9, children's generality of causal attributions correlated positively with children's self-reported depressive symptoms on the YSR ($r = .34, p < .001$), but children's generality of causal attributions did not

correlate with mothers' reports of children's depressive symptoms on the CBCL ($r = .09$, *n.s.*).

To further examine my fourth hypothesis, in regression analyses predicting children's self-reported depressive symptoms, when controlling for child age and gender, children's self-reported negative cognitive style ($\beta = .31, p < .001$) and maternal depressive symptoms ($\beta = .34, p < .001$) were both significant predictors of children's depressive symptoms on the YSR, as presented in Block 2 of Table 12. This overall model was significant ($F = 9.92, p < .001$) and accounted for approximately 24% of the variance in child self-reported depressive symptoms. In regression analyses predicting mothers' reports of their children's depressive symptoms on the CBCL, when controlling for child age and gender, mothers' levels of depressive symptoms was a significant predictor ($\beta = .47, p < .001$), but children's self-reported negative cognitive style was not ($\beta = .07, n.s.$), also presented in Block 2 in Table 12. This overall model was also significant ($F = 9.29, p < .001$) and accounted for approximately 23% of the variance in children's depressive symptoms measured via mother report.

As presented in Block 2 of Table 13, a similar pattern emerged when children's generality of causal attributions measured via interview was entered as a predictor in place of child self-reported negative cognitive style. When controlling for child age and gender, children's generality score ($\beta = .32, p < .01$) and maternal depressive symptoms ($\beta = .42, p < .001$) were both significant predictors of child self-reported depressive symptoms on the YSR. This overall model was significant ($F = 6.15, p < .001$) and accounted for approximately 26% of the variance in children's self-reported depressive symptoms. In the next set of regression analyses (also displayed in Block 2 of Table 13),

after controlling for child age and gender, maternal depressive symptoms was a significant predictor ($\beta = .53$, $p < .001$) but child generality of causal attributions was not a significant predictor ($\beta = .05$, *n.s.*) of mother-reported child depressive symptoms on the CBCL. Also of note, child gender approached significance as a predictor in this model ($\beta = .21$, $p = .07$), and due to the way child gender was coded (male = 0, female = 1), this positive beta weight indicates greater levels of mother-reported depressive symptoms for girls. This model was also significant ($F = 6.94$, $p < .001$) and accounted for approximately 29% of the variance in children's depressive symptoms measured via mothers' reports.

DISCUSSION

Overview

The current study had several primary aims. Specifically, using a sample of mothers with varying depression histories and their children ages 9 to 15, the present study developed a new interview measure of cognitive vulnerability for depression (i.e., generality of causal attributions) for use with children and their parents following a lab-based stress task that was designed to simulate a failure experience. Using data from the interview, this study tested associations between the interview measure of generality of causal attributions and other measures relevant to the study of cognitive vulnerability for depression to begin to gain an understanding of the interview's psychometric properties. The present study also examined associations between child negative cognitive style and three hypothesized correlates of child negative cognitive style: maternal cognitive

vulnerability for depression, maternal negative inferential feedback, and parenting behaviors. Potential moderation of the associations between these correlates and child negative cognitive style by maternal current depressive symptoms was also tested. Additionally, the current study examined how negative cognitive style and generality of causal attributions are related to depressive symptoms in children and their mothers.

The present study provides a new approach to quantifying cognitive vulnerability for depression in children and parents through the Child Cognitive Style Interview (CCSI) and the Parent Cognitive Style Interview (PCSI). The findings of the current study also provide an extension of prior research that has examined negative cognitive style and its correlates in children and adolescents, with some findings that are commensurate with my hypotheses and with prior research and some findings that are unexpected. Results of moderation analyses indicate that the associations between child negative cognitive style and the correlates of interest may differ based on levels of maternal depressive symptoms, thus providing evidence in support of the second hypothesis. The current findings also provide further evidence for the positive association between negative cognitive style and depressive symptoms in mothers and in children and adolescents. The following sections contain a detailed discussion of the findings of the current study and their implications, the strengths and limitations of the current study, and future directions for this research.

Descriptive and Initial Analyses

Findings from descriptive statistics provide initial information regarding the measures used in the present study with this sample. The mean scores of the ACSQ and PCSQ were similar to those obtained in prior studies of children and adults, indicating

levels of negative cognitive style that are typically obtained in normative samples that have used these measures (e.g., Haeffel et al., 2008; Hankin & Abramson, 2002). The mean T scores on the YSR and CBCL Affective Problems Scale were both moderately elevated (approximately one half standard deviation above the normative mean on both measures), indicating increased levels of child depressive symptoms based on child and mother reports in this sample. However, neither of these mean scores was high enough to meet the clinical cutoff on this scale (score of 70 for both YSR and CBCL). Approximately four percent of the children scored at or above the clinical cutoff on the YSR (5 out of 115 children in the sample), and 7% scored at or above the clinical cutoff on the CBCL (8 out of 115 children). The mean maternal BDI-II score (9.98) was indicative of minimal depression in the overall sample. 85.2% of the mothers were classified as having minimal or mild depressive symptoms and 14.8% were classified as having moderate or severe depressive symptoms, based on their BDI-II scores (Beck et al., 1996).

Several additional initial analyses warrant brief discussion. Specifically, mothers with higher levels of negative cognitive style scored higher on the generality of causal attributions score on the interview measure and also reported higher levels of negative inferential feedback. Additionally, mothers with higher levels of generality of causal attributions measured via interview reported higher levels of negative inferential feedback and were observed to have higher levels of withdrawn parenting in interaction with their children. Regarding the child interview, the positive correlation between child generality of causal attributions and child self-reported negative cognitive style approached significance.

Development of Cognitive Style Interview

One primary goal of the present study was to develop an interview to quantify cognitive vulnerability for depression in children and parents. Several studies have discussed the development of interview measures for cognitive vulnerability for depression as a valuable future direction for research in this field (e.g, Gibb & Abela, 2008). There are several reasons why an interview like the one developed in the present study may be a beneficial method to measure cognitive vulnerability for depression.

In examining the format of the majority of questionnaires that are most often used for measuring negative cognitive style in children and adults, a clear pattern emerges. Almost all of these measures (e.g., the Adolescent Cognitive Style Questionnaire, ACSQ; Hankin & Abramson, 2002) instruct the participant to imagine him or herself in several hypothetical failure or stressful situations and then use a forced-choice format for items to examine the content of individuals' interpretations of each of these situations (e.g., using a scale of 1 to 7, the participant is asked "How much do you believe something about you caused this event to occur?", where 1 means "not caused by something about me" and 7 means "entirely caused by something about me").

In contrast to these frequently used questionnaire measures of negative cognitive style, the CCSI and PCSI are different in several ways. First, these interviews were conducted immediately following a lab-based stress task, designed to mimic a failure experience. Each child was instructed to prepare and give a 5-minute-long speech about him or herself and then given false feedback of a low score as a rating of the quality of his or her performance on the speech. After the child received this false feedback, the mother and child completed the interviews separately to provide information about their

interpretations of this fabricated failure in "real-time" as well as their interpretations of a past stressor. Thus, the CCSI and PCSI differ from many questionnaire measures of negative cognitive style in that the interview is conducted regarding events that the participant has experienced, as opposed to hypothetical situations (as used on many questionnaires), which may or may not correspond with situations the participant has actually directly experienced.

In addition to obtaining interpretations of experiences the participants have experienced and assessing interpretations of a lab-based simulated failure situation immediately after its occurrence, the CCSI and PCSI also ask open-ended questions to obtain children's and mothers' causal attributions regarding these experiences. Responses to open-ended questions presumably yield a more spontaneous approximation of how participants interpret failure events as compared to forced-choice questions. With the open-ended questions on the CCSI and PCSI, participants are given the opportunity to verbally and spontaneously express his or her own thoughts, which are later coded into categories that parallel factors of cognitive vulnerability for depression. In the CCSI and PCSI, participants are allowed to list as many attributions for the speech performance and for the previous stressor as they can generate. Questionnaire measures (e.g., ACSQ and PCSQ), on the other hand, ask for a single causal attribution regarding each hypothetical event and then ask directly about various dimensions of cognitive vulnerability for depression regarding that hypothetical event, so there is not as much opportunity for spontaneously generated cognitions.

Moreover, an interview format allows for greater elaboration of one's thoughts and through a communication exchange between the interviewer and participant,

61

arguably allows a greater understanding of questions on the part of the participant and a greater understanding of participant responses on the part of the researcher. For example, in administration of the CCSI and PCSI, if a particular causal attribution was not entirely clear, the interviewer would ask follow-up questions to gain elaboration of the causal attribution. Also, through this interview format, several follow-up questions were at the interviewers' disposal to obtain additional information regarding the stability and globality of causal attributions, which cannot be done through a questionnaire (e.g., if a child said her speech performance was the result of a lack of experience with public speaking, the interviewer asked, "Do you think being inexperienced with public speaking will cause other things you do to be stressful or difficult in the future?").

The CCSI and PCSI focused on the generality of children's and parents' causal attributions. The concept of generality of causal attributions as a cognitive vulnerability for depression has been suggested by the hopelessness theory of depression (Abramson et al., 1989). Many studies examining cognitive vulnerability for depression from the perspective of the hopelessness theory often collapse across the internal/external dimension in classifying causal attributions and in scoring negative attributional style, such that all stable and global causal attributions are combined, regardless of whether they are internal or external to the participant responding to the questions (e.g., Hankin & Abramson, 2002). This scoring method was used because internality of causal attributions is hypothesized to lead to feelings of low self-worth in already depressed individuals, but it is not hypothesized to lead to the development of depression (Haeffel et al., 2008).

The coding scheme for the PCSI and CCSI was developed through close examination of definitions of various dimensions of negative cognitive style throughout the literature. Causal attributions provided by mothers and children were classified on three dimensions (internal/external, stable/unstable, and global/specific) by coding the audio-recorded interviews. If a mother or child mentioned consequences as a result of the speech or implications for the self, those were also coded as positive, neutral, or negative. The interview data were originally scored for internal, stable, and global causal attributions combined with expectations for negative consequences and negative implications for self in an attempt to create a total negative cognitive style score. However, it is noteworthy that *no* mothers in the interview sample provided any attributions for their children's performance on the speech that were classified as internal to themselves, so the interview data was scored to create a total generality score from all stable and global causal attributions for both mothers and children.

One explanation for the absence of internal attributions by mothers in the current study may correspond to the concept of the actor-observer bias. Specifically, the mothers were the observers in the speech task, while their children were the actors. Those who have studied this bias hypothesize that when an observer is asked to explain the behavior of an actor, that observer is more likely to make attributions that are inherent to the actor or something about the actor's personality (i.e., attributions that are external to the observer). On the other hand, actors are more likely to make external attributions for the outcome of tasks in which they actively participate, such as saying that situational factors caused the outcome, rather than saying something inherent to their own personality or ability led to the outcome (Jones & Nisbett, 1971). Thus, it is not necessarily surprising

that the mothers did not attribute their children's speech performance to something internal to themselves since they were in the role of an observer during the speech task. Ultimately, collapsing across the internal/external dimension to include all stable and global attributions in a total generality of causal attributions score yielded interview data with adequate variance for testing its associations with other variables in the current study.

This study produced several significant findings using the total generality score on the PCSI and CCSI. The generality score on the PCSI was positively related to mothers' self-reported negative cognitive style, so mothers with greater levels of negative cognitive style also offered more stable and global causal attributions for their children's speech performance and for a previous stressor. Additionally, the positive association between the generality score on the CCSI and children's self-reported negative cognitive style approached statistical significance. These results are in the expected positive direction and also begin to provide some construct validity for the PCSI and CCSI. Further, the generality score on the CCSI was positively related to child depressive symptoms, indicating that children who interpreted their speech performance and other stressful situations as being the result of stable and global causes had higher levels of depressive symptoms. This was also an expected result and provides some concurrent validity for this new interview measure.

Moreover, it is promising that the analyses using the generality score on the CCSI and PCSI yielded several statistically significant results, considering the interview sample in the current study ($n = 60$) was approximately half the size of the overall sample ($n = 115$). Ultimately, these and other results from the present study using the generality score

on the CCSI and PCSI provide the very first set of findings using this new measure. Additional details of findings using the generality score on the CCSI and PCSI are in the discussion that follows regarding hypothesis testing.

Hypothesis 1: Results for Correlates of Child Negative Cognitive Style

        Association between child cognitive vulnerability for depression and maternal cognitive vulnerability for depression. The current study yielded partial support for the first hypothesis regarding potential correlates of child negative cognitive style. Results of bivariate correlation analyses indicated that child self-reported negative cognitive style was positively related to mothers' own self-reported negative cognitive style. Correlation analyses also indicated that child self-reported negative cognitive style was positively related to mothers' generality of causal attributions as measured via interview. Thus, children who reported higher levels of negative cognitive style had mothers who also reported higher levels of negative cognitive style and higher levels of generality of causal attributions, as suggested in the modeling hypothesis, which often interprets a positive correlation between children's and parents' cognitive vulnerability for depression as preliminary evidence that children model their parents' thinking patterns. This is similar to the findings of prior studies that found support of the modeling hypothesis (e.g., Alloy et al., 2001; Blount & Epkins, 2009).

        Association between child cognitive vulnerability for depression and maternal negative inferential feedback. Bivariate correlation analyses indicated that child negative cognitive style was positively related to mothers' feedback of internal, stable, global causal attributions and to positively related to mothers' feedback of expectations for negative consequences, indicating that children with higher levels of

65

negative cognitive style had mothers who provided more negative inferential feedback related to events in their children's lives. Both of these correlations were medium in magnitude. This is similar to the findings of prior studies that found evidence of this positive association (e.g., Alloy et al., 2001; Oliver et al., 2007; Stark et al., 1996).

However, a key way in which the current study differs from prior studies that examined parental inferential feedback is by examining it concurrently with child negative cognitive style (i.e., using a sample of children and adolescents and their mothers, as opposed to young adult college students and their parents, as in Alloy et al., 2001). Therefore, this sample is arguably more developmentally appropriate for testing how maternal negative inferential feedback is related to child negative cognitive style. By examining the associations between these constructs in samples of college students and their parents, prior studies have retroactively assessed parental negative inferential feedback. Through the assessment of these two constructs during childhood, the present study was less affected by possible biased recall that may have been present in other studies using young adult samples. Thus, findings from the present study may be more reliable than those that based the measurement of parental negative inferential feedback on parents' and offspring's memories of what parents might have said to their college-age offspring several years ago.

Association between child cognitive vulnerability for depression and parenting behaviors. Regarding the third potential correlate of child cognitive vulnerability for depression, the present study did not find evidence of the hypothesized positive associations between observed withdrawn and intrusive parenting and child self-reported negative cognitive style or between observed withdrawn and intrusive parenting

and child generality of causal attributions from the interview. These null findings raise several important issues related to measurement of parenting and selection of constructs of interest related to ineffective parenting. Despite the fact that the composites of withdrawn and intrusive parenting were selected for the present study because of prior research on these parenting constructs, it is possible that examining a different set of parenting behaviors might lead to different results than those found in the present study.

Specifically, these parenting composites were used to provide a more detailed look at possible dimensions of ineffective parenting, compared to past studies that examined broader constructs, such as "negative parenting", as they may relate to child cognitive vulnerability for depression (e.g., Bruce et al., 2006). Additionally, research has shown that parents with depression history exhibit greater levels of withdrawn and intrusive parenting behaviors, even when they are out of a depressive episode (Lovejoy et al., 2000). With the inclusion of mothers with varied depression history in the current sample, withdrawn and intrusive parenting behaviors seemed relevant to represent hypothesized ineffective parenting behaviors that were expected to correlate positively with greater child negative cognitive style.

It is noteworthy that the previous studies that examined parenting behaviors and child cognitive vulnerability have also yielded inconsistent findings, so the null findings in the present study are not necessarily unexpected. Of the 9 previous studies testing the association between parenting and child negative cognitive style, 6 found a positive association between negative and/or ineffective parenting behaviors and child cognitive vulnerability for depression or a negative association between parental warmth/sensitivity and child cognitive vulnerability for depression. It is also noteworthy that studies that did

not find significant associations between parenting and child cognitive vulnerability were typically those that used observation methods to quantify parenting, similar to the current study (e.g., Hankin et al., 2009; Mezulis et al., 2006). The multi-method design in the current study may be a more stringent test of the possible association between parenting and child negative cognitive style, so a larger sample size than the one in the present study may be needed to detect significant effects.

Regardless of the reasons behind the findings of the present study and previous research examining how parenting and child negative cognitive style may be related, perhaps examining parenting at this broad level (positive or negative as in prior studies or withdrawn and intrusive as in the present study) will not yield results because a more detailed measure of how parents communicate messages indicating negative ways of thinking is the level of analysis needed for this research. Simply examining "positive" or "negative" parenting or even specific examples of ineffective parenting (e.g., withdrawn and intrusive parenting) does not provide any information regarding the specific messages parents are sending their children, such as what is examined through the construct of negative inferential feedback. A parent can be withdrawn and intrusive with her child without communicating negative ways of interpreting failure and stressful events. It is possible that ineffective parenting may provide the background for the communication of negative ways of thinking, but perhaps it is too distal of a risk factor for children's negative cognitive style, whereas negative inferential feedback may be a more proximal risk factor.

Multivariate analyses predicting child cognitive vulnerability for depression. Also regarding the first hypothesis, in testing a full model that included all of the

potential correlates predicting child self-reported negative cognitive style and controlling for child age, child gender and maternal depressive symptoms, none of these variables were significant predictors. Since maternal negative cognitive style and maternal negative inferential feedback were both positively correlated with child negative cognitive style, the results of this regression model were unexpected. This finding could be an indication of multi-collinearity among the predictors, as some of them are positively correlated with each other (such as maternal negative inferential feedback with maternal negative cognitive style and maternal negative inferential feedback with withdrawn and intrusive parenting) and thus may be competing for variance in predicting child negative cognitive style. This null outcome from testing a full model may also be an indication that none of these potential correlates of child negative cognitive style are unique and independent predictors when all entered together into a model controlling for child age, child gender and maternal depressive symptoms.

Hypothesis 2: Moderation of Correlates of Child Negative Cognitive Style by Maternal Depression

Moderation analyses provided additional information about the associations between child self-reported negative cognitive style, the potential correlates of interest, and how maternal depressive symptoms may modify these associations. Support was found for the second hypothesis, i.e., positive associations between the hypothesized correlates and child cognitive vulnerability for depression would be stronger at higher levels of maternal depressive symptoms.

Moderation of maternal negative inferential feedback by maternal depressive symptoms. The interaction between maternal depressive symptoms and maternal

negative inferential feedback was significant in predicting child self-reported negative cognitive style. As seen in Figure 1, at higher levels of maternal depressive symptoms (i.e., maternal BDI-II score of 19.66), the association between maternal feedback of internal, stable, global causes and child self-reported negative cognitive style is stronger. Examining the slopes of the two lines in Figure 1, at high levels of maternal depressive symptoms, there is a positive slope, indicating that children with greater levels of negative cognitive style have mothers who provide more feedback of internal, stable, and global causal attributions. However, the slope of the line for a low level of maternal depressive symptoms (BDI-II score of 0.3) shows the lack of association between child negative cognitive style and maternal feedback of internal, stable, and global causal attributions.

Similarly, as illustrated in Figure 2, at higher levels of maternal depressive symptoms (also pertaining to a maternal BDI-II score of 19.66), the association between maternal feedback of expectations for negative consequences and child self-reported negative cognitive style is positive, indicating that at higher levels of maternal depressive symptoms, children with greater levels of self-reported negative cognitive style have mothers who communicate more feedback of expectations for negative consequences.

There are several possible ways in which maternal depression may moderate the association between maternal negative inferential feedback and child negative cognitive style. It is likely that when mothers are depressed, they are thinking in more negative ways about themselves, the world, and the future, and this can affect the ways they interpret the causes and consequences of stressful or failure events. Mothers who are depressed may therefore make more causal attributions that are internal, stable, and

global and may have more expectations for negative consequences regarding negative

events in their own and in their children's lives. Having a greater level of negative

thoughts may increase the chance that these negative interpretations will "spill over" into

the feedback mothers provide their children. In addition to thinking in more negative

ways when they are experiencing depression, mothers may also have a harder time

censoring the messages they communicate to their children regarding failure or stressful

events the children experience, again increasing the levels of negative inferential

feedback they provide to their children.

Moderation of the modeling hypothesis by maternal depressive symptoms.

Perhaps the strongest evidence was found for moderation of the association between

maternal generality of causal attributions as measured via the interview and child self-

reported negative cognitive style by maternal self-reported depressive symptoms. It is

noteworthy that this interaction was tested using multiple methods (questionnaire and

interview) and multiple informants (mother and child report). This finding indicates that

when mothers are at the highest levels of depressive symptoms, higher levels of maternal

generality of causal attributions regarding the lab-based speech task and a previous

stressor are related to higher levels of child self-reported negative cognitive style.

A visual representation of this interaction is presented in Figure 3. For mothers

with high levels of depressive symptoms (i.e., BDI-II score of 19.66), there is a positive

slope for the association between maternal generality of causal attributions reported on

the interview and child self-reported negative cognitive style. Thus, at higher levels of

maternal depressive symptoms, greater levels of child self-reported negative cognitive

style are related to greater levels of maternal generality of causal attributions related to

the lab-based public-speaking task and a previous stressor. However, for mothers at low levels of depressive symptoms (i.e., BDI-II score of 0.3), there was no association between maternal generality of causal attributions and child self-reported negative cognitive style.

This provides further evidence in support of a modeling hypothesis of cognitive vulnerability for depression, which posits that children whose mothers have more negative ways of thinking will also have more negative ways of thinking simply through a process of modeling or learning via observation. This interaction indicates that the modeling hypothesis may only be true for children whose mothers are experiencing high levels of depression symptoms. As was previously discussed for maternal negative inferential feedback, mothers with higher levels of depressive symptoms likely have higher levels of negative ways of thinking, such as making more stable and global causal attributions for stressors. Perhaps when mothers who have depression have more of these depressogenic ways of thinking, they may display more of these ways of thinking, thus making the possibility for their children to model their negative thought patterns greater. This is similar to the findings of Blount & Epkins (2009) who found a stronger association between mother and child negative cognitive triad in mothers with greater levels of depressive symptoms.

Non-significant interactions. On the other hand, several of the interactions tested were not significant. Specifically, the interactions between maternal depressive symptoms and maternal negative inferential feedback were not significant in predicting child generality of attributions measured via the interview. Additionally the interaction between maternal depressive symptoms and maternal self-reported negative cognitive

style was not significant in predicting child self-reported negative cognitive style. Moreover, the interaction between maternal depressive symptoms and maternal generality of causal attributions predicting child generality of causal attributions was not significant. This result is in contrast to the findings of Blount & Epkins, 2009. As previously described, in that study, the association between child and mother negative cognitive triad was stronger at higher levels of maternal depressive symptoms. The interaction between parenting and maternal depressive symptoms was also not significant in predicting child self-reported negative cognitive style or in predicting child generality of causal attributions. Considering the lack of significant correlations between the parenting constructs and child negative cognitive style and between parenting and child generality of causal attributions, this lack of significant findings is not unexpected.

Hypothesis 3: Association of Maternal Negative Cognitive Style and Maternal Depression

Results of the current study provide partial support for the third hypothesis, which stated that mother negative cognitive style would be positively related to mother depressive symptoms. Specifically, maternal self-report of negative cognitive style was positively correlated with maternal self-reported depressive symptoms in both the full sample and the interview sample. Thus, higher levels of maternal negative cognitive style related to stressful or failure events in the mothers' lives are related to higher levels of current maternal depressive symptoms. The correlations that pertain to this finding are both considered medium in magnitude. This finding is similar to other studies of a positive association negative cognitive style and depressive symptoms in adults (e.g., Haeffel et al., 2008).

However, the correlation between maternal generality of causal attributions on the interview and maternal self-reported depressive symptoms was not significant. This was unexpected, as having more stable and global causal attributions for a stressful event is a characteristic that is hypothesized as a risk factor for depression, according to the hopelessness theory of depression. Of note, considering that one of the events about which the mothers were providing causal attributions in the PCSI was their children's performance on the public-speaking stress task, it is possible that the generality score for mothers is a less pure indicator of how they interpret events they experience directly, as is measured on the PCSQ, which measured maternal self-reported negative cognitive style regarding hypothetical events in their own lives, and was positively related to maternal depressive symptoms.

Hypothesis 4: Associations of Child Negative Cognitive Style and Child Generality of Causal Attributions with Child Depressive Symptoms

Results of the current study also provide partial support for the fourth hypothesis, which stated that child negative cognitive style would be positively related to child depressive symptoms. This hypothesis was tested with both child self-report and maternal report of child depressive symptoms.

Child cognitive vulnerability for depression related to child self-report of depressive symptoms. Specifically, child self-reported depressive symptoms and child-self reported negative cognitive style were positively correlated in the full sample and the interview sample. Both of these correlations are considered medium in magnitude. Thus, children with higher levels of negative cognitive style related to stressful or failure events reported higher levels of current depressive symptoms.

Additionally, child generality of causal attributions on the interview was positively correlated with child self-reported depressive symptoms, and this correlation was also medium in magnitude. Therefore, children who had greater levels of stable and global causal attributions regarding their performance on a lab-based public-speaking task and the experience of a previous stressor reported higher levels of current depressive symptoms. These findings are commensurate with the robust finding of a cross-sectional positive association between depressogenic interpretations of failure events and depression in children and adolescents in previous studies (e.g., Abela & Skitch, 2007; Gladstone & Kaslow, 1995).

With the inclusion of maternal depressive symptoms as a predictor, regression analyses provided additional information regarding the associations between child self-reported negative cognitive style and child generality of causal attributions and child self-reported depressive symptoms. Both maternal depressive symptoms and child self-reported negative cognitive style were significant predictors of child self-reported depressive symptoms. With child generality of causal attributions from the interview in place of child self-reported negative cognitive style as a predictor, the same pattern occurred, such that maternal depressive symptoms and child generality of causal attributions were significant predictors of child self-reported depressive symptoms. Thus, greater levels of maternal depressive symptoms and greater levels of child cognitive vulnerability are unique, independent predictors of higher levels of child self-reported depressive symptoms. In other words, both of these factors contribute to explaining the variance in child self-report of depressive symptoms.

Child cognitive vulnerability for depression related to maternal report of child depressive symptoms. On the other hand, mothers' reports of child depressive symptoms were not significantly correlated with child self-reported negative cognitive style or with child generality of causal attributions measured via interview. In regression analyses, when predicting mothers' reports of child depressive symptoms from maternal depressive symptoms and child self-reported negative cognitive style, only the level of maternal depressive symptoms was a significant predictor. When child generality of causal attributions was entered in place of child self-reported negative cognitive style, the same pattern of results occurred.

There may be several explanations for these non-significant effects. For example, since many depressive symptoms can be covert experiences (e.g., feelings of depressed mood, feelings of worthlessness or guilt, difficulties making decisions), it is possible that mothers are not as accurate at reporting their children's depressive symptoms than the children are at reporting on their own depressive symptoms. It is also possible that the mothers' reports of children's symptoms in this sample may have been slightly biased. Of note, in this study, there was a strong positive correlation between mothers' reports of their own depressive symptoms and mothers' reports of their children's depressive symptoms (medium in magnitude for the full sample and large in magnitude in the interview sample). This indicates that mothers with higher levels of depressive symptoms reported higher levels of depressive symptoms in their children. Previous research has hypothesized that parental depression may bias the accuracy of parents' reporting on their children's functioning, as they may report greater levels of difficulties or symptoms for their children (Goodman et al., 2011).

An expectation for outcomes of analyses examining the cross-informant association between child self-reported negative cognitive style and parent-reported child depressive symptoms based on prior research is difficult to attain since many prior studies have used single-informant designs in which the children report on both their own negative cognitive style and their own depressive symptoms (e.g., Hankin & Abramson, 2002). The lack of cross-informant association found in this study may not reflect a true lack of relation between negative cognitive style and depression symptoms in children and adolescents, but rather seems to be an indication of one of these other possible factors at work (inaccurate or biased maternal report of child symptoms).

Strengths and Limitations

The current study has several strengths. First, the design of this study included multiple methods (questionnaires, interviews, and observations) and multiple informants (child and mother report), thus decreasing the likelihood that findings are due to shared method variance. Another strength of this study was the creation of a new interview to test for child and parent cognitive vulnerability for depression to augment the information obtained via existing questionnaire measures of negative cognitive style. The sample for the current study is also arguably more developmentally appropriate for testing potential correlates of child negative cognitive style. Specifically, through the measurement of potential correlates of negative cognitive style during childhood, as opposed to in young adulthood as previous studies have done, the current study is less likely to be affected by potential recall bias. Additionally, the use of a sample of mothers with varied depression histories provides greater variance of many of the constructs being tested, such as

negative cognitive style and depressive symptoms, thus improving generalizability of findings to the greater population.

This study also has several limitations. These include the cross-sectional design, which prevents the ability to test for causality of associations. Many of the potential correlates of child negative cognitive style tested in the present study have been hypothesized as developmental origins of child negative cognitive style. Testing these associations cross-sectionally begins to provide valuable information about how these constructs are related but does not allow conclusions regarding how these correlates may *lead to* the development of child negative cognitive style to be drawn. Also, since the sample only included mothers, there is no information provided by this study's results regarding how the associations between the potential correlates and child negative cognitive style may behave in a sample of fathers and their children. Finally, the current sample may not be generalizable to the greater population due to characteristics of the mothers. Specifically, the vast majority of mothers' education levels in this sample were quite high, with only seven mothers (6% of the sample) who did not complete some college or receive a technical degree, with all others completing some college, a technical degree, or a college or a graduate degree. The nature of the educational attainment of this sample is not surprising, considering that many mothers in this sample were recruited from employees at a private university medical center, but these levels of education are not fully representative of the population.

Future Directions

There are several possible future directions for this research. First, the CCSI and PCSI to examine children's and parents' interpretations of other "failure" experiences,

either lab-based or previously experienced in the "real world" setting. For example, the CCSI and PCSI could be used to examine how parents interpret their own failures, as opposed to asking them to interpret a failure they witnessed their children experiencing, as in the current study. Second, future research should include fathers to examine which results of the current study may differ for fathers compared to mothers and which results may be similar. Third, future studies should utilize prospective designs to measure the correlates of child negative cognitive style at one point in time (i.e., maternal negative cognitive style, maternal negative inferential feedback, and parenting behaviors) and then measure child negative cognitive style at a later time in order to provide the opportunity to test for and examine causality. Such designs would provide the opportunity to truly elucidate the developmental origins of child negative cognitive style, which is a known risk factor for the onset of depression in childhood and adolescence. By determining and better understanding the developmental origins of this risk factor, it may be possible to augment prevention efforts. Teaching parents how to communicate with their children in ways that could prevent the development of child negative cognitive style may be another avenue for the prevention of depression in children and adolescents.

Table 1. *Definitions and Measures for Key Concepts in Cognitive Vulnerability for Depression*

Cognitive Vulnerability Concept	Definition and Citation	Measure(s)
• Negative Cognitive Style	A negative mode of thinking, "by which individuals tend to make negative inferences about the cause of an event (i.e., global and stable attributions), the consequences following an event, and the implications for one's self." (Hankin & Abramson, 2002, p. 491)	• Adolescent Cognitive Style Questionnaire (ACSQ; Hankin & Abramson, 2002) • Child Cognitive Style Questionnaire (Abela, 2001)
o Negative Attributional Style	"A tendency to attribute failure (or negative events) to global, stable, and internal factors." (Abramson, Seligman, & Teasdale, 1978, p. 68)	• Child Attributional Style Questionnaire (Seligman et al., 1984) • Attributional Style scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)
▪ Stable Causes	"Long-lived or recurrent causes" of negative events. (Abramson, Seligman, & Teasdale, 1978, p. 56)	• Child Attributional Style Questionnaire (Seligman et al., 1984) • Attributional Style scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)
▪ Global Causes	"Causes that affect a wide variety of outcomes." (Abramson, Seligman, & Teasdale, 1978, p. 57)	• Child Attributional Style Questionnaire (Seligman et al., 1984) • Attributional Style scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)
▪ Internal Causes	Causes that are "contingent on a response in one's repertoire." (Abramson, Seligman, & Teasdale, 1978, p. 53)	• Child Attributional Style Questionnaire (Seligman et al., 1984) • Attributional Style scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)
▪ Generality of causal attributions	Stable and global causal attributions (Abramson, Metalsky, & Alloy, 1989)	• Stable and global attributions on Child Attributional Style Questionnaire (Seligman et al., 1984) • Stable and global attributions on the Attributional Style scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)

Table 1. *Continued*

o Inferences for Negative Consequences	"The likelihood that further negative consequences will result from the negative event." (Hankin and Abramson, 2002, p. 494)	• Negative Inferences for Consequences scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)
o Inferences for Self	"The degree to which the occurrence of the event signifies that the person's self is flawed." (Hankin and Abramson, 2002, p. 494)	• Inferences for Self scale of the Adolescent Cognitive Style Questionnaire (Hankin & Abramson, 2002)
• Negative Cognitive Triad	A group of three negative and depressogenic patterns of thinking about the self, the world and the future (Beck, 1967, 1983)	• Cognitive Triad Inventory for Children (CTI-C; Kaslow, Stark, Printz, Livingston, & Tsai, 1992)
• Self Schema	"A body of knowledge stored in long-term memory which both facilitates and biases the processing of personally relevant information," (Hammen & Zupan, 1984, p. 599). It "selectively rather than accurately processes information," (Hammen, 1988, p. 349).	• Self schema incidental memory task (Hammen & Zupan, 1984) • Self referent encoding task (Taylor & Ingram, 1999)
• Dysfunctional Attitudes	"Depressogenic attitudes and maladaptive beliefs" (Garber & Robinson, 1997, p. 624)	• Dysfunctional Attitudes Scale (Weissman & Beck, 1978) • Children's Dysfunctional Attitudes Scale (Abela & Sullivan, 2003)
• Hopelessness	"The extent to which someone is pessimistic about his or her future" (Garber & Robinson, 1997, p. 625)	• Children's Hopelessness Scale (Kazdin, Rodgers, & Colbus, 1986)
• Negative interpretive bias	"The tendency to impose more negative or less positive interpretations on emotionally ambiguous information." (Dearing & Gotlib, 2009, p. 80)	• Acoustic blends of neutral and negative words and stories with ambiguous endings (Dearing & Gotlib, 2009)

Table 2. *Demographic Characteristics of Mothers and Children*

	Mothers (*n* =115)	Children (*n* = 115)
Age [mean (SD)]	41.72 (5.99)	12.34 (1.88)
Race [*n* (%)]		
Euro-American	78 (67.8)	77 (66.9)
African-American	30 (26.1)	30 (26.1)
Asian-American	3 (2.6)	3 (2.6)
Hispanic/Latino	5 (4.3)	7 (6.1)
American-Indian/Native Alaskan	1 (0.9)	0 (0)
More than one race or "other"	2 (1.7)	5 (4.3)
Annual Family Income [*n* (%)]		
≤$9,999	1 (0.9)	
$10,000 – $14,999	2 (1.7)	
$15,000 – 24,999	7 (6.1)	
$25,000 – 39,999	15 (13.0)	
$40,000 – 59,999	19 (16.5)	
$60,000 – $89,999	25 (21.7)	
$90,000 – $179,999	31 (27.0)	
≥ $200,000	4 (3.5)	
Unknown	11 (9.6)	
Education [*n* (%)]		
Some high school	1 (0.9)	
Graduated high school	6 (5.2)	
Some college (at least one year) or technical school	39 (33.9)	
Graduated college (4 year degree)	38 (33.0)	
Graduate education (above a 4 year degree)	31 (27.0)	
Marital Status [*n* (%)]		
Married/Domestic Partner	75 (65.2)	
Divorced or annulled	21 (18.3)	
Separated	7 (6.1)	
Never Married	10 (8.7)	
Widowed	3 (2.60)	

Table 3. *Reliability of Coding of Child Cognitive Style Interview (CCSI)*

	Public-Speaking Task	Previous Stressor	Total
Percentage of identical attributions	75.34%	64.29%	73.56%
Percent agreement for categorizing attributions	**Public-Speaking Task**	**Previous Stressor**	**Total**
Internal/External Dimension	96.36%	100%	96.88%
Stable/Unstable Dimension	92.73%	100%	93.75%
Global/Specific Dimension	92.73%	77.78%	90.63%

Table 4. *Reliability of Coding of Parent Cognitive Style Interview (PCSI)*

	Public-Speaking Task	Previous Stressor	Total
Percentage of identical attributions	60.42%	77.78%	63.16%
Percent agreement for categorizing attributions	**Public-Speaking Task**	**Previous Stressor**	**Total**
Internal/External Dimension	89.66%	100%	91.67%
Stable/Unstable Dimension	100%	100%	100%
Global/Specific Dimension	96.55%	100%	97.22%

Table 5. *Parenting Behaviors and Corresponding IFIRS Codes Used for Withdrawn and Intrusive Parenting Composites*

	Parenting Behavior(s) Associated with Depressive Symptoms	IFIRS Codes	IFIRS Code Definitions (Melby & Conger, 2001)
Withdrawn Parenting	Self-focused attention; low motivation for interaction with children	Neglecting/ Distancing (ND)	The degree to which the parent is uncaring, apathetic, uninvolved, ignoring, aloof, unresponsive, self-focused, and/or adult-oriented; the parent displays behavior that minimizes the amount of time, contact, or effort she has to expend on the child.
	Low responsiveness and high disengagement; lack of emotional support or reciprocity; tendency to select responses that require low effort	Listener Responsiveness (LR) [Reverse coded]	The degree to which the parent attends to, shows interest in, acknowledges, and validates the verbalizations of the child through the use of nonverbal backchannels and verbal assents.
	Lack of interest in the activities of the child	Child Monitoring (CM) [Reverse coded]	Assesses the parent's knowledge as well as the extent to which the parent pursues information concerning the child's life (e.g., school, extra-curricular activities, peers, sibling and family relationships).
	Less social involvement; lack of involvement between parent and child	Quality Time (QT) [Reverse coded]	Assesses the quality and quantity of time the parent and child spend doing mutually enjoyable activities together and the parent's involvement in the child's life outside of the immediate setting.
Harsh Parenting	Negative emotionality; disturbed contingent responses to child behaviors; tendency to react to challenging child behaviors with anger	Hostility (HS)	Measures the degree to which the parent displays hostile, angry, critical, disapproving, and/or rejecting behavior toward the child's behavior (actions), appearance, or state.
	Increased disruptive and inconsistent discipline; Increased ineffective, indulgent, and/or harsh discipline	Inconsistent Discipline (ID)	Assesses evidence of parental inconsistency and failure to follow through on an expected consequence or punishment, and failure to maintain and adhere to rules and standards of conduct set for the child's behavior. This scale applies to both implicit and explicit rules and standards of conduct.
	Use of harsh control associated with thoughts of parental incompetence	Intrusiveness (NT)	Assesses intrusive and over-controlling behaviors that are parent-centered rather than child-centered and often conveyed in an irritable manner. Task completion or the parent's own needs appear to be more important than promoting the child's autonomy.
	Increased manipulative parenting (e.g., guilt induction, shaming, conditional loving)	Guilty Coercion (GC)	The degree to which the parent achieves goals or attempts to control or change the behavior or opinions of the child by means of contingent complaints, crying, whining, manipulation, or revealing needs or wants in a whiny or whiny-blaming manner. These expressions convey the sense that the parent's life is made worse by something the child does.

Note. IFIRS Iowa Family Interaction Rating Scales.
Table adapted from Gruhn et al., 2015.

Table 6. *Inter-Rater Reliability for IFIRS Coding, Intra-Class Correlations for IFIRS Codes Used in Withdrawn and Intrusive Parenting Composites* (*ICC*)*, Internal Consistency Reliability for Withdrawn and Intrusive Parenting Composites* (α)

	Family Stressor Discussion Task	Peer Stressor Discussion Task
Inter-rater reliability (Overall percent agreement on all codes)	74.22%	77.92%
Intra-class correlations for codes used in present study	**Family Stressor Discussion Task** (*ICC*)	**Peer Stressor Discussion Task** (*ICC*)
Neglecting/ Distancing (ND)	.70	.60
Listener Responsiveness (LR)	.75	.76
Child Monitoring (CM)	.57	.64
Quality Time (QT)	.84	.29
Hostility (HS)	.85	.86
Inconsistent Discipline (ID)	.68	.48
Intrusiveness (NT)	.70	.70
Guilty Coercion (GC)	.57	.46
Internal consistency reliability of parenting composites	**Family Stressor Discussion Task** (**α**)	**Peer Stressor Discussion Task** (**α**)
Withdrawn Parenting	.56	.56
Intrusive Parenting	.66	.69
Overall internal consistency reliability across both tasks	**Withdrawn Parenting** (**α**)	**Intrusive Parenting** (**α**)
	.65	.77

Note. IFIRS Iowa Family Interaction Rating Scales, *ICC* Intra-class correlation

Table 7. *Descriptive Statistics for Negative Cognitive Style, Maternal Negative Inferential Feedback, Parenting Behaviors, Depressive Symptoms, and Generality of Causal Attributions*

Measure	Mean (SD)
Full Sample **(*n* = 115)**	
Negative Cognitive Style	
ACSQ	2.79 (0.91)
PCSQ	3.54 (1.01)
Mother Negative Inferential Feedback	
PACE ISG Attributions	5.96 (9.57)
PACE Negative Consequences	9.97 (12.54)
Mother Observed Parenting	
IFIRS Withdrawn Composite	4.97 (0.78)
IFIRS Intrusive Composite	2.57 (0.99)
Depressive Symptoms	
YSR Affective Problems raw score	4.32 (3.33)
YSR Affective Problems *T* score	55.45 (6.12)
CBCL Affective Problems raw score	2.12 (2.93)
CBCL Affective Problems *T* score	55.28 (7.02)
BDI-II	9.98 (9.68)
Interview Sample **(*n* = 60)**	
Generality of Causal Attributions	
CCSI Generality of Causal Attributions	1.32 (1.27)
PCSI Generality of Causal Attributions	2.06 (1.60)

Note. ACSQ Adolescent Cognitive Style Questionnaire, *PCSQ* Parent Cognitive Style Questionnaire, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences, *IFIRS* Iowa Family Interaction Rating Scales, *YSR* Youth Self Report, *CBCL* Child Behavior Checklist, *BDI-II* Beck Depression Inventory-II, *CCSI* Child Cognitive Style Interview, *PCSI* Parent Cognitive Style Interview

Table 8. *Correlations among Children's Negative Cognitive Style on ACSQ, Maternal Negative Inferential Feedback, Parenting Behaviors, and Depressive Symptoms for the Full Sample*

	1.	2.	3.	4.	5.	6.	7.	8.
1. ACSQ Total								
2. YSR Affective Problems	.37***							
3. CBCL Affective Problems	.14	.49***						
4. PCSQ Total	.19*	.19*	.25**					
5. PACE ISG Attributions	.21*	.13	.07	.18†				
6. PACE Negative Consequences	.27**	.13	.09	.19*	.81***			
7. IFIRS Withdrawn Composite	.03	.15	.09	-.02	.25**	.20*		
8. IFIRS Intrusive Composite	.04	-.01	.10	.05	.07	.12	.54***	
9. BDI-II	.12	.38***	.47***	.43***	-.02	.02	.12	.09

Note. ACSQ Adolescent Cognitive Style Questionnaire, *YSR* Youth Self Report, *CBCL* Child Behavior Checklist, *PCSQ* Parent Cognitive Style Questionnaire, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences, *IFIRS* Iowa Family Interaction Rating Scales, *BDI-II* Beck Depression Inventory-II

n = 115

†*p* < .10, ** p* < .05, *** p* < .01, *****p < .001

Table 9. *Correlations among Children's Negative Cognitive Style on ACSQ, Generality of Causal Attributions on CCSI, Maternal Negative Inferential Feedback, Parenting Behaviors, and Depressive Symptoms for the Interview Sample*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. ACSQ Total										
2. CCSI Generality	$.23^{\dagger}$									
3. YSR Affective Problems	$.35^{***}$	$.34^{***}$								
4. CBCL Affective Problems	.06	.09	$.49^{***}$							
5. PCSQ Total	$.26^{*}$	-.02	.18	.12						
6. PCSI Generality	$.32^{*}$	.01	-.08	.02	$.28^{*}$					
7. PACE ISG Attributions	$.25^{\dagger}$	.12	.06	-.05	$.39^{**}$	$.24^{\dagger}$				
8. PACE Negative Consequences	$.35^{**}$	.16	.15	-.02	$.36^{**}$	$.33^{*}$	$.82^{***}$			
9. IFIRS Withdrawn Composite	-.06	.15	.13	-.08	-.03	-.05	$.30^{*}$	$.21^{*}$		
10. IFIRS Intrusive Composite	-.13	.13	-.02	.15	-.08	.05	.02	.00	$.55^{***}$	
11. BDI-II	$.29^{*}$	.04	$.43^{***}$	$.53^{***}$	$.33^{*}$	.16	-.01	-.06	.11	.09

Note. ACSQ Adolescent Cognitive Style Questionnaire, *CCSI* Child Cognitive Style Interview, *YSR* Youth Self Report, *CBCL* Child Behavior Checklist, *PCSQ* Parent Cognitive Style Questionnaire, *PCSI* Parent Cognitive Style Interview, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences, *IFIRS* Iowa Family Interaction Rating Scales, *BDI-II* Beck Depression Inventory-II

$n = 60$

$^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 10. *Regression Analyses Testing Interaction between Maternal Negative Inferential Feedback and Maternal Depressive Symptoms as Predictors of Child Negative Cognitive Style*

DV: ACSQ Total

Block 1 $R^2 \Delta = .06^*$	β	sr^2	Block 1 $R^2 \Delta = .08^{**}$	β	sr^2
PACE ISG Attributions	$.27^*$	.07	PACE Negative Consequences	$.27^{**}$	.07
BDI-II	.15	.02	BDI-II	.11	.01
Block 2 $R^2 \Delta = .04^*$			Block 2 $R^2 \Delta = .03^{**}$		
BDI-II×PACE ISG Interaction	$.20^*$	.04	BDI-II×PACE Negative Consequences Interaction	$.18^*$	.03
Final Model $R^2 = .07^*$			Final Model $R^2 = .09^{**}$		

Note. ACSQ Adolescent Cognitive Style Questionnaire, *BDI-II* Beck Depression Inventory-II, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences.
Model values are Adjusted R^2. β = standardized beta; sr^2 = semi-partial correlation squared.
* $p < .05.$ ** $p < .01.$

Table 11. *Regression Analyses Testing Interaction between Maternal Generality of Causal Attributions and Maternal Depressive Symptoms as Predictors of Child Negative Cognitive Style*

DV: ACSQ Total

Block 1 $R^2 \Delta = .16^{**}$	β	sr^2
PCSI Generality	.20	.04
BDI-II	.25*	.06
Block 2 $R^2 \Delta = .07^{**}$		
BDI-II×PCSI Generality Interaction	.27*	.07
Final Model $R^2 = .19^{**}$		

Note. ACSQ Adolescent Cognitive Style Questionnaire, *BDI-II* Beck Depression Inventory-II, *PCSI* Parent Cognitive Style Interview.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.
* $p < .05.$ ** $p < .01.$ *** $p < .001.$

Table 12. *Regression Analyses Testing Child Negative Cognitive Style and Maternal Depressive Symptoms as Predictors of Child Depressive Symptoms*

DV: YSR Affective Problems	β	sr^2	DV: CBCL Affective Problems	β	sr^2
Block 1 $R^2 \Delta = .03$, *n.s.*			Block 1 $R^2 \Delta = .02$, *n.s*		
Child age	.03	.00		.13	.02
Child gender	.14	.02		.09	.01
Block 2 $R^2 \Delta = .24^{***}$			Block 2 $R^2 \Delta = .23^{***}$		
ACSQ	$.31^{***}$	.10		.07	.00
BDI-II	$.34^{***}$	.11		$.47^{***}$	.22
Final Model $R^2 = .24^{***}$			Final Model $R^2 = .23^{***}$		

Note. *YSR* Youth Self Report, *CBCL* Child Behavior Checklist, *ACSQ* Adolescent Cognitive Style Questionnaire, *BDI-II* Beck Depression Inventory-II.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.
$^{*}p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

Table 13. *Regression Analyses Testing Child Generality of Causal Attributions and Maternal Depressive Symptoms as Predictors of Child Depressive Symptoms*

DV: YSR Affective Problems	β	sr^2	DV: CBCL Affective Problems	β	sr^2
Block 1 $R^2 \Delta = .03$, *n.s.*			Block 1 $R^2 \Delta = .05$, *n.s*		
Child age	-.01	.00		.09	.01
Child gender	.16	.03		$.21^{\dagger}$	.04
Block 2 $R^2 \Delta = .28^{***}$			Block 2 $R^2 \Delta = .29^{***}$		
CCSI Generality	$.32^{**}$	.10		.05	.00
BDI-II	$.42^{***}$	.17		$.53^{***}$	.29
Final Model $R^2 = .26^{***}$			Final Model $R^2 = .29^{***}$		

Note. YSR Youth Self Report, *CBCL* Child Behavior Checklist, *CCSI* Child Cognitive Style Interview, *BDI-II* Beck Depression Inventory-II.
Model values are Adjusted R^2. β = standardized beta; sr^2 = semi-partial correlation squared.
$^{\dagger} p < .10,$ $^{*} p < .05,$ $^{**} p < .01,$ $^{***} p < .001.$

Figure 1. *Interaction between Maternal Feedback of Internal, Stable, Global Causal Attributions and Maternal Depressive Symptoms Predicting Child Negative Cognitive Style*
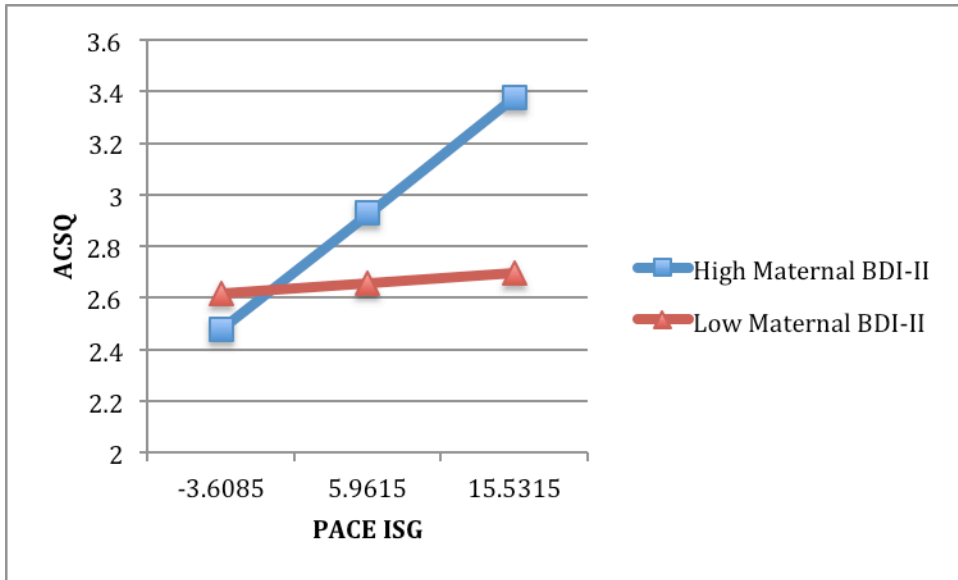
Note. ACSQ Adolescent Cognitive Style Questionnaire, *PACE ISG* PACE Internal, Stable, Global Attributions, *BDI-II* Beck Depression Inventory-II
High BDI-II = 19.66
Low BDI-II = 0.3

Figure 2. *Interaction between Maternal Feedback of Expectations for Negative*
Consequences and Maternal Depressive Symptoms Predicting Child Negative Cognitive
Style
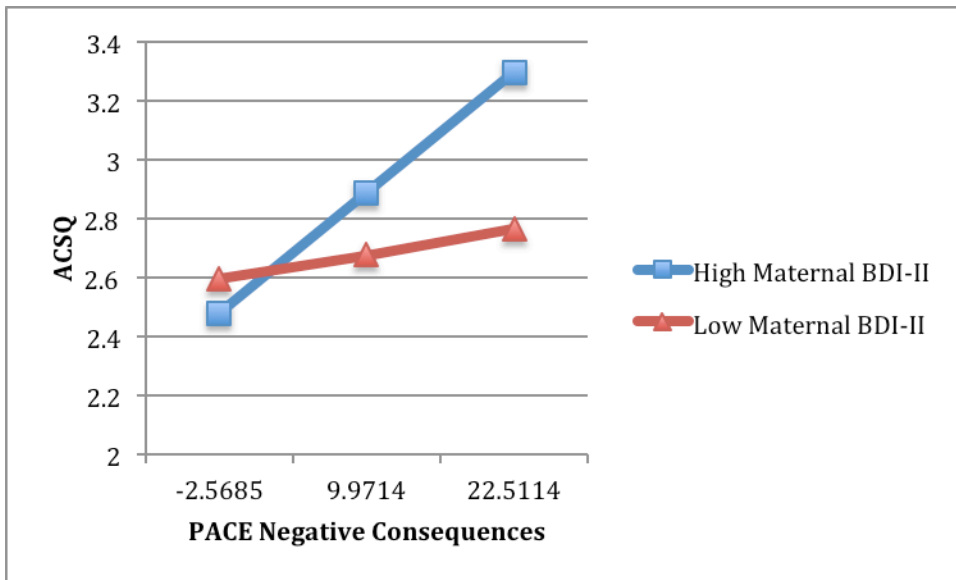
Note. ACSQ Adolescent Cognitive Style Questionnaire, *PACE Negative Consequences*
PACE Expectations for Negative Consequences, *BDI-II* Beck Depression Inventory-II
High BDI-II = 19.66
Low BDI-II = 0.3

Figure 3. *Interaction between Maternal Generality of Causal Attributions and Maternal Depressive Symptoms Predicting Child Negative Cognitive Style*
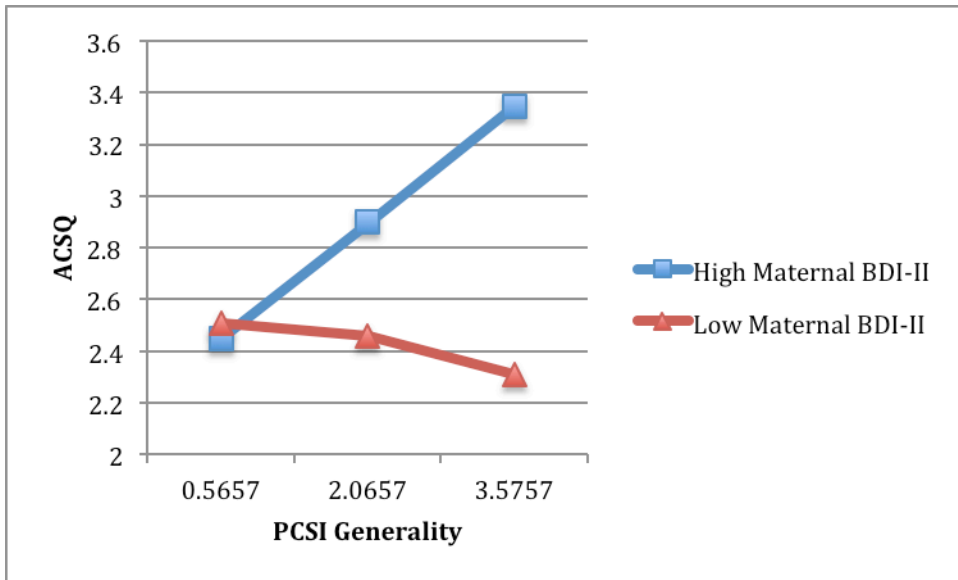
Note. ACSQ Adolescent Cognitive Style Questionnaire, *PCSI Generality* Parent Cognitive Style Interview Generality of Causal Attributions, *BDI-II* Beck Depression Inventory-II
High BDI-II = 19.66
Low BDI-II = 0.3

REFERENCES

Abela, J. R. Z., & McGirr, A. (2007). Operationalizing cognitive vulnerability and stress from the perspective of the hopelessness theory: A multi-wave longitudinal study of children of affectively ill parents. *British Journal of Clinical Psychology 46*, 377–395.

Abela, J. R. Z., & Skitch, S. A. (2007). Dysfunctional attitudes, self-esteem, and hassles: Cognitive vulnerability to depression in children of affectively ill parents. *Behaviour Research and Therapy, 45*, 1127–1140.

Abela, J. R. Z., Skitch, S. A., Adams, P., & Hankin, B. L. (2006). The timing of parent and child depression: A hopelessness theory perspective. *Journal of Clinical Child and Adolescent Psychology, 35*(2), 253-263.

Abela J. R. Z., & Sullivan, C. (2003). A test of Beck's cognitive-diathesis theory of depression in early adolescents. *Journal of Early Adolescence, 23*, 384–404.

Abramson, L. Y., Metalsky, G. I. & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review, 96*(2), 358-372.

Abramson, L. Y., Seligman, M. E., & Teasdale J. D. (1978). Learned helplessness in humans: Critique and reformation. *Journal of Abnormal Psychology, 87*(1), 49-74.

Alloy, L. B., Abramson, L. Y., Hogan, M. E., Whitehouse, W. G., Rose, D. T., Robinson, M. S., et al. (2000). The Temple-Wisconsin cognitive vulnerability to depression project: Lifetime history of Axis I psychopathology in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology, 109*, 403–418.

Alloy, L. B., Abramson, L. Y., Tashman, N. A., Berrebbi, D. S., Hogan, M. E., Whitehouse, W. G., Crossfield, A.G., & Moroco, A. (2001). Developmental origins of cognitive vulnerability to depression: Parenting, cognitive, and inferential feedback styles of the parents of individuals at high and low cognitive risk for depression. *Cognitive Therapy and Research, 25*(4), 397-423.

Alloy, L. B., Abramson, L. Y., Smith, J. M., Gibb, B. E., & Neeren, A. M. (2006). Role of parenting and maltreatment histories in unipolar and bipolar mood disorders: Mediation by cognitive vulnerability to depression. *Clinical Child and Family Psychology Review, 9*(1), 23-64.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Bandura, A. (1971). *Social Learning Theory.* New York: General Learning Press.

Beardslee, W. R., Gladstone, T. R. G., and O'Connor, E. E. (2011). Transmission and prevention of mood disorders among children of affectively ill parents: A review. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*(12), 1098-1109.

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Harper & Row.

Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. J. Clayton, & J. E. Barnett (Eds.), *Treatment of depression: Old controversies and new approaches* (pp. 265–290). New York: Raven Press.

Beck, A. T., Steer, R. A, Ball, R., & Ranieri, W. F. (1996). Comparison of Beck Depression Inventories-IA and II in psychiatric outpatients. *Journal of Personality Assessment, 67*, 588-597.

Becker-Weidman, E. G., Reinecke, M. A., Jacobs, R. H., Martinovich, Z., Silva, S. G., & March, J. S. (2009). Predictors of hopelessness among clinically depressed youth. *Behavioural and Cognitive Psychotherapy, 37*, 267–291.

Blount T. H., & Epkins C. C. (2009). Exploring modeling-based hypotheses in preadolescent girls' and boys' cognitive vulnerability to depression. *Cognitive Therapy and Research, 33*, 110-125.

Bruce, Cole, Dallaire, Jacquez, Pineda, & LaGrange (2006). Relations of parenting and negative life events to cognitive diatheses for depression in children. *Journal of Abnormal Child Psychology, 34*(3), 321–333.

Bugental, D. B., Johnston, C., New, M., & Silvester, J. (1998). Measuring Parental Attributions: Conceptual and Methodological Issues. *Journal of Family Psychology, 12*(4), 459-480.

Cobham, V. E., Dadds, M. R., & Spence, S. H. (1999). Anxious children and their parents: What do they expect? *Journal of Clinical Child Psychology, 28*(2), 220-231.

Cole, D. A., Ciesla, J. A., Dallaire, D. H., Jacquez, F. M., Pineda, A. Q., LaGrange, B., . . . Felton, J. W. (2008). Emergence of attributional style and its relation to depressive symptoms. *Journal of Abnormal Psychology, 117*(1), 16-31.

Cole, D. A., Warren, D. A., Dallaire, D. H., LaGrange, B., & Ciesla, J. A. (2007). Early predictors of helplessness thoughts and behaviors in children: Developmental precursors to depressive cognitions. *Clinical Child Psychology and Psychiatry, 12*, 295-312.

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Progress, problems, and potential in theory and research. *Psychological Bulletin, 127*, 87-127.

Compas, B.E., Forehand, R., Keller, G., Champion, A., Cole, D.A., Reeslund, . . . Cole, D.A. (2009). Randomized clinical trial of a family cognitive-behavioral preventive intervention for children of depressed parents. *Journal of Consulting and Clinical Psychology, 77*, 1007-1020.

Conley, C. S., Haines, B. A., Hilt, L. M. & Metalsky, G. I. (2001). The Children's Attributional Style Interview: Developmental tests of cognitive diathesis-stress theories of depression. *Journal of Abnormal Child Psychology, 29*(5), 445–463.

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.

Crossfield, A. G., Alloy, L. B., Gibb, B. E., & Abramson, L. Y. (2002). The development of depressogenic cognitive styles: The role of negative childhood life events and parental inferential feedback. *Journal of Cognitive Psychotherapy: An International Quarterly, 16*(4), 487-502.

Dearing, K.F. & Gotlib, I.H. (2009) Interpretation of ambiguous information in girls at risk for depression. *Journal of Abnormal Child Psychology, 37*, 79-91.

Dunbar, J. P., McKee, L., Rakow, A., Watson, K. H., Forehand, R., & Compas, B. E. (2013). Coping, Negative Cognitive Style and Depressive Symptoms in Children of Depressed Parents. *Cognitive Therapy and Research, 37, 18-28.*

England, M. J., & Sim, L. J. (2009). Depression in Parents, Parenting, and Children: Opportunities to Improve Identification, Treatment, and Prevention. Washington, DC: National Academies Press.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2001). *Structured Clinical Interview for DSM–IV–TR Axis I Disorders, Research Version, Patient Edition (SCID-I/P)*. New York: Biometrics Research, New York State Psychiatric Institute.

Gamble, S. A., & Roberts, J. E. (2005). Adolescents' perceptions of primary caregivers and cognitive style: The roles of attachment security and gender. *Cognitive Therapy and Research, 29*(2), 123–141.

Garber, J., & Flynn, C. (2001). Predictors of depressive cognitions in young adolescents. *Cognitive Therapy and Research, 25*(4), 353–376.

Garber, J., & Robinson, N.S. (1997) Cognitive vulnerability in children at risk for depression. *Cognition and Emotion, 11*(5/6), 619-635.

Gibb, B. E., & Abela, J. R. Z. (2008). Introduction to special issue: Cognitive vulnerability to depression in children and adolescents. *International Journal of Cognitive Therapy, 1*(4), 281-283.

Gladstone, T. R. G., & Kaslow, N. J. (1995). Depression and attributions in children and adolescents: A meta-analytic review. *Journal of Abnormal Child Psychology, 23*, 597– 606.

Gladstone, T. R., Kaslow, N. J., Seeley, J. R. and Lewinsohn, P. M. (1997). Sex differences, attributional style, and depressive symptoms among adolescents. *Journal of Abnormal Child Psychology, 25*, 297–305.

Goodman, S. H., & Gotlib, I. H. (1999). Risk for psychopathology in the children of depressed mothers: A developmental model for understanding mechanisms of transmission. *Psychological Review, 106*, 458-490.

Goodman, S. H., Rouse, M. H., Connell, A. M., Broth, M. R., Hall, C. M., and Heyward, D. (2011). Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review, 14*, 1-27.

Griffith, S. J., Oliver, J. M., & Katz, B. M. (2003). Mothers' attributional style for events in their offsprings' lives as predictors of their offsprings' cognitive vulnerability to depression. *North American Journal of Psychology, 5*(1), 1-14.

Gruhn, M. A., Dunbar, J. P., Watson, K. H., Reising, M. M., McKee, L., Forehand, R., & Compas, B. E. (2015). *Depression and parenting: Testing specificity in the relationship between intrusive and withdrawn parenting and child problems*. Manuscript submitted for publication.

Haeffel, G. J., Gibb, B. E., Metalsky, G. I., Alloy, L. B., Abramson, L. Y., Hankin, B. L., . . . Swendsen, J. D. (2008). Measuring cognitive vulnerability to depression: Development and validation of the cognitive style questionnaire. *Clinical Psychology Review, 28*(5), 824-836.

Hammen, C. (1988). Self-cognitions, stressful events, and the prediction of depression in children of depressed mothers. *Journal of Abnormal Child Psychology, 16*(3), 347-360.

Hammen, C., & Zupan, B. A. (1984). Self schemas, depression, and the processing of personal information in children. *Journal of Experimental Child Psychology, 37*, 598–608.

Hankin, B. L. (2012). Future directions in vulnerability to depression among youth: Integrating risk factors and processes across multiple levels of analysis. *Journal of Clinical Child and Adolescent Psychology, 41*(5), 695-718.

Hankin, B. L., & Abramson, L. Y. (2002). Measuring cognitive vulnerability to depression in adolescence: Reliability, validity and gender differences. *Journal of Clinical Child and Adolescent Psychology, 31*(4), 491-504.

Hankin, B. L., Oppenheimer, C., Jenness, J., Barrocas, A., Shapero, B. G., & Goldband, J. (2009). Developmental origins of cognitive vulnerabilities to depression: Review of processes contributing to stability and change across time. *Journal of Clinical Psychology, 65*(12), 1327-1338.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* New York: The Guilford Press.

Hiroto, D. S. (1974). Locus of control and learned helplessness. *Journal of Experimental Psychology, 102*, 187-193.

Ingram, R. E. (2003). Origins of cognitive vulnerability to depression. *Cognitive Therapy and Research, 27*(1), 77-88.

Jaenicke, C., Hammen, C., Zupan, B., Hiroto, D., Gordon, D., Adrian, B., & Burge, D. (1987). Cognitive vulnerability in children at risk for depression. *Journal of Abnormal Child Psychology, 15(*4), 559-572.

Jacobs, R. H., Reinecke, M. A., Gollan, J. K., & Kane, P. (2008). Empirical evidence of cognitive vulnerability for depression among children and adolescents: A cognitive science and developmental perspective. *Clinical Psychology Review, 28*(5), 759-782.

Jones, E. E., & Nisbett, R. E. (1987). *The actor and the observer: Divergent perceptions of the causes of behavior.* Lawrence Erlbaum Associates, Inc., Hillsdale, NJ.

Joorman, J., Talbot, L., & Gotlib, I.H. (2007) Biased processing of emotional information in girls at risk for depression. *Journal of Abnormal Psychology, 116*(1), 135-143.

Kaslow, N. J., Stark, K. D., Printz, B., Livingston, R. & Tsai, S. L. (1992). Cognitive Triad Inventory for Children: Development and relation to depression and anxiety. *Journal of Clinical Child Psychology, 21*, 339-347.

Kazdin, A. E., Rodgers, A., & Colbus, D. (1986). The Hopelessness Scale for Children: Psychometric characteristics and concurrent validity. *Journal of Consulting and Clinical Psychology, 54*, 241-245.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, D. R., et al. (2003). The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication. *Journal of the American Medical Association, 289*, 3095-3105.

Kortlander, E., Kendall, P. C., & Panichelli-Mindel, S. (1997). Maternal expectations and attributions about coping in anxious children. *Journal of Anxiety Disorders, 11*(3), 297-315.

Lakdawalla, Z., Hankin, B. L., & Mermelstein, R., (2007). Cognitive theories of depression in children and adolescents: A conceptual and quantitative review. *Clinical Child and Family Psychology Review 10*(1) 1-24.

Lewinsohn, P. M., Joiner, T. E., & Rhode, P. (2001). Evaluation of cognitive diathesis stress models in predicting major depressive disorder in adolescents. *Journal of Abnormal Psychology, 110*, 203–215.

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting: A meta-analytic review. *Clinical Psychology Review, 20*, 561-592.

Melby, J. N., & Conger, R. D. (2001). The Iowa Family Interaction Rating Scales: Instrument summary. In P. K. Kerig & K. M. Lindahl (Eds.), *Family observational coding systems: Resources for systemic research* (pp. 33–58). Mahwah, NJ: Erlbaum.

Mezulis, A., Funasaki, K., & Hyde, J. S. (2011). Negative cognitive style trajectories in the transition to adolescence. J*ournal of Clinical Child & Adolescent Psychology, 40*(2), 318–331.

Mezulis, A. H., Hyde, J. S., & Abramson, L. Y. (2006). The developmental origins of cognitive vulnerability to depression: Temperament, parenting, and negative life events in childhood as contributors to negative cognitive style. *Developmental Psychology, 42*(6), 1012-1025.

Murray, L., Woolgar, M., Cooper, P., & Hipwell, A. (2001). Cognitive vulnerability to depression in 5-year-old children of depressed mothers. *Journal of Child Psychology and Psychiatry 42*(7), 891-899.

Oliver, J. M., & Berger, L. S. (1992). Depression, parent-offspring relationships, and cognitive vulnerability. *Journal of Social Behavior & Personality, 7*(3), 415-429.

Oliver, J. M., Murphy, S. L., Ferland, D. R., & Ross, M. J. (2007). Contributions of the Cognitive Style Questionnaire and the Dysfunctional Attitude Scale to Measuring Cognitive Vulnerability to Depression. *Cognitive Therapy and Research, 31*, 51–69.

Riskind, J. H., & Alloy, L. B. (2006). Cognitive vulnerability to psychological disorders: Overview of theory, design, and methods. *Journal of Social and Clinical Psychology, 25*(7), 705-725.

Seligman, M. E. P. (1975). *Helplessness: On depression, development, and death.* San Francisco, CA: Freeman.

Seligman, M. E. P., Peterson, C. A., Kaslow, N. J., Tanenbaum, R. L., Alloy, L. B., & Abramson, L. Y. (1984). Attributional style and depressive symptoms among children. *Journal of Abnormal Psychology, 93*, 235-238.A

Stark, K. D., Schmidt, K. L., & Joiner, T. E. (1996). Cognitive Triad: relationship to depressive symptoms, parents' cognitive triad, and perceived parental messages. *Journal of Abnormal Child Psychology, 24*(5), 615-631.

Steer, R. A., Brown, G. K., Beck, A. T., & Sanderson, W. C. (2001). Mean Beck Depression Inventory–II scores by severity of major depressive disorder. *Psychological Reports, 88*, 1075–1076.

Weissman A. N., & Beck, A. T. (1978). Development and validation of the Dysfunctional Attitude Scale. Paper presented at the American Educational Research Association Annual Convention, Toronto, Canada.

Weissman, M. M., Wickramaratne, P., Nomura, Y., Warner, V., Pilowsky, D., Verdeli, H. (2006). Offspring of depressed parents: 20 years later. *American Journal of Psychiatry, 163*, 1001-1008.

Weitlauf, A. S., & Cole, D. A. (2012). Cognitive development masks support for attributional style models of depression in children and adolescents. *Journal of Abnormal Child Psychology, 40*(6), 849-862.

Whisman, M. A., & Kwon, P. (1992). Parental representations, cognitive distortions, and mild depression. *Cognitive Therapy and Research, 16*(5), 557-568.

CHILD COGNITIVE STYLE INTERVIEW SCRIPT:

"First, we want to check in on how you are feeling after the speech test. Please fill out this form one more time so we can understand how you are feeling right now, and when you finish, we will talk some about the test you just did with your mom."

Allow child time to complete emotion rating, then start interview:
"As we told you, you received a score of 5 on the speech test, so you and your mom are not eligible to receive the extra $10, because you had to score 7 or higher. Let's talk about that:"

1. **What do you think about how that speech test went?**
   a. **While you were giving your speech, what were you thinking? What was going through your head?**

2. **Why do you think you did not score higher on the speech test?**

If child says something more external (like not enough time to prepare), reflect what child says (e.g., So you think the short time you had to prepare made it hard for you to do better), then say:
"We will talk more about that in a minute, but first I want to know more specifically about you"
3. **What did <u>you</u> do or not do that made it difficult for you to succeed on the test?**

If child says something specific about him/herself (like I was nervous, I am not comfortable with public speaking), reflect what child says, then say:
"Tell me more about that, you said you did/didn't do _____ /or you were ___:
3. **Is there anything else you think you did or did not do that made it difficult for you to succeed on the test?**

If child already mentioned something parent did or did not do in response to question 2, reflect that by saying:
4. **You already mentioned that your mom did/did not do ___** (say reasons from question 2) **and believe it may be why you did not succeed on the test. Is there anything else you think your mom did or did not do that caused you to be unsuccessful on the test?**

If child does not mention parent or something she did or did not do in response to question 2, say:

"Now let's talk about your mom more specifically:"
   4. **Is there anything <u>your mom</u> did or did not do that made it difficult for you to succeed on the test?**

"Now I'm going to ask some questions about how preparing for and giving the speech may relate to experiences you may have had in the past:"

   5. **Is this speech test similar to anything you do or have done at school?**

   6. **Is this speech test similar to anything you do or have done at home?**

   7. **Is this test similar to anything you do or have done with your mom?**

   8. **When was the last time you and your mom tried to prepare for something stressful or challenging together? Tell me about it and how it went.**

   9. **When stressful things happen with your mom similar to ____,** (reflect what child said in question 8 and/or the speech test if described as stressful) **why do you think they go that way?**

"Now I'm going to ask about how this speech test you just did may relate to future experiences:"

   <u>Ask Question 10 only if reasons provided in questions 2, 3, and 4 are specific about the parent and/or the child (e.g., child is not good at public speaking, child was too nervous, parent could have done more to help prepare), ask:</u>
   10. **Previously you mentioned that you think _____** (list the reason(s) parent provided in questions 2, 3, and 4) **caused you to be unsuccessful on this test:**
       Do you think _____ (list reasons again) **will cause other things <u>you</u> do to be stressful or difficult in the future?**
       Do you think ___ (list reasons again) **will cause other things you do with your mom to be stressful or difficult in the future?**

   11. **If you had to do this test again in the future, what would you do differently?**

   12. **What would you want your mom to do differently if you had to do this test again in the future?**

PARENT COGNITIVE STYLE INTERVIEW SCRIPT:

"First, we want to check in on how you are feeling after the speech test. Please fill out this form one more time so we can understand how you are feeling right now, and when you finish, we will talk some about the test [child] just did."

- Allow parent time to complete emotion measure, then start interview:

"As I mentioned, [child] received a score of 5 on the speech test, so you two are not eligible to receive the gift cards, as he/she needed to score 7 or higher. Let's talk about that:"

3. **What do you think about how that speech test went?**
    a. **While [child] was giving his/her speech, what were you thinking? What was going through your head?**

4. **Why do you think [child] did not score higher on the speech test?**

If parent says something more external (like not enough time to prepare), reflect what parent says (e.g., So you think the short time s/he had to prepare made it hard for him/her to do better), then say:

"We will talk more about that in a minute, but first I want to know more specifically about [child]"
4. **What did [child] do or not do that made it difficult for him/her to succeed on the test?**

If parent says something specific about child (like he/she was nervous, he/she is not comfortable with public speaking), reflect what parent says, then say:

"Tell me more about that, you said [child] did/didn't do _____ /or [child] was ____:
5. **Is there anything else you think [child] did or did not do that made it difficult for him/her to succeed on the test?**

If parent already mentioned something she did or did not do in response to question 2, reflect that by saying:
6. **You already mentioned that you did/did not do ____** (say reasons from question 2) **and believe it may be why [child] did not succeed on the test. Is there anything else [child] did or did not do that caused [child] to be unsuccessful on the test?**

"Now let's talk about what the speech task was like for you more specifically:"

13. Do you think there is anything you did or did not do that made it difficult for [child] to succeed on the test?

"Now I'm going to ask some questions about how preparing for [child's] speech and [child] giving the speech may relate to experiences you may have had in the past:"

14. Is this speech test similar to anything you do or have done in your work or at your job?
(if mom says she is not working, skip to question 6)

15. Is this speech test similar to anything you do or have done at home?

16. Is this test similar to anything you do or have done with [child]?

17. When was the last time you and [child] tried to prepare for something stressful or challenging together? Tell me about it and how it went.

18. When stressful or challenging things happen with [child] similar to ____, (reflect what parent said in question 8 and/or the speech test if described as stressful) why do you think they go that way?

"Now I'm going to ask about how this speech test you and [child] just did may relate to future experiences:"

19. Previously you mentioned that you think _____ (list the reason(s) parent provided in questions 2, 3, and 4) caused [child] to be unsuccessful on this speech test (pause):
    Do you think _____ (list reasons again) will cause other things you do with [child] to be stressful or difficult in the future?
    Do you think _____ (list reasons again) will cause other things [child] does to be stressful or difficult in the future?

20. If you had to do this test again with [child] in the future, what would you do differently?

21. What would you want to see [child] do differently if he/she had to do this test again in the future?

APPENDIX C

Cognitive Style Interview Coding Manual

Manual Contents:

Part 1: Brief Explanation of Negative Cognitive Style and Cognitive Style Interview

1. What is Negative Cognitive Style and why is it important?

Negative cognitive style is a generally negative mode of thinking about causes, consequences, and implications for one's self after experiencing a negative event (Hankin & Abramson, 2002). It includes the concepts of negative attributional style (thinking the causes of negative/stressful events are internal, stable, and global), negative inferences for consequences (expecting other negative situations to occur as a result of a single negative event), and negative inferences for the self (thinking something is wrong with one's self as a result of a negative event).

There are several reasons why negative cognitive style is important to study. First, it is a risk factor for depression. Negative cognitive style is correlated with depression symptoms in children and adolescents, and it also predicts the onset of depression (i.e., the start of the first depressive episode) in adolescents in longitudinal studies. Moreover, it can possibly be changed through cognitive behavioral therapy, which involves challenging and modifying cognitive distortions and inaccurate beliefs. Learning more about negative cognitive style can help with interventions to treat or prevent depression. Another way we want to study negative cognitive style is to learn how it may be transmitted from parents to children. Understanding more about how negative cognitive style develops in children and adolescents may help with interventions to improve parenting and parent-child communication.

2. What is the Cognitive Style Interview?

This is an interview developed in our lab to use with kids and mothers in the Mothers, Children, and Emotions Study (MCE Study), following a speech task in which the children are given false feedback that they have "failed" at their speech (received a score of 5 on a 1-10 scale, had to get a 7 to earn $10). It is false feedback because every child receives the same score, regardless of his/her performance. The idea behind this task was to create a failure experience in the lab and then immediately ask the children and their mothers about their thoughts regarding that failure experience. Most prior studies have used questionnaire measures of negative cognitive style, which ask participants to imagine themselves in hypothetical failure situations (typically social and academic situations). By creating a failure experience in the lab and conducting an interview, we are hoping to capture negative cognitive style in "real-time" and with an actual situation participants experience, as opposed to asking about hypothetical events, which may or may not be relevant for participants. Children and mothers were asked essentially the same questions on the interview. Both were asked some questions about their own thoughts and behaviors and about each other, as well as some questions about how the speech task may be similar to prior experiences they have had at school/work, at home, and with each other.

3. Why are we coding the Cognitive Style Interview?

Research assistants conducted the cognitive style interview in the lab immediately following the speech task. The interviews were audio recorded and research assistants took notes during the interviews to record participants' responses, but the interviews were not scored in any way while they were administered. Now, our task is to go back and listen to these interviews to extract the data we need to quantify negative cognitive style from participants' responses to the questions. Coding the interviews will provide this information for our research.

Part 2: Training Steps

- Read and understand the coding scheme and definitions of key concepts being coded in this manual.
- Transcribe interviews.
    - Practice transcribing responses from interviews into the far left column on the coding sheet on 3 interviews previously transcribed by Jenni. Need to capture all needed information in these transcriptions and put them into correct locations on the coding sheet, as determined by Jenni.
- Practice coding on 2-3 interviews previously coded by Jenni.
    - Achieve 75% reliability with Jenni's codes
- Start coding independently.
- Check reliability on a small percentage of coded interviews with other coders.

Part 3: Definitions of Elements of Negative Cognitive Style and Causal Attributions for Coding Interviews

Concept	Definition	Example
Causal Attributions	The reasons someone thinks something happened, the reasons or explanations behind the child's performance on the speech.	<u>I did not do well because I was nervous.</u> <u>Because I didn't know how you were scoring me.</u>
Internal Causes	Causes that are "contingent on a response in one's repertoire" meaning the individual caused the outcome (Abramson, Seligman, and Teasdale, 1978, p. 53)	<u>I</u> am bad at giving speeches.
External Causes	Causes due to something or someone outside of/external to the individual	It was not clear what I had to do to get a high score on the speech.
Stable Causes	"Long-lived or recurrent causes" of negative events. (Abramson, Seligman, and Teasdale, 1978, p. 56)	People <u>always</u> make it hard for kids to succeed at things.
Unstable Causes	Causes that last a short period of time	The expectations for getting a high score were not clear <u>this time</u>.
Global Causes	"Causes that affect a wide variety of outcomes." (Abramson, Seligman, and Teasdale, 1978, p. 57)	I never succeed at <u>anything</u>.
Specific Causes	Causes that are only related to this speech task in the lab or to giving speeches.	I did not prepare enough for <u>this</u> speech test.
Inferences for Negative Consequences	"The likelihood that further negative consequences will result from the negative event." (Hankin and Abramson, 2002, p. 494)	Because I failed this test, I will fail at any public speaking I have to do in the future.

Inferences for Positive Consequences	Expectations that positive consequences will result from the speech task or the speech performance.	I will be motivated to practice public speaking more because of this speech test.
Negative Inferences for Self	"The degree to which the occurrence of the event signifies that the person's self is flawed." (Hankin and Abramson, 2002, p. 494)	I am a failure because I did not do well on this speech.
Positive Inferences for Self	Belief in positive aspects of one's self as a result of the speech or speech performance.	This speech confirmed for me that I can handle any situation.
Ability	One's innate, internal ability or lack of ability for specific tasks.	I am not good at public speaking.
Effort	How much effort one puts forth for a specific task, also includes attributions that mention motivation.	I did not try hard enough to get the 7 or higher.
Task difficulty	Anything that has to do with how the speech task was organized, run, scored. Also, any statements about the mom are included.	This speech test is just way too hard for any kid to do.
Luck	The larger effects at play, not attributed to the child or the mother but people in general, the world, the way the world work. May directly mention luck, but also any external "forces" that do not include the child or the mother.	I have terrible luck, the deck is always stacked against me.
Emotion	Any causal attribution for speech performance that has to do with emotions, feelings, and emotional states.	I was nervous, I was scared, I was tired, I was grumpy/in a bad mood, etc.

Part 4: Process of Coding Child Cognitive Style Interview

1. First, write all reasons why child said he/she did not do well on the speech into the boxes in the far left column of the coding sheet. These are the ***causal attributions*** the child has for his/her performance on the speech task and will be said in response to questions 1-4 and questions 10-12.
   a. Just as a reminder, these causal attributions will come through the direct questions in the interview ("What did you do or not do that made it hard for you to succeed?", "What did your mom do or not do that made it hard for you to succeed?") and may also come indirectly through the last questions in the interview ("If you had to do this speech again in the future, what would you do differently?, "What would you want your mom to do differently?").
      - If a child mentions the same attributions (or same basic concept/content) in response to those last questions ("What would you do differently?") as what was already mentioned in response to the first few questions, do not re-write those or double-count them.
        - For example, if child says, "I fidgeted too much" as an initial causal attribution and then later says, "I would not fidget as much", do not re-write that or double-count it. Only write attributions that provide new or different information from the ones already stated.
      - Also of note, not everything a child says is a causal attribution! For example, in response to the initial questions "How do you think that speech test went?" and "What was going through your head as you were giving your speech?", kids may say quite a bit, but we will not count any of these statements as causal attributions at this early point in the interview.
   b. Also, when writing down causal attributions, you need to get enough information that you can determine how each attribution fits on each of the three dimensions: 1. internal/external, 2. stable/unstable, 3. global/specific, and if it should be categorized as effort, ability, emotion, task difficulty, or luck.
      - Write as close to word-for-word as possible, but do not worry about words/phrases like "let me think", "um", "hm", or pauses.
      - If child says, "I don't know" and never provides any causal attributions, write that down and we will not code those. It is important to capture that, though, so that we know that the questions were asked, but that the child just did not provide any causal attributions.
      - If it is difficult to hear what the child says, do your best to write it down by listening multiple times, and look back at the paper form that was used for the interview (hopefully the interviewer took adequate notes, so we can code from what the interviewer wrote). If you feel like it's codeable, but just hard to hear, get another coder to do

"consensus" on that interview with you. If there are no notes and the interview recording is impossible to hear, then we will unfortunately have to consider it as a lost interview.
- Be careful with elaborations. We are thinking of elaborations as something that adds additional information to a causal attribution, but it is not enough on its own to be a separate attribution. Write them down, but put them in parentheses. DO NOT CODE ELABORATIONS or include them in counts and percentage calculations.
    - Elaborations can take the form of saying the same attribution, just with slight modification of the wording, talking about how an attribution makes the person feel (unless the person says those feelings were the reason for poor performance), or talking about an outcome of the attribution. Examples:
        - I was really nervous (Gosh, I was just so nervous)
        - I just could not stop stuttering, (and I feel bad that I did that)
        - Because I kept pausing (Mom had to remind me)
c. If an attribution is "positive" in nature, write POSITIVE next to it. For the purposes of coding negative ways of thinking, we are most interested in attributions that are more negative in nature or that are indicative of the speech being difficult, stressful, or hard to achieve success.
    - For example, if a child says "I worked really hard", "My mom helped me before and during my speech," those will be considered positive attributions.
    - Put asterisks next to the positive causal attributions to help you remember to not include them in your counts and percentage calculations.

2. For each causal attribution, determine if it is an **internal** cause (entirely caused by the child or something about the child), caused by some **external** situation or force, or if it is a **dual** cause (meaning it is attributed to something about the child and the mother together).
    a. **Internal causes** are anything attributed to something about the child's behavior, abilities, mood or how he/she was feeling that day or at the time of the speech task.
        - **Examples:** I messed up, I said "um" too much, I forgot what to say, I did not prepare enough, I am not good at this, I was too nervous/tired/scared/upset.
    b. **External causes** are anything attributed to anyone (RA, mom, etc.) or anything external to the child (the task itself, the video camera, the set up of the room, the length of the lab visit, the way the world works, etc.).
        - **Examples:** You graded me too hard, This task is impossible, I did not know what the grading criteria would be, People are always making it hard for me to succeed at everything.

- **More information:** When thinking about causal attributions being internal or external, someone could be talking about the task, but say "I" in their attribution. Even though a child says "I", it is still coded as external if it is something about how the task is run/organized, such as: "I'd do better if I had more time to prep," is considered an external attribution because it has to do with the amount of time the child was given to prepare, which is part of how the task is organized.

c. Note if any **external** causal attributions are **due to mom** in any way. This includes passive mentions of mom, such as saying that just her presence in the room somehow affected the child's performance (even if not explicitly stated why her presence had a negative effect). These are coded as **external "mom".**
- **Examples:** My mom was putting too much pressure on me, My mom did not help me prepare enough, I would have done better if my mom was not in the room.

d. Note if any causal attributions are **dual**. This means they are something that pertains to mom and child together.
- **Examples:** My mom and I didn't work hard enough to prepare, My mom and I are both strong people, We argued too much during the prep phase.

3. For each causal attribution, is it **unstable** (lasting a short period of time) or **stable** (long-lived or recurrent)? Indications of this dimension refer to time in some way. This dimension may have to be inferred based on the responses. Specific key words (as listed below) may not always be provided, but may be implied.

a. Key words for **unstable**: this time, today, this afternoon, this session.
- **Examples:** I was nervous, I forgot what to say, I would have done better if I had more time to prepare, I was tired this afternoon.

b. If not explicitly stated, you may have to think about whether this is a long-lasting cause that is unlikely to change or resolve on its own. **Stable** causes can also be thought of as trait-like, some characteristic that is not temporary, but that is part of how a person tends to be or behave. If explicitly stated, key words for **stable** include: always, never, every time, forever
- **Examples:** I always forget what to say when I do public speaking, People never give me enough time to prepare for things, I will never be comfortable talking in front of people, I am always a nervous person, I am not very good at public speaking.

4. For each causal attribution, is it **specific** just to this task/this type of task or is it **global** (it will apply to/affect many other types of situations)? This is the most difficult dimension to decide. When examples are unclear, we will discuss them in our meetings to decide how to categorize them.

a. Keywords for **specific**: this task, this situation, this speech, giving speeches, public speaking, talking in front of people. These words or clarifications may not always be explicitly stated, so based on the way a causal attribution is worded, you may need to infer if the child is only referring to a cause that affected performance on this task/this type of task or if the cause would affect other types of situations in the child's life. For our purposes: we are categorizing public speaking and giving speeches as **specific**.
   - **Examples:** I was nervous, I was tired, I forgot what to say, I would have done better if I had more time to prepare, I am not good at giving speeches.
b. For **global**: listen for indications that the cause of "failure" on this speech will affect multiple other things in the child's life, such as social situations, trying out for teams, and other performance or evaluative situations. This may not always be explicitly stated, so you may need to infer this dimension sometimes.
   - **Examples:** I get nervous when I have to talk to people, I am a nervous person, I always forget what to say when I talk, People never give me enough time to prepare for things, I don't do well when I am being scored or evaluated.
c. For your global/specific rating, you will rate how certain you are about your decision by writing YES or NO in parentheses after global/specific. You should ONLY write YES if the person indicated later in the interview that this cause will affect other situations (see next section) or if it is a very clear example of global (e.g., I always fail at everything) or very clearly specific jus to this task (e.g., I had trouble getting my words out during this speech).
   - If you write YES and it is not a very clear example (as in the examples just mentioned), write why you are certain (such as "follow up questions").
   - For global vs. specific: if you could argue it in the opposite direction, then the certainty rating needs to be a "NO", which will very often be the case!
d. It is possible that a person's responses to later questions in the interview (i.e., Question 10: "Do you think [causal attribution] will cause other things you do to be stressful or difficult in the future?") can help you determine globality vs. specificity (and also possibly stability vs. instability). Unfortunately, the follow up questions about this were not always consistently asked in a way that we have that information for all attributions a kid provides.
   - If someone says something along the lines of "Yes, I think getting nervous easily will make giving presentations in college and taking exams in high school more stressful for me," then you can rate that attribution as global AND stable, and you can rate your global rating as certain. Similarly, if someone says, "No, I don't think

116

being nervous will make anything else stressful or difficult in the future," then you can rate that as specific AND unstable.
- Also, even if someone just says a simple YES to that question about whether that cause will make other things stressful or difficult in the future, you can rate it as stable and global, even without any elaboration of why they think it will affect other future things or what other things they think will be affected. A simple YES is enough to code it as stable and global and to say YES that you are certain on your global rating.—just remember to write "follow up questions" next to your YES certainty rating.

e. Additional information that can be helpful for deciding about globality and stability…Another way to think of this:
- Global = It's global if it will affect other things either now or in the future
- Stable = It's stable if it will reappear or re-occur and affect other things in the future (either this type of task or different tasks/situations)
- If it has global effects <u>in the future</u>, then it is <u>stable</u>
- If will <u>just affect this kind of task</u> in the future, then it's stable, but <u>it's not global</u>
  - Just because a causal attribution gets a global rating does not mean it will also be stable. We want to make sure we do not confound those 2 dimensions.

5. Tally up the total number of negative attributions provided for the speech task and the total positive attributions provided. In the internal/external column, write in the total number of internal, external, external due to mom, and dual attributions. Then calculate the percentage of each by dividing by the total number of NEGATIVE attributions. Do this for the next 2 columns (global/ specific and stable/unstable), again dividing by total number of NEGATIVE attributions.

6. In the next column, categorize each attribution on all three dimensions. For example, "internal, stable, global" or "external, unstable, specific".
- Write these categories below (Ok to abbreviate: e.g., internal, stable, global = ISG) and tally the number of each one. To calculate percentage of each, again divide by the total number of negative attributions.

7. In the far right column, determine if the causal attribution fits into one of these four categories: ability, effort, emotion, task difficulty, or luck. See the Table on page 6 for definitions and help assigning these categories. Additional information:
  - ○ Some examples are not always clear, for example:

- "Distraction, I do get distracted" is Ability. It is ability because it implies that the child is not <u>able</u> to focus attention, or is unable to avoid getting distracted.
    - However, "Sometimes, I allow myself to get distracted" would be Effort because it implies that the child can exert some control (or effort) and then stay focused.
- "Because of my ability to not care sometimes" is Effort. Even though the word "ability" is in this statement, it is implying motivation (almost like a motivational deficit). The child sometimes puts forth effort, but sometimes just does not care. If the child tried harder (effort), he could probably overcome this "not caring" and be more successful.
  - o For deciding these categories in the final column, it can be difficult with "We" statements, which we are calling "Dual" causal attributions, as they include child and mother together. In these cases:
    - Substitute the word "we" with "I", then decide if it is ability or effort. Note that it is "dual" as well. For example:
      - "We are not very good at planning things out" = Ability (dual) because if a child said "I am not very good at planning things out", we would call that ability.
  - o Anything about how the task is run, organized (amount of time to prep, mom being in room, where mom is sitting, etc.) is considered Task difficulty.
  - o Behavioral causal attributions like "fidgeting", "saying um", "pausing" = Effort

8. Determine if the speech test is similar to prior experiences.
    a. Circle YES or NO for each type of similar experience (e.g., at school, at home, and with mom).
        - If the same previous experience is noted for at home and for with mom, circle YES for both and circle YES in the far right column (Same experience at home and with mom?). For example, in response to the question about home, if a child talks about how they play charades at home and have to think on their feet and speak in front of everyone, and that is similar to this speech task, circle YES for at home. If that child then says the same thing when asked if it is similar to past experiences with his mom, also circle YES for with mom and circle YES for same experience mentioned at home and with mom (far right column). If the person says NO for at home and NO for with mom, circle N/A.
        - Anything that occurs outside school and not with mom that the child mentions should get a "YES" circled for "at home". For example, a child mentioned a dance recital, but did not say this in response to the question about "at school" or "with mom", but we want to capture that. Even though the recital did not happen AT

HOME, anything not in the school domain and not with mom specifically, we are considering as a YES for "at home". Essentially, for our purposes, at home refers to literally at home, but also in the child's extra-curricular or family life (not specific to mom).

9. Repeat this process (steps 1-7) for responses to the question about previous stressful events (question 9).

10. Are there **implications for** negative or positive **consequences** due to the speech performance? These are things that the child expects will happen as a result of the speech task or the performance on the speech task.
    a. Examples: Because of this speech task, I will be motivated to practice public speaking (positive); Because of this speech task, I will be really nervous for future public speaking (negative); Because I failed this speech, I will fail at other things I do when I am being evaluated (negative).
       - NOTE: These were not directly asked on the interview, so these will only occur if the participant spontaneously says these things in response to other questions.

11. Are there negative or positive **implications for the self** due to the speech performance? Similar to the positive and negative consequences, these are a result of the speech task. These differ from internal causal attributions because internal causal attributions CAUSE the speech performance/outcome and implications for the self RESULT FROM the speech performance/outcome.
    a. Examples: I am a failure because I failed this speech (negative); I think I am a really hard worker because of this speech task (positive); I think I can handle any kind of public speaking because of this experience (positive).
       - NOTE: Like with implications for consequences above, implications for the self were not directly asked on the interview, so these will only occur if the participant spontaneously says these things in response to other questions.

A note about codes for missing data: 555, 777, 888:
- If a question was not asked that should have been asked, or there is part of an interview that we cannot hear or do not have written notes about it, that is considered missing data that cannot be recovered. That is coded as **777**. If any of those situations happen when you are listening to an interview, write 777 for the missing pieces of information. This helps us know that these data are missing, but should not be missing (they are missing due to interviewer error or audio recording issues) and they cannot be recovered.
- If you think we may have a way of recovering the data (e.g., the sound is bad, but you want to listen on another computer/with different head phones, or

119

need to look at the paper version of the interview), then write **555**. The 555 code is our way of "flagging" something to come back to it later.

- o Ultimately, you are responsible for going back to fill in any 555s that you write on your coding sheets, so once we get to data entry, there should not be any 555s on any of our coding sheets.
- o Once you try to find the missing data, you need to either fill in what you find, or change the 555 to 777 to mean it's missing an cannot be recovered.
- If data are missing and they should be missing, that is when you use **888**. For example, if a child says nothing or "I don't know" to the question about "When was the last time you and your mom tried to prepare for something stressful or challenging together?", then there should not be any causal attributions provided for the past stressful experience, since no prior experience was mentioned.
  - o In that situation, the causal attributions section on the back of the coding sheet should be left blank, but we need to write 888 in the total positive and total negative attributions spaces.
  - o This helps us understand that the question was asked, but there are no causal attributions because no prior stressor was discussed or provided by the child. These are missing data that should be missing.

Part 5: Process of Coding Parent Cognitive Style Interview:

Follow the same process as for coding for the child. However, the following are ways in which coding the parent will differ from coding the child:

- For the **internal/external** dimension, we want to capture **internal to the mom** and **internal to the child**. We are conceptualizing causes that are attributed to something about the child as internal to the child because it is likely this these may be the messages a parent may convey to a child after he/she experiences a failure (i.e., that something about the child caused the failure) or it is representative of how the mother interprets events in the child's life, which may be different from how mom interprets events in her own life.
  - o The categories are: **internal self** (meaning something about the parent herself), **internal child** (something about the child), **external** (outside the child and the parent) or **dual** (something about the parent and the child together).
    - o **Examples:**
    - o **Internal self** = I did not help my daughter organize her thoughts very well, I did not keep my child on track when we were preparing the speech, I put too much pressure on him to do well.

- **Internal child** = He stuttered too much, She wasn't willing to practice with me in the prep time, He has never been good at public speaking, I think she was really nervous.
- **External** = The RA scored him too harshly, There was not enough time to prepare, You wouldn't let her have her notes while she gave her speech, Asking a kid to speak for a full 5 minutes in front of a stranger is a pretty tall order.
- **Dual** = We were both really off task when we were supposed to be prepping; We are both really stubborn and had different ideas about how to do the speech, so we made very little progress in preparing the speech; We both worked very hard.

- **Stable and unstable** are the same as for the child.

- **Global and specific** (and the certainty rating) are the same as for the child.

- For **Ability and Effort**, determine if it is ability of the mother (Ability Self), ability of the child (Ability Child), effort on the part of the mom (Effort Self), or effort on the part of the child (Effort Child).

- **Negative and positive consequences** are the same as for the child.

- **Negative and positive implications for the self** can be for the mom, herself (write self) or for the child (write child) and categorize them as such in your counts.

Part 6: Additional Examples

Key to color coding:

External   Internal
Unstable   Stable
Global   Specific

Examples of responses with color codes for elements of cognitive style:

External, Stable, Global	People always make it hard for kids to succeed at things.
External, Unstable, Specific	The expectations for getting a high score were not clear this time.
External, Unstable, Specific	It was not clear what I had to do to get a high score on the speech.
Internal, Stable, Global	I am always nervous.
Internal, Stable, Specific	I am always nervous when I have to give speeches.
Internal, Stable, Global	I never succeed at anything.
Internal, Unstable, Specific	I did not prepare enough for this speech test.
Internal, Stable, Specific	I am bad at giving speeches.
Internal, Unstable, Specific	I was really nervous when I had to give this speech.
Internal, Unstable, Specific	I was really tired this afternoon.
Inference for Negative Consequences	Because I failed this test, **I will fail at any public speaking I have to do in the future**.
Inference for Positive Consequences	**I will be motivated to practice** public speaking more because of this speech test.
Negative Inferences for Self	**I am a failure** because I did not do well on this speech.
Positive Inferences for Self	This speech showed me that **I am a really good public speaker.**

APPENDIX D

Child Cognitive Style Interview Coding Sheet, page 1

Causal Attributions for speech *(Responses to Questions 1-4 and 10-12) *note if any are "positive attributions" by writing "positive"*	Internal/External /Dual; if external, ***note if attributed to "mom"***	Stable/Unstable	Global/Specific/IDK (I don't know) Certain? (YES/NO)	Categorize on all 3 dimensions (e.g., ISG)	Categorize as one of the following types: (Ability=A, Effort=E, Task Difficulty=T, Luck=L, Emotion=Emo, or IDK)
1. 2.	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
3. 4.	3. 4.	3. 4.	3. 4.	3. 4.	3. 4.
5. 6.	5. 6.	5. 6.	5. 6.	5. 6.	5. 6.
7. 8.	7. 8.	7. 8.	7. 8.	7. 8.	7. 8.
Total number of negative attributions for speech: _____ **Total number of positive attributions for speech: _____**	Total internal:__(__%) Total external:__(__%) Total mom:_(__%) Total dual:__(__%)	Total stable:____(__%) Total unstable:__(__%)	Total global:__(__%) Total specific:_(__%) Total unsure:__(__%)	Total (& percentage) for each category:	Total (& percentage) for each type:

Is the speech similar to prior experiences? *(Responses to Questions 5-7)*	**At school?**
	   YES NO
		At home?
		 YES NO
			With mom?
			  YES NO
				Same experience mentioned for "at home" and "with mom"?
				                 YES NO N/A	

Was another stressor listed? YES NO	**Describe stressor:**_____				

Child Cognitive Style Interview Coding Sheet, page 2

Causal Attributions for previous stressor *(Responses to Questions 8 & 9) *note if any are "positive attributions" by writing "positive"*	Internal/External /Dual; if external, *note if attributed to "mom"*	Stable/Unstable	Global/Specific/IDK (I don't know) Certain? (YES/NO)	Categorize on all 3 dimensions (e.g., ISG)	Categorize as one of the following types: (Ability=A, Effort=E, Task Difficulty=T, Luck=L, Emotion=Emo, or IDK)
1. 2.	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
3. 4.	3. 4.	3. 4.	3. 4.	3. 4.	3. 4.
5. 6.	5. 6.	5. 6.	5. 6.	5. 6.	5. 6.
Total number of negative attributions for stressor: _____ **Total number of positive attributions for stressor: _____**	Total internal:__(__%) Total external:__(__%) Total mom:__(__%) Total dual:__(__%)	Total stable:____(__%) Total unstable:__(__%)	Total global:__(__%) Total specific:__(__%) Total unsure:__(__%)	Total (& percentage) for each category:	Total (& percentage) for each type:

Consequences as a result of the speech performance: 1. 2. **Total number of consequences:_____**	Determine if positive, negative, or neutral. Write totals. 1. 2. Totals: positive:___(___%) negative:___(___%) neutral___(___%)
Implications for the self as a result of the speech performance: 1. 2. **Total number of implications for self:_____**	Determine if positive, negative, or neutral. Write totals. 1. 2. Totals: positive:___(___%) negative:___(___%) neutral___(___%)

APPENDIX E

Parent Cognitive Style Interview Coding Sheet, page 1

Causal Attributions for speech (Responses to Questions 1-4 and 10-12) *note if any are "positive attributions" by writing "positive"	Internal/External /Dual; if internal, note if attributed to self or child	Stable/Unstable	Global/Specific/IDK (I don't know) Certain? (YES/NO)	Categorize on all 3 dimensions (e.g., ISG)	Categorize as one of the following types: (Ability=A self or A child, Effort=E self or E child, Task Difficulty=T, Luck=L, Emotion=Emo, or IDK)
1. 2.	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
3. 4.	3. 4.	3. 4.	3. 4.	3. 4.	3. 4.
5. 6.	5. 6.	5. 6.	5. 6.	5. 6.	5. 6.
7. 8.	7. 8.	7. 8.	7. 8.	7. 8.	7. 8.
Total number of negative attributions for speech: _____ **Total number of positive attributions for speech: _____**	Total internal self:__(__%) Total internal child:__(__%) Total external:__(__%) Total dual:__(__%)	Total stable:____(__%) Total unstable:__(__%)	Total global:__(__%) Total specific:_(__%) Total unsure:__(__%)	Total (& percentage) for each category:	Total (& percentage) for each type:
Is the speech similar to prior experiences? (Responses to Questions 5-7)	**At work?** YES NO	**At home?** YES NO	**With child?** YES NO	Same experience mentioned for "at home" and "with child"? YES NO N/A	
Was another stressor listed? YES NO	**Describe stressor:**_____				

125

Parent Cognitive Style Interview Coding Sheet, page 2

Causal Attributions for previous stressor *(Responses to Questions 8 & 9) *note if any are "positive attributions" by writing "positive"*	Internal/External /Dual; if internal, *note if attributed to self or child*	Stable/Unstable	Global/Specific/IDK (I don't know) Certain? (YES/NO)	Categorize on all 3 dimensions (e.g., ISG)	Categorize as one of the following types: (Ability=A self or A child, Effort=E self or E child, Task Difficulty=T, Luck=L, Emotion=Emo, or IDK)
1. 2.	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
3. 4.	3. 4.	3. 4.	3. 4.	3. 4.	3. 4.
5. 6.	5. 6.	5. 6.	5. 6.	5. 6.	5. 6.
Total number of negative attributions for stressor: _____ **Total number of positive attributions for stressor: _____**	Total internal self:__(__%) Total internal child:__(__%) Total external:__(__%) Total dual:__(__%)	Total stable:____(__%) Total unstable:__(__%)	Total global:__(__%) Total specific:__(__%) Total unsure:__(__%)	Total (& percentage) for each category:	Total (& percentage) for each type:

Consequences as a result of the speech performance: 1. 2. **Total number of consequences:_____**	Determine if positive, negative, or neutral. Write totals. 1. 2. Totals: positive:___(___%) negative:___(___%) neutral:___(___%)
Implications for the self as a result of the speech performance (note if for parent or for child): 1. 2. **Total number of implications for self:_____ Total for child:_____**	Determine if positive, negative, or neutral. Write totals. 1. 2. Total self: positive:__(__%) negative:__(__%) neutral:__(__%) Total child: positive:__(__%) negative:__(__%) neutral:__(__%)

APPENDIX F

Table F1. *Regression Analyses Testing All Hypothesized Correlates as Predictors of Child Negative Cognitive Style and Child Generality of Causal Attributions*

DV: ACSQ Total			DV: CCSI Generality score		
Block 1 R^2 Δ = .03, *n.s.*	β	sr^2	Block 1 R^2 Δ = .04, *n.s.*	β	sr^2
Child age	.11	.01	Child age	.20	.03
Child gender	.02	.00	Child gender	-.04	.00
BDI-II	.08	.00	BDI-II	.07	.00
Block 2 R^2 Δ = .08, *n.s.*			Block 2 R^2 Δ = .04, *n.s.*		
PCSQ Total	.11	.01	PCSI Generality	-.10	.01
PACE ISG Attributions	-.03	.00	PACE ISG Attributions	-.08	.00
PACE Negative Consequences	.27	.02	PACE Negative Consequences	.26	.02
IFIRS Withdrawn Composite	-.06	.00	IFIRS Withdrawn Composite	.03	.00
IFIRS Intrusive Composite	.03	.00	IFIRS Intrusive Composite	.07	.00

Final Model R^2 = .11, *n.s.*   Final Model R^2 = .09, *n.s.*

Note. ACSQ Adolescent Cognitive Style Questionnaire, *CCSI* Child Cognitive Style Interview, *BDI-II* Beck Depression Inventory-II, *YSR* Youth Self Report, *PCSQ* Parent Cognitive Style Questionnaire, *PCSI* Parent Cognitive Style Interview, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences, *IFIRS* Iowa Family Interaction Rating Scales.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.

Table F2. *Regression Analyses Testing Interaction between Maternal Negative Cognitive Style/Maternal Generality of Causal Attributions and Maternal Depressive Symptoms as Predictors of Child Negative Cognitive Style/Child Generality of Causal Attributions*

DV: ACSQ Total			DV: CCSI Generality score		
Block 1 $R^2 \Delta = .04$, *n.s.*	β	sr^2	Block 1 $R^2 \Delta = .00$, *n.s.*	β	sr^2
Total PCSQ	.16	.02	PCSI Generality	-.02	.00
BDI-II	.09	.01	BDI-II	.04	.00
Block 2 $R^2 \Delta = .00$, *n.s.*			Block 2 $R^2 \Delta = .00$, *n.s.*		
BDI-II×PCSQ Interaction	-.07	.00	BDI-II×PCSI Interaction	.05	.00
Final Model $R^2 = .02$, *n.s.*			Final Model $R^2 = -.05$, *n.s.*		

Note. ACSQ Adolescent Cognitive Style Questionnaire, *CCSI* Child Cognitive Style Interview, *BDI-II* Beck Depression Inventory-II, *YSR* Youth Self Report, *PCSQ* Parent Cognitive Style Questionnaire, *PCSI* Parent Cognitive Style Interview.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.

Table F3. *Regression Analyses Testing Interaction between Maternal Negative Inferential Feedback and Maternal Depressive Symptoms as Predictors of Child Generality of Causal Attributions*

DV: CCSI Generality score

Block 1 R^2 Δ = .02, *n.s.*	β	sr^2	Block 1 R^2 Δ = .02, *n.s*	β	sr^2
PACE ISG Attributions	.11	.01	PACE Negative Consequences	.16	.02
BDI-II	.03	.00	BDI-II	.05	.00
Block 2 R^2 Δ = .00, *n.s.*			Block 2 R^2 Δ = .00, *n.s*		
BDI-II×PACE ISG Interaction	-.07	.00	BDI-II×PACE Negative Consequences Interaction	-.05	.00

Final Model R^2 = -.03, *n.s.*   Final Model R^2 = -.02, *n.s.*

Note. CCSI Child Cognitive Style Interview, *BDI-II* Beck Depression Inventory-II, *YSR* Youth Self Report, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.

Table F4. *Regression Analyses Testing Interaction between Parenting and Maternal Depressive Symptoms as Predictors of Child Negative Cognitive Style*

DV: ACSQ Total

Block 1 R^2 Δ = .02, *n.s.*	β	sr^2	Block 1 R^2 Δ = .02, *n.s*	β	sr^2
IFIRS Withdrawn Composite	.02	.00	IFIRS Intrusive Composite	.03	.00
BDI-II	.12	.01	BDI-II	.12	.01
Block 2 R^2 Δ = .00, *n.s.*			Block 2 R^2 Δ = .00, *n.s*		
BDI-II×IFIRS Withdrawn Composite Interaction	.04	.00	BDI-II×IFIRS Intrusive Composite Interaction	-.01	.00
Final Model R^2 = -.01, *n.s.*			Final Model R^2 = -.01, *n.s.*		

Note. ACSQ Adolescent Cognitive Style Questionnaire, *CCSI* Child Cognitive Style Interview, *BDI-II* Beck Depression Inventory-II, *YSR* Youth Self Report, *PCSQ* Parent Cognitive Style Questionnaire, *PCSI* Parent Cognitive Style Interview, *PACE ISG Attributions* Parental Attributions for Child Events—Internal, stable, global attributions, *PACE Negative Consequences* Parental Attributions for Child Events—Expectations for negative consequences, *IFIRS* Iowa Family Interaction Rating Scales.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.

Table F5. *Regression Analyses Testing Interaction between Parenting and Maternal Depressive Symptoms as Predictors of Child Generality of Causal Attributions*

DV: CCSI Generality score

Block 1 R^2 Δ = .02, *n.s.*	β	sr^2	Block 1 R^2 Δ = .02, *n.s*	β	sr^2
IFIRS Withdrawn Composite	.16	.03	IFIRS Intrusive Composite	.14	.02
BDI-II	.05	.00	BDI-II	-.01	.00
Block 2 R^2 Δ = .03, *n.s.*			Block 2 R^2 Δ = .01, *n.s*		
BDI-II×IFIRS Withdrawn Composite Interaction	-.18	.03	BDI-II×IFIRS Intrusive Composite Interaction	-.11	.01
Final Model R^2 = .01, *n.s.*			Final Model R^2 = -.02, *n.s.*		

Note. CCSI Child Cognitive Style Interview, *BDI-II* Beck Depression Inventory-II, *IFIRS* Iowa Family Interaction Rating Scales.
Model values are Adjusted R^2, β = standardized beta, sr^2 = semi-partial correlation squared.