Parental Psychopathology and Youth Coping: Specificity in Predictors of Anxiety and

Depressive Symptoms in Youth

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CHAPTER 1

INTRODUCTION

Research has long documented the co-occurrence of symptoms of anxiety and depression across the lifespan, with high lifetime prevalence rates (e.g., Resclora et al., 2012; Kessler et al., 2005; Moffitt et al., 2007; Mineka et al., 1998). Considerable evidence also supports the occurrence of these symptoms independently in youth and adults, indicating that anxiety and depression are distinct yet related sets of symptoms or disorders. Statistical models have improved our understanding of how these symptoms both overlap and diverge, suggesting that the traditional diagnostic separation of anxiety and depression may not provide a sufficient framework for explaining high rates of co-occurrence (e.g., Eaton et al., 2012; Seeley et al., 2011; Watson, 2005). Furthermore, significant symptom co-occurrence suggests that these symptoms may share a common etiology. More stringent tests of specificity are needed to understand processes that may be specific as opposed to transdiagnostic predictors of these symptoms. Children of depressed parents offer a particularly important opportunity to study symptoms of anxiety and depression. Specifically, given the high rates of co-occurring symptoms of anxiety and depression in children of depressed parents and their parents (Goodman et al., 2011; Sellers et al., 2013), this population provides a useful framework to study risk factors that may be specific vs. transdiagnostic across symptoms of anxiety and depression.

The focus of the current study is to examine potential specific and transdiagnostic predictors of symptoms of anxiety and depression in youth by testing for unique and differential specificity. First, I review research on the co-occurrence of these symptoms and models that may explain how to best group or classify symptoms of anxiety and

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depression. Secondly, I review research on methods to test for specificity in mechanisms of risk for symptoms of anxiety and depression. Finally, I will discuss two potential mechanisms of risk in youth at-risk for symptoms of anxiety and depression: parental psychopathology (symptoms of anxiety and depression) and youth coping when under stress.

Co-Occurrence of Depression and Anxiety

      Diagnostic comorbidity. Prevalence rates of both anxiety and depressive disorders in adolescents are significant. For example, data from the National Comorbidity Survey-Adolescent Supplement found prevalence rates of 14% for depressive disorders and 31% for anxiety disorders (Merikangas et al., 2010). Further, rates of comorbid anxiety and depression are very high. Across studies, rates of depression with comorbid anxiety range from 25-50% of youth, while rates of anxiety with comorbid depression range from 10-20% (Axelson & Birmaher, 2001). In a longitudinal study of disorders across the lifespan, cumulative lifetime rates of comorbidity of anxiety diagnoses with depression exceeded 45%, while comorbidity of depression with anxiety disorders exceeded 75%; recurrence of either disorder was associated with greater comorbidity across the lifespan (Moffitt et al., 2007). Angold and colleagues (1999) examined relations between anxiety, depression, ADHD, and conduct disorder in children and adolescents. Anxiety and depression were strongly related; however, anxiety and depression had different strengths of association with ADHD and conduct disorder, suggesting that these diagnose, while highly comorbid, are distinct. In summary, rates of anxiety and depression co-occur frequently on the diagnostic level, but not perfectly.

Symptom co-variation. While many studies have documented prevalence rates using diagnostic interviewing and DSM criteria, recent research has moved toward a greater emphasis on dimensional approaches to psychopathology (e.g., Hyman 2010; Rutter, 2011). In youth in particular, studies have shown significant but not perfect correlations among symptoms of anxiety and depression using self-report measures (e.g., Seligman & Ollendick, 1998). For example, Cole and colleagues (1997) used confirmatory factor analysis to examine whether symptoms fit as a unitary construct or separated as two independent but related constructs. Using multi-method multi-informant reports, correlations among the anxiety and depression factors were very high (ranging from .72 to .93), even when taking into account overlapping items on questionnaires assessing both symptoms. Findings showed that in younger children, correlations were so high that it was difficult to separate symptoms of anxiety and depression. However, in older youth analyses supported findings that these symptoms are related but distinct (Cole et al., 1997).

Recent work by Achenbach and colleagues has included analyses of separate scales for anxiety (Anxiety Problems) and depression (Affective Problems) based on DSM criteria for these disorders (Achenbach, Dumenci, & Rescorla, 2003). These two scales are significantly correlated but the moderate levels of these correlations suggest that symptoms of anxiety and depression have both shared and distinct features (e.g., van Lang et al., 2005). For example, Boots and Wareham (2009) reported a correlation of .50 between the Anxiety Problems and Affective Problems scales, suggesting significant co-variation of these symptoms yet far from reflecting a single set of symptoms. Thus, the

overlap of anxiety and depression converges in both symptom and diagnostic data—these symptoms frequently occur together, but are separable constructs.

Conceptual models of anxiety and depression. Given high rates of co-occurrence on both the diagnostic and symptom level, several researchers have proposed models in order to refine our understanding of these symptoms. Clark and Watson (1991) proposed a tripartite model for understanding anxiety and depression co-occurrence, consisting of one shared, non-specific construct (general distress) that underlies both symptoms and two non-shared, specific constructs (physiological arousal and anhedonia/absence of positive affect). More recently, Watson (2009) presented a revised quadripartite model to explain symptom co-occurrence that suggests delineating symptoms in terms of both distress (e.g., high or low) and specificity to anxiety or depression (e.g., high or low). However, studies testing the applicability of the tripartite model have focused largely on adult populations, and there is less support for this model in youth (Anderson & Hope, 2008).

Krueger et al. (1998) proposed that a single internalizing factor best captures both symptoms of anxiety and depression. This model of broad internalizing and externalizing factors has been supported in some studies of adult samples (e.g., Krueger et al., 2003; South & Krueger, 2008). Variations on this model have been proposed to include both a broad internalizing factor and classes of symptoms within that factor that differentiate among distress, fear, and bipolar disorders (Watson, 2005).

Seeley et al. (2001) examined three competing models of internalizing symptoms in adolescents in order to test whether a single internalizing factor, a two-factor internalizing model (based on the Kreuger-Watson model), or a disorder-based model

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(based on the *DSM-IV*) would best explain the relationship among symptoms of anxiety and depression. The study found that all three models were a good fit to the data. Although the model distinguishing between anxiety and depression was a good fit in this study, it did not out perform models that lumped together these symptoms, suggesting that a dimensional approach is as useful, if not more useful than a categorical approach.

For children and adolescents in particular, several studies have examined how to best model these highly correlated symptoms. Achenbach and colleagues have examined reports from parents, teachers and adolescents using principal components analysis to empirically identify syndrome of psychopathology in children and adolescents (e.g., Rescorla et al., 2013). Analyses both U.S. samples and samples from over 15 countries failed to identify distinct syndromes reflecting anxiety and depression. Instead, analyses have consistently identified a mixed anxiety-depression syndrome that best captures these symptoms (e.g., Ivanova et al., 2007a, 2007b). For example, Wadsworth and colleagues (2001) used latent class analysis to examine whether symptoms of anxiety and depression in adolescents differentiated into separate classes of symptoms on the Child Behavior Checklist. Analyses supported the dimensional approach to examining these symptoms, showing that symptoms of anxiety and depression were best captured in a class together rather than as separate problem-specific classes (Wadsworth et al., 2001).

As the field moves toward refining the way we conceptualize definitions of anxiety and depression, dimensional classifications do not fully explain whether an individual will develop significant symptoms of anxiety versus depression or both. While diagnostic comorbidity and symptom co-variation is common, there is still a significant portion of individuals whom experience symptoms of anxiety or depression, but not both.

Identifying shared and non-shared risk factors for these symptoms will help us to further

our understanding of how and where symptoms of anxiety and depression converge and

diverge.

Specific and Transdiagnostic Mechanisms of Risk for Depression and Anxiety

The field has begun to explore processes and interventions that are

transdiagnostic, or that are shared between symptoms of anxiety and depression (e.g.,

Ehrenreich-May & Chu, 2014). There are a number of reasons to emphasize potential

transdiagnostic processes across symptoms of anxiety and depression, as they are

important in understanding both the development of symptoms and helpful in refining

targets for intervention. As described above, some models have attempted to provide a

framework for the co-occurrence of these symptoms (e.g., Clark & Watson, 1991;

Mineka et al., 1998). However, these models emphasize symptoms shared versus non-

shared across anxiety and depression (e.g., positive affect or distress) rather than

mechanisms associated with the development of these symptoms. Current understanding

of transdiagnostic risk factors associated with the onset and maintenance of these

symptoms is limited.

Specificity analyses can provide an important test of trandiagnostic processes.

Specificity refers to risk factors that demonstrate a significant association with one set of

symptoms or disorders (e.g., anxiety symptoms or disorders) but not the other (e.g.,

depression symptoms or disorders). If a risk factor is associated with both symptoms of

anxiety and depression, that risk factor demonstrates no specificity and is therefore a

transdiagnostic factor. Two types of specificity are important for better understanding the

relationship between processes associated with symptoms of anxiety and depression:

unique and differential effects. Unique effects are shown when an independent variable predicts one set of symptoms after the second type of symptoms is controlled for (e.g., predicting anxiety symptoms when controlling for depressive symptoms) (Caron et al., 2006). Differential effects are demonstrated when an independent variable predicts the difference score of the two sets of symptoms (e.g., predicting that an individual will be higher on anxiety symptoms relative to an individual's depressive symptoms) (Caron et al., 2006). These two types of specificity analyses allow for a more stringent test of whether a risk factor is truly trandiagnostic across co-occuring symptoms or specific to one set of symptoms. Evidence for specificity would indicate that there are distinct risk factors for symptoms of depression and anxiety, whereas failure to find evidence of specificity would support shared or transdiagnostic risk factors.

In the present study, we examine specificity in two risk factors that are particularly relevant in a sample of children of depressed parents: parental psychopathology and youth coping. Parents with a history of depression also experience high rates of symptoms of anxiety; therefore, this sample provides an opportunity to examine the impact of parental symptoms of both anxiety and depression on these symptoms in youth. Furthermore, there is strong evidence that stress is a broad risk factor for psychopathology (both internalizing and externalizing) in adolescence (e.g., Compas et al., 1993; McMahon, Grant, Compas, Thurm, & Ey, 2004). The stress associated with living with a depressed parent provides an opportunity to examine how youth's ability to cope with stress may be associated with symptoms of anxiety and depression.

Parental Psychopathology. Relatively separate lines of research have examined the effects of parental depression and parental anxiety on children's mental health.

However, because parents with a history of depression display both symptoms of anxiety and depression, it is be important to examine these types of symptoms in parents simultaneously as sources of risk for children.

The relationship between the broad category of internalizing disorders, which includes anxiety and depression, and maternal depression is well established, indicating that children of depressed parents are at a significantly greater risk for developing internalizing problems than children whose parents do not have a history of depression (Beardslee et al., 2011; Goodman et al., 2011). Similarly, children of parents with a history of anxiety are at significantly increased risk for both anxiety and depression (Micco et al., 2009). Further, depression and anxiety often co-occur in parents, among other problems (e.g., substance abuse), and comorbidity between depression and other psychopathology in parents leaves children at an even greater risk of developing psychopathology (Sellers et al., 2013).

There is some evidence to suggest that parental psychopathology (symptoms of anxiety and depression) is a largely non-specific (i.e., transdiagnostic) risk factor for symptoms of anxiety and depression in youth (Starr et al., 2014). However, in a longitudinal study of children of parents with panic, depression, or both, results showed evidence for both specific and non-specific risk for symptoms of anxiety and depression in children (Hirshfeld-Becker et al., 2012). Panic and depression in parents independently predicted different internalizing disorders in their offspring, while some disorders (e.g., MDD) were predicted by both panic and depression in the parent.

With a breadth of evidence to support that internalizing symptoms in parents are associated with internalizing symptoms in their children, the specificity of parental

symptoms of anxiety and depression and these symptoms in their children remains

unclear. A transdiagnostic model would posit that both symptoms of anxiety and

depression in youth are associated with both parental symptoms of anxiety and

depression. In contrast, a specificity model would speculate that parental depressive

symptoms are associated with youth depressive symptoms and parental anxiety

symptoms are associated with youth anxiety symptoms.

Coping with Stress. Youths living with a parent with a history of depression

experience increased stressed in their environment, driven by the unpredictability in

interactions with their parent. Chronic stress in the family environment, like that of living

with a parent with psychopathology, is associated with increased internalizing problems

in youth (Grant et al., 2004). Therefore, youths' ability to engage in coping and emotion

regulation strategies to manage the chronic stress in their environment is an important

area of concern for youths with depressed parents.

Coping is defined as the conscious, volitional effort to regulate emotion,

cognition, behavior, physiology, and the environment in response to stressful events or

circumstances (Compas et al., 2001). While emotion regulation encompasses the

regulation of emotion in both stressful and non-stressful situations, coping includes those

efforts to regulate emotions specifically in the face of stress (Compas et al., 2013;

Compas et al., in press). Evidence shows that coping and emotion regulation are

associated with both internalizing and externalizing problems in youth (Compas et al., in

press). More specifically, increased use of both primary control (e.g., problem solving)

and secondary control coping (e.g., cognitive reappraisal) has been linked to fewer

internalizing symptoms and specifically fewer symptoms of anxiety and depression

across a number of samples, while increased use of disengagement coping has been linked to increased symptoms in these samples (e.g., Raviv & Wadsworth, 2010; Rhoades et al., 2007; Wadsworth & Compas, 2002).

In children of depressed parents, coping and emotion regulation show a similar relationship with symptoms of both anxiety and depression. Parent-reported symptoms of anxiety and depression in their children were negatively correlated with secondary control coping in a sample of depressed parents and their offspring (Langrock et al., 2002). Additionally, Fear et al. (2009) examined the relationship between coping and symptoms of anxiety and depression in the context of parental depression and inter-parental conflict. Results were based on both parent and child report, finding that secondary control coping was negatively associated with increased symptoms. In an adolescent sample of offspring of depressed parents, Jaser et al. (2005) similarly found a significant negative relationship between secondary control coping and a composite of anxiety and depression symptoms as reported by both the parent and adolescent. Finally, in an intervention teaching secondary control coping skills to children of depressed parents, increased use of secondary control coping skills mediated the changes in youth self-reported internalizing symptoms (Compas et al., 2010). These findings suggest that secondary control coping may act as a transdiagnostic risk factor for symptoms of anxiety and depression in youth. However, it is noteworthy that all of these studies examined a single mixed anxiety/depression factor rather than testing separate measures of these symptoms.

Findings associated with primary control coping in children of depressed parents have been more varied. In the studies reviewed above, no significant associations were

found between symptoms and primary control coping (Fear et al., 2009; Jaser et al., 2005; Langrock et al., 2002). However, in a sample of children of both depressed and non-depressed parents Jaser et al. (2011) found a significant negative association between a composite of anxiety and depressive symptoms and primary control coping. Mixed support for the association between primary control coping and internalizing symptoms in youth suggest that a more stringent test of specificity is important to further clarify the role primary control coping may play in youth symptoms.

Finally, the association between disengagement coping and youth symptoms is less supported in the literature. Jaser et al. (2011) showed that disengagement coping was significantly associated with symptoms, in that increased disengagement coping was related to increased symptoms in youth. However, in other studies reviewed above, disengagement coping was not associated with youth symptoms (Compas et al., 2010; Fear et al., 2009; Jaser et al., 2005; Langrock et al., 2002). Additional tests of specificity are needed to understand whether disengagement coping plays a specific or transdiagnostic role, if any, in predicting symptoms of anxiety and depression in youth.

In summary, there is considerable evidence to support the relationship between coping and symptoms of anxiety and depression, particularly in children of depressed parents. However, previous work has examined this relationship using composite measures of anxiety and depressive symptoms or overall internalizing symptoms or has focused on depressive symptoms alone. As a result, our understanding of how coping may be a specific predictor of symptoms of anxiety versus depression is limited. While research suggests that secondary control coping may be a transdiagnostic mechanism, there is less evidence for whether primary control and disengagement coping are specific

or non-specific risk factors for symptoms in youth. A transdiagnostic model would predict that youth coping is associated with both anxiety and depressive symptoms, while a specificity model would predict that different types of coping in youth is associated with either anxiety or depressive symptoms.

Present Study

The present study aims to expand on this body of research in exploring specificity in predictors of symptoms of anxiety and depression in youths. First, the study aims to examine whether parental symptoms of anxiety and depression uniquely and/or differentially predict these symptoms in youth. Secondly, the study aims to explore whether strategies used to cope with stress in youth demonstrate specificity to anxiety and depression in youth. Past findings examining predictors of symptoms of anxiety and depression in children and adolescence inform hypotheses for the current study: (1) Parental symptoms of anxiety will be a trandiagnostic risk factor for symptoms of anxiety and depression in youth. (2) Parental symptoms of depression will be a trandiagnostic risk factor for symptoms of anxiety and depression in youth. (3) Secondary control coping will be a transdiagnostic risk factor for symptoms of anxiety and depression in youth. Previous research does not provide consistent evidence for primary control coping and disengagement coping as either specific or transdiagnostic factors in youth anxiety and depression; therefore, analyses of these two types of coping were considered exploratory.

CHAPTER 2

METHOD

Participants. The sample for the current study was drawn from a sample of 180

families with 242 children (121 boys, 121 girls) between the ages of 9 and 15 years (M =

11.53, SD = 2.02) from areas in and surrounding Nashville, Tennessee and Burlington,

Vermont. Parents met criteria for at least one episode of MDD during the lifetime of their

child(ren). Because a number of families had more than one child participating in the

study, one child was randomly selected from each family for all analyses to address the

possible non-independence of children within the same family. The final sample for the

current study included 180 parents (88.9% female; Mean age = 41.96). Of the parents,

82.2% were Caucasian, 11.7% African American, 2.2% Hispanic, 1.1% Asian, 0.6%

American Indian or Alaska Native, and 2.2% mixed race/ethnicity. Annual family income

ranged from less than $5,000 to over $180,000, with a median family income of $40,000.

Among the parents, 61.7% were married, 21.7% divorced, 5.0% separated, 1.1%

widowed, and 10.6% never married. The final sample also included 180 children (49.4%

female; Mean age=11.46, SD=2.00). Of the children, 82.2% were Caucasian, 11.7%

African American, 2.2% Hispanic, 1.1% Asian, 0.6% American Indian or Alaska Native,

and 2.2% mixed race/ethnicity.

Measures

Parental depression diagnostic history. To identify a sample of parents with a

history of depression in their child's lifetime, parents' current and past history of MDD

was assessed and other Axis I disorders were screened with the Structured Clinical

Interview for DSM (SCID; First et al., 2001), a semi-structured diagnostic interview used

to assess current and previous episodes of psychopathology according to DSM-IV criteria (American Psychiatric Association, 1994). Inter-rater reliability was calculated on a randomly selected subset of these interviews and indicated 93% agreement (*kappa* = 0.71) for diagnoses of MDD.

Parental symptoms of depression. Parents completed the Beck Depression Inventory-II (BDI-II; Beck et al., 1996; Steer et al., 2001), a widely used 21-item self-report measure assessing depressive symptoms over the previous 2 weeks. The BDI-II assesses symptoms on a scale from 0 (no change/not at all) to 3 (significant change/severely). The BDI-II includes ratings of sadness, lack of interest in daily activities, sleep, appetite, and other common symptoms of depression over a two-week period. Higher scores indicate greater severity of depressive symptoms, ranging from minimal (0–13) to mild (14–19), moderate (20–28), and severe (29–63; Beck et al., 1996). The measure demonstrates adequate internal consistency (α = .91) and validity. The internal consistency in the current sample was α = .93.

Parental symptoms of anxiety. The Beck Anxiety Inventory (BAI; Beck et al., 1988), a 21-item self-report measure assessing anxiety symptoms (scores ranging from 0 to 63) over the previous 2 weeks, was also completed by parents. The BAI assesses common symptoms of anxiety, including somatic symptoms (e.g., "dizzy or lightheaded") and worries/fears (e.g., "fear of dying"). Higher scores indicate greater severity of depressive symptoms, ranging from minimal (0–7) to mild (8–15), moderate (16–25), and severe (26–63). The BAI demonstrates adequate internal consistency (α = .92) and validity. The internal consistency in the current sample was α = .93.

Scores on the BDI and BAI were prorated to account for missing items. If a

participant skipped up to 3 items on the measure, the missed items were assigned the average score of the items endorsed and included in analyses. Data were not included if a participant skipped more than 3 items.

Child symptoms of anxiety and depression. Parents also completed the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) about their child. The CBCL includes a 118-item checklist of problem behaviors during the previous 6 months that parents rate as not true (0), somewhat or sometimes true (1), or very true or often true (2) of their child in the past 6 months. The CBCL assesses a number of problem areas in children, including anxiety, depression, oppositional behaviors, and attention, and demonstrates well-established reliability and validity.

Youths completed the Youth Self Report (YSR; Achenbach & Rescorla, 2001), the self-report version of the CBCL for adolescents 11–18 years of age. Reliability and validity of the CBCL and YSR are well established. Children who were 9 or 10 years of age completed the YSR to allow for complete data on all measures.

Analyses in the present study focused on the DSM scales of Affective Problems and Anxiety Problems. These scales were derived based on items that reflect DSM symptoms of depression and anxiety disorders. The Affective Problems scale is comprised of 13 items including sadness, sleep problems, and feelings of worthlessness. The Anxiety Problems scale includes 6 items such as nervousness, fears, and worries. Internal consistency reliabilities for the current sample was .78 for the YSR Affective Problems scale and .71 for the YSR Anxiety Problems scale; internal consistency reliabilities for the current sample was .71 for the CBCL Affective Problems scale and .64 for the CBCL Anxiety Problems scale.

Child coping. Finally, parents completed the parental depression version of the Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) about their child. Youths also completed the RSQ, a 57-item self-report measure of how they cope with their parents' depression. The RSQ parental depression version measures the specific ways in which children cope with and react to the stress associated with their parent's depression. Items are rated on a scale from 1 to 4 that indicates the frequency with which the child engaged in or enacted a coping response. The RSQ has demonstrated excellent reliability and validity (Connor-Smith et al. 2000).

A five-factor model on the ways in which youths cope with stress has been established and supported by confirmatory factor analyses across diverse samples of adolescents reporting on a wide range of stressors. The five factors include: primary control coping (i.e., problem solving, emotional expression, emotional modulation), secondary control coping (i.e., cognitive restructuring, positive thinking, acceptance, distraction), disengagement coping (i.e., avoidance, denial, wishful thinking), involuntary engagement, and involuntary disengagement (e.g., Benson et al., 2011; Compas et al., 2006; Connor-Smith et al., 2000; Wadsworth et al., 2004; Yao et al., 2010). The present study focuses on three coping factors: primary control coping (e.g., problem-solving), secondary control coping (e.g., acceptance), and disengagement coping (e.g., avoidance). In the present study, proportion scores on the three coping factors were used in analyses to control for response bias and individual differences in base rates of item endorsement, Proportion scores are calculated by taking the total score for each of the three factors and dividing by the total score for the entire measure (e.g., Osowiecki & Compas, 1998, 1999; Vitaliano, Maiuro, Russo, & Becker, 1987).

Procedures

Participants were invited to enroll in a study testing the efficacy of a family group cognitive-behavioral intervention to prevent depression in children of parents with a history of major depressive disorder (MDD) in Nashville, Tennessee and Burlington, Vermont. Families enrolled in the study were randomized to either a 12-week Family Group Cognitive-Behavioral (FGCB) intervention or a Written Information (WI) control condition.

Family group intervention. The 12-week FGCB intervention (eight weekly and four monthly booster sessions) aimed to educate families about the impact of stress and depression, improve adaptive coping responses to stress in children, and improve parenting skills. Groups consisted of up to four families each, with both parents and children attending each session. Skills are taught through didactic instruction, videotapes, modeling, role-playing, and homework assignments to practice what is learned in session each week. The monthly booster allowed families to problem solve difficulties around the implementation of skills and provided additional practice and reinforcement of both parenting and coping skills (see Compas et al., 2009, for more details on the intervention, including evaluation of treatment integrity).

Written information condition. The WI condition was modeled after modeled after a self-study program used successfully by Wolchik et al. (2000) in their preventive intervention trial for families coping with parental divorce and the lecture information condition used by Beardslee et al. (2007). Over the course of eight weeks, families were mailed three packets of written materials to provide education about depression and its effects on families and signs of depression in children. Separate materials were developed

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for parents and children.

Data Analytic Approach

Composite variables were created from parent and youth reports of youth coping and youth symptoms of anxiety and depression by converting scores to standardized scores (z-scores) and calculating the mean of the parent and youth z-scores for each variable. Means and standard deviations for parental symptoms of anxiety and depression, youth coping, and youth anxiety and depression were calculated. Bivariate Pearson's correlations were calculated to examine associations among parent self-report anxiety and depressive symptoms, parent- and self-reported child anxiety and depressive symptoms, and parent- and self-reported child coping at baseline. Linear multiple regression analyses were conducted to examine the extent to which parental symptoms of anxiety and depression and youth coping demonstrate specificity toward youth symptoms of anxiety and depression.

Specificity analyses. Two types of specificity analyses were conducted to examine whether parental symptoms of anxiety and depression or youth coping were specific versus transdiagnostic risk factors for symptoms anxiety and depression in youth. First, specificity analyses were conducted to examine whether parental symptoms of anxiety and depression and youth primary control, secondary control, and disengagement coping demonstrated *unique effects*. Unique effects occur when a variable significantly predicts a specific child outcome after controlling for the other child outcome (e.g., significantly predicts anxiety symptoms when controlling for depressive symptoms).

Second, specificity analyses were conducted to examine differential patterns of symptoms of anxiety and depression as predicted by parental symptoms of

psychopathology and youth coping. Based on analyses described by Caron and colleagues (2006), difference scores were calculated between the composite scores of symptoms of depression and anxiety in youth. Significant *differential effects* would indicate that the independent variable predicts whether a youth will be higher on symptoms of anxiety or depression relative to the other symptom.

CHAPTER 3

RESULTS

Preliminary Analyses

For the purposes of describing the sample and allowing for comparison to other

studies, means and standard deviations for parents' BDI-II and BAI (raw scores), youth

coping (proportion scores), and youth symptoms of anxiety and depression (T scores) are

presented in Table 1.

The BDI-II and BAI scores are reported as pro-rated scores; YSR and CBCL

Affective and Anxiety Scales scores are reported as normalized T Scores; and RSQ

Primary, Secondary, and Disengagement scores are reported as proportion scores.

Parents' BDI-II scores ranged from 0 to 52.5, with a mean score of 19.23 ($SD =$

12.58). Scores between 13-19 are in the mild range on the BDI, and scores 20 and above

are in the moderate to severe range. Parents' BAI scores ranged from 0 to 55, with a

mean score of 12.03 ($SD = 10.34$). Scores between 8-15 are in the mild range on the BAI,

and scores 16 and above are considered in the moderate to severe range.

Youth depressive symptoms as measured by the YSR Affective Problems Scale

ranged from T scores of 50 to 80, with a mean of $T = 56.54$ ($SD = 7.39$). Parents' report

of youth depressive symptoms as measured by the CBCL Affective Problems scale

ranged from T scores of 50 to 81, with a mean score of $T = 60.43$ ($SD = 8.04$). Youth

YSR Anxiety Problems scores ranged from 50 to 78, with a mean score of $T = 55.36$ (SD

$= 6.98$). CBCL Anxiety Problems T scores ranged from 50 to 77, with a mean score of T

$= 58.22$ ($SD = 7.76$). Overall, youths were elevated on both self and parent-report of

symptoms of anxiety and depression.

Bivariate Correlations

Correlational analyses were conducted to examine the associations between parent anxiety and depressive symptoms, child anxiety and depressive symptoms, and child coping (see Table 2). Youth Affective and Anxiety Problems composite scores were highly correlated ($r = .62$, $p < .01$). Parental depressive symptoms were significantly positively associated with parental anxiety ($r = .58$, $p < .01$) and youths' anxiety ($r = .18$, $p = .02$) and depression ($r = .36$, $p < .01$). Parental anxiety was significantly positively associated with youths' anxiety ($r = .16$, $p = .04$) and depression ($r = .24$, $p < .01$), supporting the hypothesis that parental symptoms of anxiety and depression would be related to both types of child internalizing problems.

Youths' primary control coping was significantly negatively associated with youths' anxiety ($r = -.20$, $p = .01$) and depression ($r = -.41$, $p < .01$). Secondary control coping was also significantly negatively associated with youths' anxiety ($r = -.44$, $p < .01$) and depression ($r = -.53$, $p < .01$), whereas youths' disengagement coping was positively associated with youths' depression ($r = .20$, $p = .01$), but not anxiety.

Parental depressive symptoms were negatively associated with youths' primary control coping ($r = -.30$, $p < .01$), and positively associated with youths' disengagement coping ($r = .24$, $p < .01$). Parental anxiety was negatively associated with youths' primary control coping ($r = -.15$, $p = .05$).

Specificity: Unique Effects

Linear regressions to examine the whether parental psychopathology and child coping were significant and unique predictors of child psychopathology are presented in Table 3. In the final step of the model, parental depressive symptoms ($\beta = .23$) and child primary (β

= -.26) and secondary (β = -.24) control coping were significant independent and unique predictors of child depressive symptoms when accounting for child anxiety symptoms. Child anxiety symptoms remained a significant predictor of child depressive symptoms (β = .44). In total, parental depressive symptoms, child primary and secondary control coping, and child anxiety symptoms accounted for 54% of the variance in child depressive symptoms (R^2 = .54).

Analyses demonstrated that only child secondary control coping (β = -.18) was a significant independent unique predictor of child anxiety symptoms in the final step of the model when accounting for child depressive symptoms (see Table 4). Child depressive symptoms remained a significant predictor of child anxiety symptoms (β = .57). Parental symptoms of anxiety and depression were not significant unique predictors of child anxiety symptoms. In total, child secondary control coping and child affective symptoms accounted for 41% of the variance in child anxiety symptoms (R^2 = .41).

Specificity: Differential Effects

Linear regression was conducted to examine whether parental symptoms of psychopathology or youth coping differentially predict within-subject variation in symptoms of anxiety and depression in youth (see Table 5). Parental depressive symptoms was the only significant differential predictor (β = .21), indicating that a parents' symptoms of depression were associated with higher depressive symptoms in their children relative to the youth's anxiety symptoms. None of the three types of coping (primary control, secondary control, or disengagement) were a significant differential predictor. Primary control coping, though uniquely predicting depressive symptoms in youth (see Table 3), was not associated with higher depressive symptoms relative to

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anxiety symptoms in youth; i.e., it was not a differential predictor. However, primary control coping was a significant predictor in each step of the regression model until the final step that included all three types of coping. Secondary control coping, which was a shared predictor of both symptoms in previous analyses, did not differentiate between higher levels of anxiety or depression.

CHAPTER 4

DISCUSSION

Findings from the current study extend previous research by examining specific and transdiagnostic mechanisms of risk for symptoms of anxiety and depression in children of parents with a history of depression. Previous research has aimed to explain the co-occurrence of symptoms of anxiety and depression, as these symptoms are highly correlated yet still remain distinct problems. However, research on mechanisms of risk for the co-occurrence of these symptoms is still in its early stages. Whereas past studies have tended to broadly examine mechanisms associated with internalizing symptoms in youth, we more specifically analyzed mechanisms associated with symptoms of anxiety and depression.

Specificity in Symptoms of Anxiety and Depression

The present study confirmed previous work demonstrating that while anxiety and depressive symptoms are highly correlated, they are separable sets of symptoms in youth. While correlation between the Affective Problems and Anxiety Problems scales was higher in this sample than has been reported in other studies (e.g., Boots & Wareham, 2010), the correlation was not so high to suggest that these symptoms are synonymous.

Analyses supported that while some risk factors for anxiety and depression are shared or transdiagnostic, others show specificity to anxiety versus depression. Parental depressive symptoms demonstrated unique specificity to child depressive symptoms, but not symptoms of anxiety in children. Parental anxiety symptoms were not a significant predictor of youth symptoms of anxiety or depression in this sample. These findings are inconsistent with well-documented literature on the association between anxiety and

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depression in parents and their children (e.g., Goodman et al. 2011; Micco et al. 2009). This discrepancy may be due in part to differences in measurement across studies; the present study focused on symptoms rather than diagnoses whereas most studies documenting the transmission of psychopathology have focused on diagnoses. The present study also used a composite score of parent and child reports of symptoms in youth. However, these findings are noteworthy in that they examine both parental depression and anxiety symptoms as specific predictors of both child depression and anxiety symptoms. The findings suggest that parental depression symptoms may play an important and specific role as a risk for symptoms of depression in children.

Additionally, primary control coping demonstrated unique specificity for symptoms of depression in youths and not symptoms of anxiety. In previous work examining primary control coping as a mechanism of risk for internalizing or mixed anxiety-depression symptoms more broadly, studies showed varied evidence for this type of coping as a risk factor for symptoms in youth (e.g., Fear et al., 2009; Jaser et al., 2005; Jaser et al., 2011; Langrock et al., 2002). Given that primary control coping was found to be specific to depressive symptoms in youth only, this may account for mixed findings across studies examining symptoms of anxiety and depression together. Primary control coping on the RSQ reflects strategies that involve taking action to change the stressful situation or one's emotions associated with the stressful situation. The active component of primary control coping strategies may parallel the process of behavioral activation, which has been supported as an effective treatment for depressive symptoms but not symptoms of anxiety (e.g., Sturmey et al., 2009).

Secondary control coping was significantly associated with symptoms of both anxiety and depression, and therefore functions as a transdiagnostic risk factor for these symptoms. These analyses support prior studies that demonstrate secondary control coping predicts internalizing symptoms in youth (e.g., Compas et al., 2010; Fear et al., 2009; Jaser et al., 2005; Langrock et al., 2002). Secondary control coping on the RSQ reflects strategies that involve altering or adapting yourself to a stressful situation, including using cognitive reappraisal, positive thinking, acceptance, or distraction. Automatic negative cognitions have been shown to predict both symptoms of anxiety and depression (e.g., Bird et al., 2013; McEvoy & Brans, 2013). Therefore, using strategies to reframe or manage those automatic negative thoughts through secondary control coping may decrease symptoms of both anxiety and depression in youth. Findings from Compas et al. (2010) support just that—secondary control coping mediated the impact of a preventive intervention for children of depressed parents on internalizing symptoms in youth. The present study further suggests that secondary control coping is transdiagnostic risk factor for both symptoms in youth, and may be an important target for transdiagnostic interventions.

Disengagement coping was not a significant predictor of symptoms in youth, which is consistent with prior research (e.g., Fear et al., 2009; Jaser et al., 2005; Jaser et al., 2011; Langrock et al., 2002). Disengagement coping on the RSQ includes strategies of orienting away from a stressful situation (i.e., avoidance, denial, and wishful thinking). Upon closer examination of disengagement coping in the unique specificity analyses presented in Tables 3 and 4, an interesting pattern emerges. When entered into the regression with parental symptoms of anxiety and depression, primary control coping,

and secondary control coping, disengagement coping is a significant predictor of both

Affective Problems (β = -.22) and Anxiety Problems (β = -.23). However, these values

are in the opposite direction of what might be expected; the negative beta values indicate

that increased disengagement coping is associated with fewer symptoms. In both cases,

disengagement coping is no longer a significant predictor of symptoms once the other

symptom is entered into the regression (see Tables 3 and 4). While this pattern of

findings may suggest a spurious relationship (i.e., a type of suppressor effect), further

research is needed to explore the role of disengagement coping in both children of

depressed and non-depressed parents.

In differential specificity analyses, parent depressive symptoms demonstrated

differential specificity to child depressive symptoms. Within individuals, parental

depressive symptoms show a differential relation to child symptoms of anxiety and

depression. That is, increases in parental depressive symptoms predict higher child

depressive symptoms *relative to* child anxiety symptoms at the within-subjects level.

Secondary control coping did not differentially predict symptoms of anxiety or

depression. Although the use of more secondary control coping strategies predicts lower

levels of both symptoms in youth, it does not predict within-subject differential relations

among symptoms. Primary control coping was also not a differential predictor of youth

symptoms of anxiety or depression. However, upon closer examination of the regression

analyses, primary control coping was significant until the final step, when disengagement

coping was entered into the equation. It is worth noting that the correlation between

disengagement coping and primary control coping in this sample is very high (r = -.71),

which may account for why primary control coping was no longer significant in the final

step. Again, disengagement coping was not a significant predictor of symptoms in differential specificity analyses.

Altogether, findings support the existence of both specific and transdiagnostic risk factors in children and adolescents. The present study provides consistent evidence that parental depressive symptoms, and to some extent primary control coping, are specific predictors of depressive symptoms but not anxiety symptoms in youth. Secondary control coping, on the other hand, is a trandiagnostic predictor of both symptoms of depression and anxiety in children of depressed parents. This study is the first to provide evidence of these types of specific and transdiagnostic predictors of anxiety and depression in children who are at high risk for these symptoms (Compas et al., 2013).

Strengths

The present study has several strengths. First, the study examines symptoms of anxiety and depression separately in both parents and youth. In studies examining the relationship between coping and symptoms in youth, the majority used broad internalizing or mixed anxiety-depression scales. Furthermore, studies of parental psychopathology often examine either only parental anxiety or depression or also use broader measures of combined symptoms of anxiety and depression. Examining these symptoms as separate constructs allows for a clearer understanding of potential transdiagnostic versus specific risk factors.

Second, the study uses multiple informants (i.e., parent and child report) in measures of youth coping and symptoms of anxiety and depression. The use of composite scores of parent and child reports is important in reducing problems associated with shared method variance when only one informant is used to obtain reports on more

than one construct of interest (e.g., single informant reports of both coping and anxiety and depression in children; Achenbach, 2006, 2011).

Finally, the study examines specificity in two ways: unique specificity and differential specificity. Analyses testing unique specificity provide a particularly stringent test of whether or not a mechanism is shared versus non-shared for a given symptom by controlling for the other symptom (i.e., when testing a predictor of anxiety symptoms the analyses control for depressive symptoms and vice versa). Differential analyses provide a second, within-subjects test of these mechanisms of risk that further identify whether a mechanism has a broadband association with these symptoms in youth as well as a differential association (Caron et al., 2006). Rigorous testing of specificity of mechanisms in such highly related constructs is critical, as significance in either test of specificity may have different implications for future research and intervention efforts in youth at-risk for anxiety and depression.

Limitations

The results of this study have a number of limitations. First, the sample was based on parent's depression history—all parents in the sample had to have a history of depression in the participating child's lifetime in order to be eligible. Although parents experienced heightened levels of symptoms of anxiety in this sample, no parents in the sample had a history of symptoms of anxiety only. In future research it will be important to include a sample of parents with a history of anxiety only, depression only, and both anxiety and depression to best test specificity of these symptoms to youth outcomes.

Secondly, the self-report measures for anxiety used in this sample do not differentiate between types of anxiety disorders. It is well documented that symptoms of

social anxiety, panic, and generalized anxiety are highly correlated with symptoms of depression (e.g., Chavira et al. 2004; Kessler et al. 2008; Moffitt et al. 2007; Roy-Byrne et al., 2000). Little research has been conducted to examine specificity in depression and individual anxiety disorders. Therefore, including the full spectrum of anxiety symptoms in these analyses may overshadow ways in which risk factors potentially demonstrate specificity differently across the different anxiety disorders. In addition, the YSR Anxiety Problems scale only consists of 6 items that intend to cover a range of *DSM-IV* anxiety disorders. Tests of validity of the YSR Anxiety Problems and Affective Problems scales have demonstrated only a moderate correlation between the YSR scale and *DSM-IV* anxiety diagnoses, whereas the YSR Affective problems scale has shown stronger relation to depressive disorder diagnoses (Ferdinand, 2008).

Additionally, it should be noted that the RSQ probes for ways in which youth cope with parental depression, an uncontrollable source of stress in their lives. Secondary control coping on the RSQ includes strategies that are most useful in stressful situations that are uncontrollable, and therefore secondary control coping may show stronger associations with uncontrollable stressors (e.g., depression). Additional tests of the specificity of secondary control coping as it relates to symptoms of anxiety and depression in controllable stressful situations are needed to strengthen these findings.

Finally, the present study examined cross-sectional relations among parental symptoms of anxiety and depression, youth coping, and youth symptoms of anxiety and depression. Therefore, causality cannot be inferred from these analyses. In order to better understand the relationship between mechanism of risk and symptoms in youth, prospective studies across childhood and adolescence into adulthood will be important.

Future Directions

Several steps can be taken to extend the findings from the present study in future research. With strong evidence supporting that symptoms of anxiety and depression are highly related yet distinct constructs, future work should focus on the use of stringent tests of specificity to identify those mechanisms that are truly transdiagnostic versus specific to these symptoms. Studies have identified a large number of potential shared and non-shared risk factors for these symptoms in addition to parental psychopathology and youth coping (e.g., parenting, negative cognitive style, temperament), which need more exploration using specificity analyses.

Identifying specific and transdiagnostic risk factors for these symptoms in youth also has important implications for prevention and treatment. For example, findings from this study support the utility of both teaching coping skills (i.e., primary and secondary control coping) to youth and targeting parental depressive symptoms to prevent depression in children of depressed parents. Recently, the field has moved toward the development of promising transdiagnostic treatments for anxiety and depression in children and adolescents (e.g., Allen et al., 2012; Craske et al., 2012; Ehrenreich-May et al., 2012; Weersing et al., 2008). Transdiagnostic treatment protocols may offer a number of benefits over disorder-specific approaches, including the potential to better address comorbidity in children and adolescents as well as a consolidation of resources for clinicians in real world settings. While trandiagnostic interventions aim to be effective for disorder A *and* B as well as disorder A *or* B, the field must use caution when combining intervention for symptoms of anxiety and depression. Certainly, these symptoms show high rates of co-occurrence and shared mechanisms of risk. However, it is important to

also recognize that symptoms of anxiety and depression in youth also have non-shared factors that may be important for successful intervention.

In summary, the current study found support for both transdiagnostic and specific risk factors for symptoms of anxiety and depression in youth. Secondary control coping acted as a transdiagnostic risk factor, while primary control coping and parental depressive symptoms were specific predictors of depressive symptoms only in youth. Analyses align with previous research indicating that symptoms of anxiety and depression have both shared and non-shared components. Findings from this study inform the conceptualization of symptoms of anxiety and depression in childhood and adolescence and hold important implications for intervention research.

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Table 1

Means and Standard Deviations of Parent and Child Symptom and Coping Measures.

Measure	Mean	Standard Deviation
Parental Symptoms		
Beck Depression Inventory-II (BDI-II)	19.23	12.58
Beck Anxiety Inventory (BAI)	12.03	10.36
Child Symptoms		
YSR Affective Problems Scale	56.54	7.39
YSR Anxiety Problems Scale	55.36	6.98
CBCL Affective Problems Scale	60.43	8.04
CBCL Anxiety Problems Scale	58.22	7.76
Coping		
Child Self-Report Primary Control Coping (RSQ)	.18	.04
Child Self-Report Secondary Control Coping (RSQ)	.24	.04
Child Self-Report Disengagement Coping (RSQ)	.20	.03
Parent Report Primary Control Coping (RSQ)	.17	.04
Parent Report Secondary Control Coping (RSQ)	.21	.05
Parent Report Disengagement Coping (RSQ)	.20	.03

Note. YSR = Youth Self-Report. CBCL = Child Behavior Checklist.

Table 2

Bivariate Correlations Among Parent and Child Symptoms of Anxiety and Depression and Child Coping.

	BDI-II	BAI	Composite DSM Affective	Composite DSM Anxiety	Composite RSQ Primary	Composite RSQ Secondary	Composite RSQ Disengagement
BDI-II	---						
BAI	.58**	---					
Composite DSM Affective	.36**	.24**	---				
Composite DSM Anxiety	.18*	.16*	.62**	---			
Composite RSQ Primary	-.30**	-.15*	-.41*	-.20**	---		
Composite RSQ Secondary	-.11	-.09	-.53**	-.44**	.33**	---	
Composite RSQ Disengagement	.24**	.04	.20**	.03	-.71**	-.23**	---

Note. Affective and anxiety symptoms were measured by a composite of the CBCL and YSR scales. BDI = Beck Depression Inventory. BAI = Beck Anxiety Inventory. RSQ = Responses to Stress Questionnaire.

$p \leq .05^*, p \leq .01^{**}$

Table 3

Summary of Unique Specificity Analyses Predicting Child Depressive Symptoms.

Variable	β	*t*-value	R^2 Change	Total R^2
		DV: Child Affective Problems		
Step 1			.13***	.13***
Parental Depressive Symptoms	.37***	5.01		
Step 2			.00	.12***
Parental Depressive Symptoms	.35***	3.79		
Parental Anxiety Symptoms	.02	.20		
Step 3			.10***	.22***
Parental Depressive Symptoms	.26**	2.87		
Parental Anxiety Symptoms	.02	.24		
Child Primary Control Coping	-.32***	-4.48		
Step 4			.16***	.37***
Parental Depressive Symptoms	.25**	3.03		
Parental Anxiety Symptoms	-.02	.21		
Child Primary Control Coping	-.19**	-2.72		
Child Secondary Control Coping	-.42***	-6.35		
Step 5			.02*	.39***
Parental Depressive Symptoms	.27**	3.34		
Parental Anxiety Symptoms	-.02	-.20		
Child Primary Control Coping	-.34***	-3.70		
Child Secondary Control Coping	-.42***	-6.49		
Child Disengagement Coping	-.22*	-2.47		

Step 6			.15***	.54***
Parental Depressive Symptoms	.23**	3.28		
Parental Anxiety Symptoms	-.04	-.54		
Child Primary Control Coping	-.26**	-3.18		
Child Secondary Control Coping	-.24***	-3.84		
Child Disengagement Coping	-.12	-1.51		
Child Anxiety Problems	.44***	7.25		

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

Table 4

Summary of Unique Specificity Analyses Predicting Child Anxiety Symptoms.

Variable	β	t-value	R^2 Change	Total R^2
		DV: Child Anxiety Problems		
Step 1			.03*	.03*
Parental Depressive Symptoms	.18*	2.30		
Step 2			.00	.02*
Parental Depressive Symptoms	.12	1.26		
Parental Anxiety Symptoms	.09	.87		
Step 3			.03*	.04*
Parental Depressive Symptoms	.08	.77		
Parental Anxiety Symptoms	.09	.89		
Child Primary Control Coping	-.16*	-2.05		
Step 4			.15	.19***
Parental Depressive Symptoms	.06	.69		
Parental Anxiety Symptoms	.08	.92		
Child Primary Control Coping	-.03	-.35		
Child Secondary Control Coping	-.42***	-5.55		
Step 5			.03*	.21***
Parental Depressive Symptoms	.09	.96		
Parental Anxiety Symptoms	.05	.53		
Child Primary Control Coping	-.19	-.1.83		
Child Secondary Control Coping	-.42***	-5.66		
Child Disengagement Coping	-.23*	-2.29		

Step 6			.19***	.41***
Parental Depressive Symptoms	-.07	-.79		
Parental Anxiety Symptoms	.06	.73		
Child Primary Control Coping	.00	.03		
Child Secondary Control Coping	-.18*	-2.48		
Child Disengagement Coping	-.11	-1.91		
Child Affective Problems	.57***	7.25		

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

Table 5

Summary of Differential Specificity Analyses Predicting Child Anxiety and Affective

Problems Difference Scores.

	DV: Difference Score			
Variable	β	*t*-value	R^2 Change	Total R^2
Step 1			.04**	.04**
Parental Depressive	.21*	2.73		
Step 2			.00	.04*
Parental Depressive	.26*	2.63		
Parental Anxiety	-.08	-.80		
Step 3			.03*	.06**
Parental Depressive	.21*	2.08		
Parental Anxiety	-.08	-.80		
Child Primary Control Coping	-.18*	-2.24		
Step 4			.00	.05*
Parental Depressive	.21*	2.07		
Parental Anxiety	-.08	-.80		
Child Primary Control Coping	-.18*	-2.15		
Child Secondary Control Coping	.01	.10		
Step 5			.00	.05*
Parental Depressive	.21*	2.03		
Parental Anxiety	-.07	-.75		
Child Primary Control Coping	-.17	-.1.44		
Child Secondary Control Coping	.01	.11		

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Child Disengagement Coping   .02   .18