SUICIDAL IDEATION IN ANXIETY-DISORDERED YOUTH:
IDENTIFYING PREDICTORS OF RISK

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Kelly O’Neil Rodriguez
Suicidal Ideation in Anxiety-Disordered Youth: Identifying Predictors of Risk
Kelly O’Neil Rodriguez
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Philip C. Kendall, Ph.D.

ABSTRACT

Evidence is mixed regarding an independent association between anxiety and suicidality. Beyond associations with demographic factors and depression, do anxiety disorders increase risk for suicidality in youth? Given that not all anxiety-disordered youth experience suicidal ideation, potential predictors of risk also require investigation. The present study examined (a) the independent relationship between anxiety and suicidal ideation and (b) comorbid depressive disorders, emotion dysregulation, and distress intolerance as predictors of risk for suicidal ideation in a sample of anxiety-disordered youth aged 7-17 (N = 86, M = 11.5). Youth and parents reported on suicidality, comorbid depressive disorders, emotion dysregulation, and distress intolerance. Distress tolerance was further measured by a computerized behavioral task. Results supported an independent relationship between anxiety symptomatology and youth-reported suicidal ideation, controlling for depressive symptoms. Youth self-report of emotion dysregulation and distress intolerance predicted higher levels of suicidal ideation in univariate analyses. In a multivariate analysis including all significant predictors, only anxiety symptomatology uniquely predicted suicidal ideation. Results are discussed in terms of implications for assessment and treatment in anxiety-disordered youth. Suggestions for future research investigating the relationship between anxiety and suicidal ideation in youth are offered.
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Anxiety disorders and suicidality (ideation, plans, attempts, and completed suicide) are both major public health issues in youth: anxiety disorders are among the most common childhood psychological disorders (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003) and suicide is among the leading causes of death in children and adolescents (Heron, 2007). There is ongoing debate regarding an independent association between anxiety and suicidality. Beyond associations with demographic factors and depression, do anxiety disorders increase risk for suicidality in youth?

Evidence from epidemiological and community studies is mixed regarding an independent association between anxiety disorders and suicidality in youth, with some studies supporting an independent association beyond demographic factors and depression (e.g., Boden, Fergusson, & Horwood, 2007; Gould et al., 1998) and the findings of other studies failing to support an independent relationship (e.g., Esposito & Clum, 2002; Foley, Goldston, Costello, & Angold, 2006). The source of the sample studied may be important. Findings from several studies of hospitalized adolescents demonstrate support for an independent association between anxiety and suicidality (Ghaziuddin, King, Naylor, & Ghaziuddin, 2000; Goldston et al., 2009; Pinto & Whisman, 1996). However, other findings from treatment-referred samples do not support an independent relationship between anxiety and suicidality (Greene, Chorpita, & Austin, 2009; Strauss et al., 2000). Findings from the limited number of studies of suicidality in samples of anxiety-disordered youth seeking outpatient treatment for their anxiety support an independent association between anxiety and suicidal ideation beyond depression and various demographic and clinical factors (Carter, Silverman, Allen, &
Ham, 2008; O’Neil, Puleo, Benjamin, Podell, & Kendall, 2012) and indicate that rates of suicidal ideation in treatment-seeking anxious youth are as high as 41% (O’Neil et al., 2012.) However, most investigations of suicidality in anxiety-disordered youth are limited by reliance on a single-item measure of suicidal ideation. Thus, the relationship between anxiety disorders and suicidality in treatment-seeking youth warrants further exploration in studies using comprehensive and continuous measures of suicidality.

Research regarding the relationship between anxiety and suicidality in youth needs to examine possible explanations for the discrepant findings to date. Sample differences may contribute to the inconsistency in findings; for example, there is variability in anxiety severity and the treatment setting across studies, ranging from community samples to psychiatrically hospitalized youth. The relationship between anxiety and suicidality may also vary by subtype of anxiety, explaining some of the inconsistent findings to date. For example, several studies that failed to find support for an independent association between anxiety and suicidality (e.g., Esposito & Clum, 2002; Greene et al., 2009) examined this relationship using only generalized anxiety severity or symptomatology, whereas many studies that support the association utilized the range of anxiety disorders or broader anxiety symptom measures (Carter et al., 2008; Ghaziuddin, et al., 2000; Gould et al., 1998, O’Neil et al., 2012). The possibility that specific anxiety disorders have different relationships to suicidal ideation warrants investigation.

Another possible explanation for the discrepant findings may be that anxiety has different relationships with the specific components of the broad spectrum of suicidality (e.g., suicidal ideation versus suicide attempts) and previous research regarding anxiety and suicidality has not always considered these components separately. The Interpersonal
The Theory of Suicide (Van Orden, Witte, Cukrowicz, Braithwaite, Selby, & Joiner, 2010) posits that the desire to complete suicide and the actual capability to engage in suicidal behavior are separate components of suicidality and that these components have distinct risk factors. Specifically, the theory posits that passive suicidal ideation is caused by the interpersonal constructs of thwarted belongingness and perceived burdensomeness, and that suicidal desire is caused by the additional presence of hopelessness (Van Orden et al., 2010). The acquired capability for suicide, a distinct component from suicidal desire, is hypothesized to be composed of a lowered fear of death and an increased physical pain tolerance. According to the theory, other risk factors (e.g., psychological disorders) for suicide confer risk for suicidal behavior (which requires both suicidal desire and the capability for suicide) indirectly by increasing the constructs of thwarted belongingness, perceived burdensomeness, hopelessness, lowered feared of death, or increased physical pain tolerance (Van Orden et al., 2010). Given the inconsistent findings regarding anxiety and general suicidality, perhaps anxiety disorders are specifically predictive of the suicidal ideation or desire component of suicidality (rather than the capability to engage in suicidal behavior), through their relationship to thwarted belongingness, perceived burdensomeness, or hopelessness. In fact, given the increased fear of death common in several anxiety disorders, anxiety may serve to protect against the acquired capability for suicide. Given this possibility, the present study examines the suicidal ideation component of suicidality specifically.

If psychological disorders confer risk for suicidality indirectly through their relationship with other constructs, this may help explain why, despite high rates of suicidal ideation in anxiety-disordered youth, the vast majority do not endorse suicidal
ideation (O’Neil et al., 2012). Rather, there may be other predictors of suicidal ideation in anxiety-disordered youth, such as emotion dysregulation or distress intolerance. Youth who have greater difficulty modulating and tolerating negative emotions may more likely to think about suicide as a method to escape or find relief from their distress. Both emotion dysregulation and distress intolerance have demonstrated or theorized associations with both anxiety and suicidality in youth.

Emotion regulation has been defined as the extrinsic and intrinsic processes that monitor, evaluate, and modify emotional reactions in terms of intensity and length (Thompson, 1994). Emotion dysregulation has been associated with child psychopathology, generally (Cicchetti, Ackerman, & Izard, 1995; Keenan, 2000), and anxiety and depression, specifically (e.g., Garber, Braafsladt, & Weiss, 1995; Suveg & Zeman, 2004). Findings of studies from community samples of youth support the link between emotion dysregulation and internalizing symptoms (Garber et al., 1995; Silk, Steinberg, & Morris, 2003; Suveg, Hoffman, Zeman, & Thomassin, 2009; Zeman, Shipman, & Suveg, 2002). Anxiety-disordered youth show poorer understanding of hiding emotional expressions and the notion that one can change his/her emotions (Southam-Gerow & Kendall, 2000). These youth also display more dysregulation in their expression of worry, sadness, and anger and less adaptive emotion coping than youth without anxiety disorders (Suveg & Zeman, 2004).

Evidence indicates that difficulties in emotion regulation are associated with suicidality in youth. Emotion dysregulation predicted suicidality (ideation, plans, and attempts) in youth with major depressive disorder (Tamas et al., 2007) and was related to suicidal behavior among hospitalized adolescents (Zlotnick, Donaldson, Spirito, &
Pearlstein, 1997). The demonstrated relationships to both anxiety and suicidality encourage the investigation of emotion dysregulation as a predictor of suicidal ideation in anxiety-disordered youth.

Distress tolerance can be defined as the ability to experience and withstand emotional distress (Simons & Gaher, 2005). Although distress tolerance has not been frequently studied in anxiety-disordered youth, low distress tolerance was related to internalizing symptoms for females in a sample of children recruited from the community (Daughters et al., 2009). In young adult samples, low distress tolerance has been associated with anxiety symptoms (Keough, Riccardi, Timpano, Mitchell, & Schmidt, 2010), worry (Huang, Szabo, & Han, 2009), hoarding (Timpano, Buckner, Richey, Murphy, & Schmidt, 2009), and depression (Buckner, Keough, & Schmidt, 2007; Ellis, Fischer, & Beevers, 2010).

There is little research available regarding the relationship between distress tolerance and suicidality, despite the frequent theoretical connection made between distress tolerance and suicidality or self-harm behavior (e.g., Klonsky, 2007; Linehan, 1993). However, there is evidence that adolescent self-injurers show lower distress tolerance than non-injurers (Nock & Mendes, 2008) and that low distress tolerance is correlated with suicidal ideation in young adults (Anestis, Bagge, Tulle, & Joiner, 2011).

The evidence linking emotion dysregulation and distress intolerance to both anxiety and suicidality supports the notion that they may be predictors of suicidal ideation in anxiety-disordered youth. As with anxiety, emotion dysregulation and distress intolerance may increase perceived burdensomeness, thwarted belongingness, and hopelessness which lead to suicidal ideation and desire specifically. Although these
relationships have not been examined in anxiety-disordered youth, there is some evidence suggestive of such a relationship in young adults (Anestis et al., 2011).

The present study examined (a) the independent relationship between anxiety and suicidal ideation among treatment-seeking youth, controlling for depressive symptoms and demographic factors and (b) comorbid depressive disorders, emotion dysregulation, and distress intolerance as potential predictors of suicidal ideation in anxiety-disordered youth. This study builds upon prior research by examining suicidal ideation in treatment-seeking youth with principal anxiety disorders with a continuous measure and multiple informants. Comorbid depressive disorders, emotion dysregulation, and distress intolerance were examined as potential predictors of suicidal ideation in anxiety-disordered youth using youth-report and parent-report as well as a behavioral indicator of distress tolerance.

Given the lack of prior research examining suicidality in anxiety-disordered youth using continuous measures, no a priori hypotheses were made regarding the prevalence and severity of suicidal ideation and behavior. However, it was hypothesized that more severe anxiety symptomatology would predict higher levels of suicidal ideation, controlling for age, gender, and depressive symptomatology. It was also hypothesized that comorbid depressive disorders, greater emotion dysregulation, and lower distress tolerance would predict higher levels of suicidal ideation in anxiety-disordered youth. A secondary hypothesis was that comorbid depressive disorders, emotion dysregulation, and distress tolerance will each be uniquely associated with suicidal ideation, controlling for anxiety symptomatology and each of the other factors. Given the lack of previous
research on these factors, no a priori hypotheses were made regarding the relative contribution of each factor in predicting suicidal ideation.

Method

Participants

Participants were 86 youth referred for outpatient treatment from multiple sources, including school guidance counselors, pediatricians, and parents. Youth who were referred to the Child and Adolescent Anxiety Disorders Clinic (CAADC) of Temple University regarding concerns about anxiety were invited to participate in the study. Youth were included in the study if they (a) were aged 7-17 years at the time of the assessment, (b) met DSM-IV diagnostic criteria for an anxiety disorder (Separation Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), Social Phobia (SoP), Specific Phobia (SP), Obsessive Compulsive Disorder (OCD), Panic Disorder (PD), or Anxiety Disorder- Not Otherwise Specified (AD-NOS), and (c) read/spoke English and had at least one English-speaking parent. Youth were excluded from the study if they (a) were diagnosed with a principal disorder other than an anxiety disorder or (b) had an IQ < 80. Youth were not excluded on the basis of non-principal comorbidities in order to increase external validity of the study.

Participants were 86 youth aged 7-17 (M = 11.50, SD = 3.09) and their parents (82 mothers and 4 fathers). Of the 86 participating youth, 52.3% were male; 84.9% were Caucasian, 4.7% were Hispanic, 3.5% were African-American, 3.5% were Asian-American, and 3.5% declined to self-identify race/ethnicity. Total household income was reported as $0-19,999 (8.8%), $20,000-39,999 (10.1%), $40,000-59,999 (16.3%), $60,000-79,999 (20.0%), and over $80,000 (45.0%). Principal diagnoses were as follows: 39.5% met criteria for a principal diagnosis of GAD, 27.9% for SocP, 12.8% for
SP, 11.6% for SAD, 3.5% for OCD, 3.5% for PD, and 1.2% for AD-NOS. Diagnoses were based on structured interviews administered separately to youth and their parents. Composite diagnoses were determined using the “or” rule: if either parent(s) or child endorsed criteria the clinician deemed consistent with a diagnosis (i.e., warranting a clinical severity rating (CSR) of 4 or greater on the Anxiety Disorders Interview Schedule for Children (ADIS-IV-C/P), the diagnosis was assigned. The diagnosis with the highest composite CSR rating was considered to be the principal diagnosis. Of the 86 anxiety-disordered youth, 69 (80.2%) met criteria for a comorbid anxiety disorder, 13 (15.1%) met criteria for a current depressive disorder (MDD or dysthymic disorder), 20 (23.3%) met criteria for attention deficit hyperactivity disorder (ADHD), and 7 (8.1%) met criteria for oppositional defiant disorder (ODD).

**Measures**

Assessment instruments included a semi-structured diagnostic interview, self- and parent-report, and a behavioral measure of distress tolerance. The ADIS-IV-C/P was used to assess for anxiety disorders as well as comorbid conditions. Participants and their parents completed measures of anxious and depressive symptoms, emotion regulation, distress tolerance, and suicidality. Participants completed a computerized behavioral task to assess distress tolerance and a measure of negative affect before and after the task (manipulation check).

**Clinician Administered Measures**

**Anxiety Disorders Interview Schedule for Children (ADIS-IV-C/P; Silverman & Albano, 1996).** The ADIS-IV-C/P is a semi-structured interview for diagnosing DSM-IV anxiety disorders in youth. The ADIS-IV-C/P can also be used to
assess comorbid conditions, including depressive disorders and externalizing disorders. It has been found to have excellent test-retest reliability (Silverman, Saavedra, & Pina, 2001). Good to excellent inter-rater reliability has been reported for the ADIS-IV-C/P for both anxiety disorders and comorbid conditions such as depressive disorders and externalizing disorders (Lyneham, Abbott, & Rapee, 2007). There is also support for the concurrent validity of the ADIS-IV-C/P (Wood, Piacentini, Bergman, McCracken, & Barrios, 2002). Diagnosticians provide a Clinical Severity Rating (CSR) on a 9-point scale (0-8) with a minimum rating of 4 required for a diagnosis. In the present study, the ADIS-IV-C/P was administered separately to parents and child by advanced graduate students trained to reliability (Cohen’s Kappa at or above .85).

Children’s Global Assessment Scale (CGAS; Shaffer et al., 1983). The CGAS is a clinician-rated measure of youth’s level of global functioning. The clinician rates impairment on a 1-100 scale using anchor points and behavioral descriptions. High test-retest reliability, inter-rater reliability, and discriminant validity have been demonstrated for the CGAS (Shaffer et al., 1983).

Child Self-report Measures

Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997). The MASC is a 39-item self-report measure of children’s anxiety symptoms. Children report how they have been thinking, feeling, or acting over the last two weeks on a scale of 0 to 3 (0 = never and 3 = often). The MASC has been found to have excellent internal consistency, test-retest reliability (March et al., 1997) and strong convergent validity with other self-report measures of anxiety.
symptoms. In the present study, internal consistency for the MASC was .91 (Cronbach’s $\alpha$).

**Children’s Depression Inventory (CDI; Kovacs, 1981, 1992).** The CDI is a 27-item self-report measure of children’s depressive symptoms. Each item consists of three statements that are scored in increasing severity from 0 to 2. Total scores range from 0 to 54. Internal consistency and moderate test retest reliability have been reported (Saylor, Finch, Spirito, & Bennett, 1984). The CDI has been found to have good predictive and discriminant validity as it predicts depressive disorders and differentiates depressive disorders from other disorders (Timbremont, Braet, & Dreessen, 2004). In the present study, internal consistency for the CDI was .81 (Cronbach’s $\alpha$).

**Suicidal Ideation Questionnaire- Junior (SIQ-JR; Reynolds, 1988).** The SIQ-JR is a 15-item self-report measure of youth’s suicidal ideation. Youth rank each statement on a scale of 0 to 6 ($0= I\ never\ had\ this\ thought$ and $6= everyday$). Scores from each item are summed to create a total score which reflects the overall severity of suicidal ideation. The SIQ-JR has excellent test-retest reliability (Reynolds & Mazza, 1999), internal consistency (Reynolds, 1988; Reynolds & Mazza, 1999), and strong convergent validity with other measures of suicidality and suicide attempts (Reynolds, 1992; Reynolds & Mazza, 1999). Normative data are available for the SIQ-JR. Though the SIQ-JR was developed for use with early adolescents, it has been used successfully with younger children (e.g., Greene et al., 2009; Reynolds & Mazza, 1999). In the present study, internal consistency for the SIQ-JR was .87 (Cronbach’s $\alpha$).

**Children’s Emotion Management Scales (CEMS; Zeman, Shipman, & Penza-Clyve, 2001; Zeman, Cassano, Suveg, & Shipman, 2010).** The CEMS scales assess
children’s self-report of sadness, anger, and worry emotion regulation. Youth rank the frequency of their use of various emotion regulation strategies on a scale of 1 to 3 (1= *hardly ever* and 3= *often*). Each emotion scale has three subscales: Inhibition (suppression of emotional expression), Dysregulated Expression (culturally inappropriate expression of negative emotions), and Emotion Regulation Coping (healthy regulation of negative emotions through constructive control). The CEMS have demonstrated acceptable reliability and convergent validity with other measures of emotion regulation (Zeman et al., 2001; Zeman et al., 2010). The Dysregulated Expression subscale for self-report of sadness, anger, and worry emotion regulation was used in the current study. Internal consistency for this subscale was .72 (Cronbach’s α).

**Distress Tolerance Scale (DTS, Simons and Gaher, 2005).** The DTS is a 15-item self-report measure of an individual’s experience of and tolerance for negative emotions (e.g., “Feeling distressed or upset is unbearable to me.”) Although the DTS was developed for use with adults, with the author’s permission (personal communication, 2011), the language of several items was adapted for use with children (e.g., “tolerate” was also defined as “put up with”). Youth rated each statement on a scale from 1 to 5 (1= *Strongly agree* and 5= *Strongly disagree*). High scores on the DTS indicate high distress tolerance. Good internal consistency and reliability have been reported for the DTS, as well as good convergent and discriminant validity with measures of positive and negative affectivity (Simon & Gaher, 2005). In the present study, internal consistency for the DTS youth report was .89 (Cronbach’s α). Youth report on the DTS was significantly negatively related to the CEMS youth report of emotion dysregulation, providing some initial evidence for convergent validity of the adapted measure.
Behavioral Task

**Behavioral Indicator of Resiliency to Distress (BIRD; Lejuez, Daughters, Danielson, & Ruggiero, 2006).** The BIRD is a computerized distress tolerance task based on similar adult tasks. The child uses the computer mouse to quickly respond to visual stimuli. If the child is successful, a point is earned and the computer makes a pleasant sound (bird chirping). If the child is unsuccessful, no point is earned and the computer makes a loud and unpleasant noise. The BIRD has three levels. The first level lasts three minutes and is used to index skill level. The second, more challenging level lasts five minutes. The final level is very challenging and can last up to five minutes. There is an escape option during the entirety of the final level. The participant is told that they can quit the game at any time, but that their prize is dependent on their performance on the task. Distress tolerance is operationalized (on a continuum) as the length of time the child persists on the final level or categorically as whether or not the child quit the final level before the end of the five minutes. Scores on the first two levels can be used to control for the effects of skill on persistence on the final level. The BIRD has been used previously in early adolescent samples and distress tolerance as measured by the BIRD has been found to be associated with internalizing symptoms in a community sample of youth (Daughters et al., 2009).

**Positive and Negative Affectivity Scale for Children (PANAS-C; Laurent et al., 1999).** A 10-item version of the PANAS-C was administered before the first level and after the second level of the BIRD as a manipulation check for change in negative emotion. The PANAS-C is a self-report measure of the degree to which children feel various positive and negative emotions. Children rate items on a scale from 1 to 5 (1=
very slightly or not at all and 5= extremely). There is both a positive (PA) and negative affect (NA) subscale. The PANAS-C has demonstrated strong reliability (Laurent et al., 1999). The PANAS-C has also shown convergent validity through positive correlations of the NA subscale and measures of anxiety and depression and negative correlations of the PA subscale and a measure of depression (Laurent et al., 1999).

Parent-report Measures

Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001). The CBCL is a 112-item parent-completed measure of child behavioral problems and social competencies. Items are rated on a scale of 0 to 2 (0= not true, 1= sometimes true, 2= very true or often true). These ratings generate a T score to compare the child’s functioning to same sex and same age peers. Good validity, internal consistency, and test-retest reliability have been reported for the CBCL (Achenbach & Rescorla, 2001). Two questions on the CBCL assess parent report of their child’s suicidal talk and behavior.

Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). The ERC is a 24-item parent-completed measure of children’s emotion management strategies. Items are rated on a 4-point Likert scale. The ERC has two subscales: Emotion Regulation (appropriate emotional expression and emotional self-awareness), and Lability/Negativity (lability and dysregulated negative affect). Adequate reliability and convergent validity with other measures of emotion regulation have been reported for the ERC (Shields & Cicchetti, 1997). The Lability/Negativity subscale was used in the present study. Internal consistency for this subscale was .79 (Cronbach’s α).

completed a parent-version of the CEMS scales to assess parent report of their child’s sadness, anger, and worry emotion regulation. Internal consistency for the parent-report CEMS in the present study fell slightly below the acceptable range (Cronbach’s $\alpha = .63$). Thus, results with this subscale should be viewed with some caution given the limited internal consistency.

**Distress Tolerance Scale (DTS, Simons and Gaher, 2005).** Parents completed a parent version of the DTS, created for this study with permission from the author (personal communication, 2011). Parents rated their child’s experience of negative emotions (e.g., “My child can tolerate being distressed or upset as well as most children.”) Parents rated each statement on a scale from 1 to 5 ($1 =$ Strongly agree and $5 =$ Strongly disagree). High scores on the DTS indicate high distress tolerance. In the present study, internal consistency for the DTS parent report was .88 (Cronbach’s $\alpha$). Parent report on the DTS was significantly negatively related to parent report of emotion dysregulation on the CEMS, providing some initial evidence for convergent validity of the adapted measure.

**Procedure**

Families who contacted the CAADC were invited to participate after a brief description of the study. All data used for the present study were obtained prior to the onset of treatment. The procedure consisted of a diagnostic interview, youth-report and parent-report forms, and a computerized behavioral task. Prior to participation, parents provided consent and youth provided assent. Diagnostic interviews were administered separately to parents and child by advanced graduate students trained to reliability (Cohen’s Kappa at or above .85). Following the interview, youth and their parent(s)
completed self-report forms. Finally, youth completed the behavioral task of distress tolerance. Youth completed the self-report manipulation check for negative affect before and after the distress tolerance task. Youth were de-briefed following the behavioral task and allowed to choose a small prize for participation.

Youth and parent assessment instruments were reviewed for suicide risk prior to the family’s departure from the clinic. Parents were informed of any suicidality endorsed by their child. Appropriate referrals for treatment were made if the CAADC was not an appropriate treatment provider. A more detailed suicide risk assessment was conducted for children endorsing suicidal intent, plans, or behaviors (rather than ideation).

**Data Analysis Plan**

**Preliminary Analyses.** The prevalence and severity of suicidality among anxiety-disordered youth were examined with descriptive statistics of self-reported suicidal ideation and parent-reported suicidal talk and behavior. ANOVA and t-tests (for categorical factors) and linear regression (for continuous factors) analyses examined the relationships between sociodemographic factors (race/ethnicity, family SES) and clinical characteristics (principal diagnosis, level of global functioning) and suicidal ideation. Any factors that were significantly associated with suicidal ideation in the sample were included as covariates in subsequent analyses.

**Primary Aims: Independent Relationship between Anxiety and Suicidal Ideation.** A hierarchical multiple regression examined the independent relationship between anxiety and suicidal ideation (total score on the SIQ-JR). Depressive symptomatology was entered in Step 1 of the regression to control for its contribution to the association. A logistic regression analysis tested the hypothesis that anxiety
symptomatology predicts presence of suicidal talk and behavior on parent report (operationalized as a score > 0 on parent report items) after controlling for depressive symptomatology.

**Primary Aims: Comorbid Depressive Disorders.** The hypotheses regarding the differences in prevalence and severity of suicidal ideation between anxiety-disordered youth with no comorbid depressive disorder (ANX) and anxiety-disordered youth with comorbid depressive disorders (ANX + DEP) were tested using chi-square and t-test analyses. Two sets of chi-square analyses compared the rates of any self-reported suicidal ideation and parent-reported suicidality among groups (operationalized as a total score > 0 on the SIQ-JR and score > 0 on parent-report items). A t-test examined whether the ANX and ANX + DEP groups differ on severity of suicidal ideation (total score on the SIQ-JR).

**Primary Aims: Emotion Regulation.** The primary hypothesis regarding emotion dysregulation as a predictor of suicidal ideation among anxiety-disordered youth was tested using regression analyses. Linear regression analyses tested whether more severe scores on the self-report and parent-report measures of emotion dysregulation predict higher levels of self-reported suicidal ideation. Logistic regression analyses examined whether more severe scores on the self-report and parent-report measures of emotion dysregulation predict presence of parent-reported suicidality.

**Primary Aims: Distress Tolerance.** The primary hypothesis regarding distress intolerance as a predictor of suicidal ideation among anxiety-disordered youth was tested using regression analyses. Linear regression analyses tested whether lower scores on the self-report and parent-report measures of distress tolerance predict higher levels of self-
reported suicidal ideation. Logistic regression analyses examined whether lower scores on the self-report and parent-report measures of distress tolerance predict presence of parent-reported suicidality. A hierarchical multiple regression analysis tested whether shorter duration of persistence on the behavioral distress tolerance task predicts higher levels of suicidal ideation, after controlling for skill level on the task. A logistic regression analysis tested whether shorter duration of persistence on the distress tolerance task predicts presence of parent-reported suicidality, controlling for skill level on the task. ANCOVA analyses tested whether youth with low and high distress tolerance (operationalized as terminated the task or persisted for the duration of the task) differ on severity of suicidal ideation, controlling for skill level on the task. Chi-square analyses examined whether youth with low and high distress tolerance differ on the presence of parent-reported suicidality.

**Secondary Aims: Unique Contributions.** The secondary hypotheses regarding the unique contributions of comorbid depressive disorders, emotion dysregulation, and distress intolerance in predicting suicidal ideation in anxiety-disordered youth were tested with a hierarchical multiple regression analysis, controlling for anxiety symptomatology. Only the variables significantly correlated with suicidal ideation in the univariate analyses were included in the multiple regression analysis.

**Results**

**Preliminary Analyses**

None of the demographic factors (age, gender, race, or family SES) or clinical characteristics (principal diagnosis, level of global functioning) examined was significantly associated with youth self-report of suicidal ideation either when suicidal ideation was examined continuously or categorically (Table 1). Thus, none of these
factors were included as covariates in subsequent analyses. Higher levels of depressive symptomatology significantly predicted youth self-report of suicidal ideation both when examined continuously, $B = .46, p < .001$, and categorically, $t (84) = 2.51, p = .01$. Thus, depressive symptomatology was included as a covariate in subsequent analyses.

**Rates and Severity of Suicidal Ideation**

With regards to youth self-report of suicidality, scores on the SIQ-JR ranged from 0 to 49 ($M = 5.29, SD = 8.53$). Of the 86 participating youth, 50 youth (58.1%) reported some level of suicidal ideation (a non-zero total score on the SIQ-JR). In contrast, only 9 (10.5%) youth had any level of suicidal talk or behavior according to parent report (a non-zero score on the CBCL suicidality items).

**Relationships among Predictor Variables**

In order to ensure that assumptions of multiple and logistic regression were met, the predictor variables were examined for multicollinearity. Tolerance statistics below .1, VIF statistics above 10, and Pearson’s correlations above .8 may indicate problems with multicollinearity (Fields, 2005). An examination of the Tolerance and VIF statistics and Pearson’s correlations indicated that there was not multicollinearity among predictor variables (Table 2).

**Primary Aim: Independent Relationship between Anxiety and Suicidal Ideation**

Anxiety symptomatology independently predicted youth-reported suicidal ideation, above and beyond the relationship accounted for by depressive symptomatology, $\beta = .42, p < .001$ (Table 3). Anxiety symptomatology was not significantly associated with suicidal talk or behavior on parent report (operationalized as a score > 0 on parent report items) after controlling for depressive symptomatology
Contrary to my hypothesis, anxiety-disordered youth had significantly lower total scores on the SIQ-JR than the normative group ($t(1374) = 3.97, p < .001$). However, when the current sample was restricted to youth in 7th grade and higher, as in the normative group, this difference is no longer statistically significant ($t(1318) = 1.89, p = .06$).

**Primary Aim: Comorbid Depressive Disorders and Suicidal Ideation**

**Youth-reported suicidal ideation.** Anxiety-disordered youth with and without comorbid depressive disorders did not differ in levels of suicidal ideation according to youth self-report or presence of any suicidal ideation according to youth self-report (Table 5).

**Parent-reported suicidal ideation.** Anxiety-disordered youth with and without comorbid depressive disorders did not differ in presence of suicidality according to parent report (Table 5).

**Primary Aim: Emotion Regulation and Suicidal Ideation**

**Youth-reported suicidal ideation.** More severe emotion dysregulation as reported by youth significantly predicted higher levels of youth-reported suicidal ideation, after controlling for depressive symptomatology, $\beta = .29, p = .02$. Parent report of emotion dysregulation was not predictive of youth-reported suicidal ideation according to either the CEMS or the ERC.

**Parent-reported suicidal ideation.** More severe emotion dysregulation as reported by youth did not predict the presence of parent-reported suicidality after controlling for depressive symptomatology. More severe emotion dysregulation as reported by parents on the CEMS did not predict the presence of parent-reported
suicidality after controlling for depressive symptomatology. More severe emotion
dysregulation (lability/negativity) as reported by parents on the ERC did not predict the
presence of parent-reported suicidality after controlling for depressive symptomatology.

**Primary Aim: Distress Tolerance and Suicidal Ideation**

**Behavioral indicator of distress tolerance.** Youth persisted on the BIRD for an
average of 163.4 seconds (SD= 107.5). Of the 75 youth who completed the BIRD task,
66 (76.7%) quit the task before the five minute time limit. However, youth did not report
a significant increase in negative affect during the first two levels of the task as measured
by the PANAS-C, indicating that youth did not find the task psychologically stressful.

**Youth-reported suicidal ideation.** Youth self-report of distress tolerance
significantly predicted youth self-report of suicidal ideation, such that lower levels of
distress tolerance on the DTS predicted higher scores on the SIQ-JR, controlling for
depressive symptomatology, $\beta =-.29, p = .009$. Parent-report of distress tolerance was not
significantly predictive of youth self-report of suicidal ideation. Duration of persistence
on the behavioral distress tolerance task, controlling for skill level on the task, was not
predictive of higher levels of youth-reported suicidal ideation. Similarly, distress
tolerance classification (low or high, operationalized as terminated the task or persisted
for the duration of the task), controlling for skill level on the task, was unrelated to youth-
reported suicidal ideation.

**Parent-reported suicidal ideation.** Youth self-report was not predictive of parent
report of suicidality. Parent report of distress tolerance was also unrelated to parent report
of suicidality. Duration of persistence on the distress tolerance task, controlling for skill
level on the task, was unrelated to presence of parent-reported suicidality. Similarly,
distress tolerance classification (low or high), controlling for skill level on the task, was unrelated to presence of parent-reported suicidality.

**Unique Contributions of Risk for Suicidal Ideation**

In a multivariate analysis comparing all predictors with a significant relationship to youth-reported suicidal ideation in the univariate analyses, only anxiety symptomatology was uniquely predictive of youth self-report of suicidal ideation, $\beta = .36$, $p = .008$. The relationships to suicidal ideation of depressive symptomatology, youth report of emotion dysregulation, and youth report of distress tolerance, were all reduced to nonsignificance in the multivariate analysis (Table 6).

**Discussion**

The present study, unlike previous work, examined the association between anxiety and suicidal ideation with a continuous measure of suicidal ideation and multiple informants regarding suicidality. The findings demonstrated an independent relationship between anxiety symptomatology and youth-reported suicidal ideation in youth, above and beyond the association accounted for by depressive symptoms. This important finding is consistent with the results of the two studies previously conducted in similar samples of anxiety-disordered youth in outpatient clinics (Carter et al., 2008; O’Neil et al., 2012). Apparently, anxiety, not just depression, is associated with suicidality in youth seeking outpatient treatment for their anxiety disorder.

As expected, depressive symptomatology predicted youth-reported and parent-reported suicidal ideation in the present study. However, anxiety-disordered youth with comorbid depressive disorders did not endorse greater levels of suicidal ideation than youth with no comorbid depressive disorder, according to either youth or parent report of
suicidal ideation. Similarly, O’Neil and colleagues (2012) found that the presence of a comorbid depressive disorder did not significantly predict the presence of suicidal ideation. It appears that a current (i.e., past two weeks), continuous measure of depressive symptomatology is a stronger predictor of risk for suicidal ideation in anxiety-disordered youth than is the more long-term, dichotomous presence/absence of a depressive disorder.

The current findings support youth-reported emotion dysregulation and distress intolerance as predictors of risk for youth-report of suicidal ideation in anxiety-disordered youth. These findings are consistent with the relationship between emotion dysregulation and suicidality demonstrated in youth with other psychological disorders (e.g., Tamas et al., 2007; Zlotnick, Donaldson, Spirito, & Pearlstein, 1997) and the relationship between distress intolerance and self-injury in adolescents (Nock & Mendes, 2008) and distress tolerance and suicidal ideation in young adults (Anestis et al., 2011). However, this study provides the first evidence of these factors as predictors of risk for suicidal ideation in anxiety-disordered youth. Furthermore, the findings lend support to the notion that emotion dysregulation may predict the desire component of suicidality, which according to the Interpersonal Theory of Suicide includes the constructs of perceived burdensomeness, thwarted belongingness, and hopelessness. This possibility has been tested in adults (Anestis et al., 2011) but requires exploration in youth.

Only anxiety was uniquely predictive of youth-reported suicidal ideation in a multivariate analysis including youth report of anxiety, depressive symptomatology, emotion dysregulation, and distress tolerance as predictors of suicidal ideation. This finding was contrary to our hypothesis and the limited previous research on these
relationships in a young adult nonclinical sample (e.g., Anestis et al., 2011). It seems that in an anxiety-disordered sample, the severity of the youth’s anxiety is a stronger predictor of risk for suicidal ideation than youth-reported emotion dysregulation or distress intolerance. In disordered youth, it may be their anxiety that contributes most to the youth’s sense of perceived burdensomeness, thwarted belongingness, and hopelessness. However, given the extremely limited research on these relationships, further investigation is required to examine the relationships among anxiety, depression, emotion dysregulation, and distress tolerance in predicting risk for suicidal ideation, in both clinical and nonclinical samples of youth. Specifically, investigations of the relationships among these variables across multiple timepoints are needed to clarify their temporal and risk relationships.

In the present study, 58.1% of anxiety-disordered youth endorsed the presence of suicidal ideation on a continuous measure. While the mean score on the SIQ-JR in the current sample did not significantly differ from that of the normative sample, this relatively high rate of suicidal ideation as compared to that in other studies using single-item measures (e.g., O’Neil et al., 2012) may suggest the importance of asking youth about suicidal ideation using multiple items to capture the full range of suicidal thoughts (e.g., from “I wished I were dead” to “I thought about killing myself,”) and of asking youth about suicidal ideation on multiple occasions. In contrast, only 10.5% of parents reported suicidal talk or behavior for their anxiety-disordered youth. This informant discrepancy is consistent with generally modest levels of cross-informant agreement regarding child psychopathology (Achenbach, McConaughy, & Howell, 1987; De Los Reyes & Kazdin, 2005). However, youth may be particularly reluctant to report on
suicidal thoughts to their parents, underscoring the importance of multi-informant assessment for suicidal ideation.

It is noteworthy that only youth-report of distress tolerance predicted suicidal ideation in the present study, and that youth-report, parent-report, and the behavioral indicator of distress tolerance were not significantly correlated. There are several possible explanations. First, it is perhaps not surprising that youth and parents disagree regarding their report of youth’s level of distress tolerance, given the low level of informant agreement for youth and their parents (Achenbach, McConaughy, & Howell, 1987; De Los Reyes & Kazdin, 2005). Additionally, although the BIRD task has been reported to be successful at increasing psychologically stress in previous studies, the youth in the current study, as evident from the manipulation check, did not report an increase in negative affect, suggesting it was not a behavioral indicator of distress tolerance. Finally, similar measurement discrepancy is reported in the adult distress tolerance literature as self-report and behavioral measures of distress tolerance are not significantly correlated, suggesting the possibility that the two methods may measure separate constructs of sensitivity to distress and the ability to persist in a task when distressed (McHugh et al., 2011). This possibility warrants further investigation in future studies of distress tolerance in youth.

Limitations

Study limitations include the cross-sectional design. Future research should examine the relationship among potential predictors of risk and suicidal ideation in anxiety-disordered youth over multiple timepoints to identify the temporal risk relationships. Future studies may also examine the potential interactions among
predictors of risk for suicidal ideation. The present study examined three potential
predictors of risk for suicidal ideation among anxiety-disordered youth, and other
potential predictors could be examined in further research (e.g., impulsivity, negative life
events).

It is of note that all the significant findings regarding predictors of suicidal
ideation in anxious youth were within-informant (i.e., youth-reported predictors and
youth-reported suicidal ideation). As noted above, informant discrepancy regarding
youth psychopathology may play a role and youth may be the most accurate reporters of
their own suicidal ideation. However, it remains possible that the significant findings in
the present study were due to shared measurement variance. Further research utilizing
multiple informants (child, parent, and clinician) regarding both predictors and suicidal
ideation is required to rule out this possibility.

Implications for Research, Policy, and Practice

Considered in the context of possible explanations for the inconsistent findings
regarding anxiety and suicidality in youth to date, two elements of the present study
design are noteworthy. This study examined the relationship between anxiety and suicidal
ideation in youth using a broad measure of anxiety symptomatology, which appears to fit
with a trend in the literature of support for the independent association between anxiety
and suicidal ideation when a broad rather than specific measure of anxiety is used. Future
studies with sufficient numbers of youth with each specific anxiety disorder could
explore the relationships between specific anxiety disorders and suicidal ideation in
youth.
The present study examined anxiety as it relates specifically to the ideation component of suicidality, given the hypotheses of the Interpersonal Theory of Suicide, which suggests that psychological disorders increase risk for either the desire or acquired capability component of suicidality separately. The independent relationship between anxiety and suicidal ideation found in the present study, contrasted with the lack of suicidal behavior reported in this sample, lends support to the notion that anxiety may be specifically related to suicidal ideation or desire, rather than the acquired capability for suicide. This possibility requires further examination in future research, but may help to explain the data regarding anxiety and suicidality, given that some studies examined suicidal ideation and others suicidal behavior (i.e., attempts, completed suicide.)

The independent relationship between anxiety and suicidal ideation in youth supports the need for assessment of suicidality in anxiety-disordered youth presenting for outpatient treatment, regardless of levels of depressive symptomatology. Suicidality assessment for anxiety-disordered youth may include items from self-report measures of depression (e.g., CDI), self-report measures of suicidality (e.g., SIQ or SIQ-JR), and/or questions from semi-structured interviews (e.g., ADIS-IV-C/P). However, many semi-structured diagnostic interviews used in outpatient clinics, including the gold standard interview for childhood anxiety disorders (the ADIS-IV-C/P), include suicidality queries only within modules on depressive disorders (e.g., major depressive disorder), which also may be subject to discontinue criteria if the youth does not endorse other symptoms of depression. The results of the present study support the recommendation that interview questions regarding suicidality be administered to anxiety-disordered youth regardless of whether they endorse other symptoms of depression.
Given that emotion dysregulation and distress intolerance predicted suicidal ideation in the present study and that current CBT treatments for childhood anxiety disorders (e.g., the *Coping cat program*, Kendall & Hedtke, 2006) do not specifically address emotion regulation or distress tolerance skills, modifications to these treatments could be considered to reduce risk for suicidal ideation. Fortunately, there is initial support for several emotion-focused treatments for anxiety disorders in youth (Ehrenreich et al., 2009; Suveg, Kendall, Comer, & Robin, 2006). Current treatments may also be supplemented to include additional emphasis on distress tolerance skills as a target of treatment, as in dialectical behavior therapy (DBT; Linehan, 1993).
References


*Clinical Psychology: Science and Practice, 7*, 418-434.


*Clinical Psychology Review, 27*, 226-239.


Footnote

1 Given concerns about the non-normal distribution of the SIQ scores, all analyses involving SIQ scores were also conducted using a categorical approach (SIQ score of zero or non-zero) in logistic regression, as well as using a log transformation of the SIQ scores in multiple regression. There were no differences in the significance of any reported findings using these alternate analytic approaches. Thus, multiple regression analyses using non-transformed SIQ scores are presented for ease of interpretation.
Table 1

**Descriptive Information for Study Participants by Suicidal Ideation Status**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Suicidal Ideation Status</th>
<th>Significance Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AD-SI (N=50)</td>
<td>AD-NSI (N=36)</td>
</tr>
<tr>
<td>Child age in years (SD)</td>
<td>11.92 (3.27)</td>
<td>10.90 (2.75)</td>
</tr>
<tr>
<td>Males (%)</td>
<td>30 (60%)</td>
<td>15 (41.6%)</td>
</tr>
<tr>
<td>Race (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>43 (86%)</td>
<td>30 (83.33%)</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>7 (14%)</td>
<td>6 (16.67%)</td>
</tr>
<tr>
<td>Principal Anxiety Diagnosis (%)</td>
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<tr>
<td>GAD</td>
<td>23 (46%)</td>
<td>11 (30.56%)</td>
</tr>
<tr>
<td>SAD</td>
<td>4 (8%)</td>
<td>6 (16.67%)</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>13 (26%)</td>
<td>11 (30.56%)</td>
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<tr>
<td>Specific Phobia</td>
<td>5 (10%)</td>
<td>6 (16.67%)</td>
</tr>
<tr>
<td>Panic Disorder</td>
<td>3 (6%)</td>
<td>0 (0%)</td>
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<tr>
<td>OCD</td>
<td>2 (4%)</td>
<td>1 (2.78%)</td>
</tr>
<tr>
<td>AD-NOS</td>
<td>0 (0%)</td>
<td>1 (2.78%)</td>
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<tr>
<td>CGAS Composite (SD)</td>
<td>53.74 (6.11)</td>
<td>55.08 (6.70)</td>
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<tr>
<td>Principal Disorder CSR (SD)</td>
<td>5.44 (0.93)</td>
<td>5.28 (0.94)</td>
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<tr>
<td>CDI (SD)</td>
<td>10.88 (5.88)</td>
<td>7.44 (6.78)</td>
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*Note. N= 86. AD-SI = Anxiety Disorder with Suicidal Ideation, AD-NSI = Anxiety Disorder without Suicidal Ideation, GAD = Generalized Anxiety Disorder, SAD = Separation Anxiety Disorder, OCD= Obsessive Compulsive Disorder, AD-NOS= Anxiety Disorder, Not Otherwise Specified, CDI = Child Depression Inventory, CGAS = Clinician Global Assessment Scale, CSR = Clinician Severity Rating, *p < .05
Table 2

*Bivariate correlations among predictor variables*

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<th>5</th>
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<td>.49**</td>
<td>.48**</td>
<td>-.04</td>
<td>.09</td>
<td>-.36**</td>
<td>.09</td>
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<td>-.31*</td>
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<td>6. DTS Youth Report</td>
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*Note. MASC= Multidimensional Anxiety Scale for Children, CDI= Children’s Depression Inventory, CEMS= Children’s Emotion Management Scales, ERC= Emotion Regulation Checklist, DTS= Distress Tolerance Scale, BIRD= Behavioral Indicator of Resiliency to Distress.*

* = p <.05, ** p < .01.
Table 3

*Hierarchical Regression Analysis for Anxiety Predicting Self-Reported Suicidal Ideation*

<table>
<thead>
<tr>
<th>Block 1</th>
<th>B</th>
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<th>$R^2_{change}$</th>
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<tr>
<td>CDI</td>
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<td>0.46***</td>
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<th>Block 2</th>
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<td>MASC</td>
<td>0.19</td>
<td>0.05</td>
<td>0.42***</td>
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*Note. N= 86. CDI= Children’s Depression Inventory. MASC= Multidimensional Anxiety Scale for Children.* *p < .05 , ***p <.001.
Table 4

*Logistic Regression Analysis for Anxiety Predicting Parent-Reported Suicidal Ideation*

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<th>Exp (B)</th>
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<tr>
<td></td>
<td><strong>MASC</strong></td>
<td>0.01</td>
<td>0.02</td>
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*Note.* N= 86. CDI= Children’s Depression Inventory. MASC = Multidimensional Anxiety Scale for Children.* p < .05. Nagelkerke R² = .14
Table 5

*Suicidal Ideation by Comorbid Depressive Disorder Status*

<table>
<thead>
<tr>
<th>Variable</th>
<th>AD-DD (n=13)</th>
<th>AD-NDD (n=73)</th>
<th>Significance Test</th>
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<tr>
<td>SIQ-JR (SD)</td>
<td>4.92 (6.40)</td>
<td>5.35 (8.89)</td>
<td>$t(84)= 0.17, p = .87$</td>
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<tr>
<td>SIQ-JR Presence (%)</td>
<td>9 (69%)</td>
<td>41 (56.16%)</td>
<td>$\chi^2 (1, N = 86) = 0.77, p = .38$</td>
</tr>
<tr>
<td>CBCL- Presence (%)</td>
<td>2 (15.38%)</td>
<td>7 (9.59%)</td>
<td>Fisher’s exact $p = .62$</td>
</tr>
</tbody>
</table>

*Note. N= 86. AD-DD = Anxiety Disorder with Comorbid Depressive Disorder, AD-ND = Anxiety Disorder without Comorbid Depressive Disorder, SIQ-JR = Suicidal Ideation Questionnaire- Junior Version, CBCL = Children’s Behavior Checklist.*
Table 6

Hierarchical Multiple Regression Analysis for Predictors of Self-Reported Suicidal Ideation

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Block 2

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<td>DTS Youth Report</td>
<td>-1.43</td>
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Note. n= 64. CDI= Children’s Depression Inventory. MASC= Multidimensional Anxiety Scale for Children, CEMS= Children’s Emotion Management Scales, DTS= Distress Tolerance Scale. ** p < .01, *** p < .001.
CHAPTER TWO
LITERATURE REVIEW

Anxiety disorders and suicidality (ideation, plans, attempts, and completed suicide) are both serious public health problems in youth. Anxiety disorders are among the most common childhood psychological disorders (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Suicide is among the leading causes of death in children and adolescents (Heron, 2007). There is ongoing debate regarding an independent association between anxiety and suicidality. Beyond associations with demographic factors and depression, do anxiety disorders increase risk for suicidality in youth? Much of the evidence for an independent association between anxiety and suicidality comes from studies of community-based samples of youth (e.g., Boden, Fergusson, & Horwood, 2007; Gould et al., 1998; Nelson et al., 2000; Wunderlich, Bronisch, Wittchen, 1998), although the findings of some studies fail to support an association after accounting for demographic factors and depression (Esposito & Clum, 2002; Foley, Goldston, Costello, & Angold, 2006). Findings from the limited research on suicidality in samples of anxiety-disordered youth seeking outpatient treatment also suggest that 41% of anxiety-disordered youth endorse suicidal ideation using single-item measures (O’Neil, Puleo, Benjamin, Podell, & Kendall, 2012). Together, these findings suggest that the relationship between anxiety disorders and suicidality in youth warrants further exploration in additional empirical studies using continuous measures of suicidality.

Additionally, the existing evidence points to the need for clinical attention to suicidality in anxiety-disordered youth and the potential need for modifications to current treatments for childhood anxiety disorders to address co-occurring suicidality.
However, despite the evidence for an independent association between anxiety disorders and suicidality in youth, it is also clear that the majority of anxiety-disordered youth do not experience suicidality (Carter et al., 2008; O’Neil et al., 2012). Thus, additional research is necessary to examine potential predictors of suicidality in anxiety-disordered youth in order to identify the anxious youth most at risk for suicidality and to inform potential treatment modifications to address co-occurring suicidality and reduce risk for later suicidality. There are numerous potential predictors of suicidality in anxiety-disordered youth. However, the focus of this review is on factors with demonstrated or theorized relationships to both anxiety and suicidality in youth, as well as the potential to inform modifications to treatment for childhood anxiety disorders. The current review considers three potential predictors of suicidality within anxiety-disordered youth: comorbid depressive disorders, emotion dysregulation, and distress intolerance. First, the empirical evidence regarding an independent association between anxiety and suicidality (beyond depression and demographic factors) in adults and youth is reviewed. Next, each potential predictor of suicidality in anxiety-disordered youth is discussed in terms of (a) the evidence for an association with anxiety and (b) the evidence for an association with suicidality. Finally, future directions for empirical research investigating (a) the independent association between anxiety and suicidality in youth and (b) the predictors of suicidality in anxiety-disordered youth are outlined.

**Anxiety Disorders in Youth**

**Prevalence and Impairment**
Anxiety disorders, including generalized anxiety disorder (GAD), social phobia (SoP), separation anxiety disorder (SAD), specific phobia (SP), obsessive compulsive disorder (OCD), and posttraumatic stress disorder (PTSD), are among the most common childhood psychological disorders with prevalence rates of 10%-20% in epidemiological samples (Costello et al., 2003) and primary care settings (Chavira, Stein, Bailey, & Stein, 2004). Childhood anxiety disorders are associated with impairment in multiple domains, including academic achievement and school functioning (van Ameringen, Mancini, & Favolden, 2003; Mychailyszyn, Mendez, & Kendall, 2010) and peer acceptance and social functioning (Greco & Morris, 2005; Verduin & Kendall, 2008). Childhood anxiety disorders do not remit with the passage of time (Pine, Cohen, Gurley, Brook, & Ma, 1998). If the anxiety is left untreated, anxiety-disordered youth are at increased risk for depression and substance use disorders (Woodward & Fergusson, 2001).

**Suicidality in Youth**

**Prevalence and Risk Factors**

In 2004, suicide was the third leading cause of death among 10-14 year-olds and 15-19 year-olds in the United States (Heron, 2007). Although rates of completed suicide are low among children and adolescents, research suggests that youth think about, plan, and attempt suicide at higher rates. Data from the Youth Risk Behavior Survey conducted by the Centers for Disease Control and Prevention (CDC) indicate that in 2005, 16.9% of high school students seriously considered suicide, 13.0% made a specific plan, and 8.4% attempted suicide (Eaton et al., 2006). There is evidence that pre-adolescent children also think about, plan, and attempt suicide. Results from an epidemiological study of youth
ages 9-16 indicate a 3-month prevalence of 0.99% for wanting to die, 0.69% for suicidal ideation, 0.31% for suicidal plans, and 0.25% for suicide attempts (Foley et al., 2006).

Major risk factors for suicidality in youth include psychopathology (Foley et al., 2006; Goldston et al., 2009; Shaffer et al., 1996), family history of suicide and psychopathology (Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Gould, Fischer, Parides, Flory & Shaffer, 1996; King et al., 2001), and stressful life events (Brent et al., 1993a; Fergusson & Lynskey, 1995; Gould et al., 1996, King et al., 2001). Depressive disorders, substance use disorders, and disruptive behavior disorders are all significant risk factors for suicidality (Gould, Greenberg, Velting, & Shaffer, 2003). Major depressive disorder (MDD) and dysthymic disorder (DD) are the diagnoses most consistently associated with increased risk of suicidality (Brent et al., 1993b; Brent et al., 1999, Gould et al., 1998, Shaffer et al., 1996). MDD is the most significant diagnostic risk factor for suicidality, as it is associated with increased risk for ideation or attempts (OR= 9.9; Gould et al., 1998) as well as completed suicide (OR= 9.0; Brent et al., 1999). There is evidence that MDD is particularly risky when comorbid with an anxiety or disruptive disorder (Foley et al., 2006).

**Spectrum of Suicidality**

The spectrum of suicidality in youth includes suicidal ideation, plans, attempts, and completed suicide (Lewinsohn, Rohde, & Seeley, 1996). Suicidal ideation generally precedes suicide attempt (Lewinsohn et al., 1996) and increases risk for later suicide attempt (Lewinsohn et al., 1996; Reinhertz et al., 1995) even when “mild and relatively infrequent” (Lewinsohn et al., 1996). There is a higher rate of suicidal ideation compared
to suicidal behavior in both community samples of adolescents (Eaton et al., 2006; Foley et al., 2006, Lewinsohn et al., 1996) and treatment-seeking samples of anxiety-disordered youth (O’Neil et al., 2012). Both the temporal and risk relationship between suicidal ideation and suicide attempts and the relatively greater prevalence of suicidal ideation in youth point to suicidal ideation as an appropriate target for detection and intervention in treatment-seeking youth. Furthermore, suicidal ideation in adolescence predicts suicide ideation, suicide attempts, psychopathology, problem behaviors, and poorer overall functioning in adulthood (Reinhertz, Tanner, Berger, Beardslee, & Fitzmaurice, 2006). The increased risk for suicide attempts and another negative outcomes associated with suicidal ideation in youth suggests that suicidal ideation in youth warrants research and clinical attention, even in the absence of suicidal plans or attempts.

**Anxiety Disorders and Suicidality in Adults**

There has been considerable controversy in the literature regarding whether anxiety disorders independently predict suicidality in adulthood, above and beyond the risk accounted for by demographic factors or other psychological disorders, with the findings of some studies supporting an independent association (e.g., Cougle, Keough, Riccardi, & Sachs-Ericsson, 2009; Goodwin & Roy-Byrne, 2006; Sareen et al., 2005; Weissman, Klerman, Markowitz, & Ouellette, 1989) and other findings not supporting this relationship (e.g., Hornig & McNally, 1995, Warshaw, Dolan, & Keller, 2000; see Table 1). The studies with findings supporting an independent association and those failing to support an independent association are reviewed below.

**Evidence for an Independent Association**
In one of the initial reports on this topic, Weissman and colleagues (1989) examined the relationship between panic disorder (PD) and suicidality. Participants were 18,011 adults aged 18 years and older surveyed for the Epidemiologic Catchment Area (ECA) study. Results indicated that panic attacks and PD increased risk for suicidal ideation and attempts, controlling for comorbid major depression and substance use disorders (OR = 2.62). Recently, Goodwin and Roy-Byrne (2006) examined the relationship between panic attacks and PD and suicidality using data from the National Comorbidity Survey (NCS), which included 5,877 participants aged 15-54 years. Both past-year and lifetime panic attacks and PD were associated with greater suicidal ideation after controlling for comorbid depression, comorbid substance use disorder, and early trauma (past year PD OR=2.50; lifetime PD OR=1.50). There were no significant associations between panic attacks and suicide attempts after controlling for comorbid depression and substance use disorders. Past-year and lifetime PD were no longer associated with lifetime suicide attempts after controlling for comorbidity. However, past-year and lifetime PD were associated with past-year suicide attempts even after controlling for comorbid depression, comorbid substance use disorders, and demographic factors (OR= 4.3). The results of the study suggest that there is an independent association between PD and suicidality, but this relationship differs for suicidal ideation and attempts. The findings further indicate an important role for comorbid depression and substance use disorders in the relationship between anxiety and suicidality.

In another contribution to the ongoing debate regarding the relationship between panic disorder and suicidality, Vickers and McNally (2004) examined data from 5872
participants in the NCS. These researchers examined the relationship between panic disorder and suicide attempts controlling for agoraphobia, specific phobia, social phobia, GAD, PTSD, MDD, DD, alcohol dependence, alcohol abuse, drug dependence, drug abuse, conduct disorder, adult antisocial behavior, antisocial behavior, antisocial personality disorder, nonaffective disorder, nonaffective psychosis, and mania. Demographic factors (age, sex, education, income, race, and marital status) were also controlled. Results indicated that PD did not independently increase risk for suicidality after controlling for the other disorders and demographic factors (OR = 1.12). However, other anxiety disorders did independently increase risk for suicide attempts: GAD (OR = 1.62) and PTSD (OR = 3.22). Although the results of this study fail to support an independent association between panic and suicidality, the findings indicate that other anxiety disorders warrant investigation as independent risk factors for suicidality.

There is evidence from longitudinal research that indicates that the each of the anxiety disorders may represent independent risk factors for suicidality in adults. Sareen and colleagues (2005) studied the relationship between anxiety disorders and suicidal ideation and suicide attempts using data from the Netherlands Mental Health Survey and Incidence Study, a population-based survey of 7,076 adults. Anxiety disorders were assessed at baseline, including Social Anxiety Disorder (SocAD), GAD, SP, PD, agoraphobia, and obsessive compulsive disorder (OCD). The presence of an anxiety disorder at baseline was associated with risk for lifetime suicidal ideation (OR = 2.29) and suicide attempts (OR = 2.48), as was each specific lifetime anxiety disorder. SocAD, GAD, PD, and agoraphobia were associated with lifetime suicidal ideation after
controlling for demographic factors and comorbidity (mood disorders, substance use disorders, eating disorder, and schizophrenia). Panic disorder, agoraphobia, and SP were associated with lifetime suicide attempts after controlling for demographic factors and comorbidity. Prospectively, the presence of an anxiety disorder was associated with onset of suicidal ideation and suicide attempts at follow-up assessments. Baseline SocAD, GAD, and OCD were associated with onset of suicidal ideation at follow-up assessments after controlling for demographic factors and comorbidity. Specific phobia was associated with onset of suicide attempts at follow-up assessments. Additionally, presence of an anxiety disorder comorbid with a mood disorder increased likelihood for lifetime suicidal ideation and suicide attempts, as well as the prospective onset of suicide attempts, beyond the risk associated with mood disorders alone. Findings from this prospective study indicate that anxiety disorders are independent risk factors for onset of suicidal ideation and suicide attempts in adults. The authors assert that treating anxiety disorders may reduce risk for later suicidality, and further suggest that interventions designed to reduce risk for suicidality should prioritize adults with anxiety disorders, mood disorders, and particularly adults with comorbid anxiety and mood disorders.

Another study examined the association of suicidality with the entire spectrum of anxiety disorders in adults. Cougle and colleagues (2009) examined the association between lifetime anxiety disorders and suicidal ideation and attempts in 4,131 participants in the National Comorbidity Study- Replication. SocAD (OR= 1.68), GAD (OR= 1.58), PD (OR= 1.80), and posttraumatic stress disorder (PTSD; OR= 1.96) were associated with lifetime suicidal ideation, controlling for demographic and diagnostic risk
factors (all Axis I and II disorder). SocAD (OR= 1.60), GAD (OR= 1.74), and PTSD (OR= 1.96) were associated with a lifetime history of suicide attempts, controlling for demographic and diagnostic risk factors. The findings of this study bolster support for an independent association between several of the anxiety disorders and suicidality in adulthood.

Finally, the findings from a recent study are also consistent with an independent association between anxiety disorders and suicidality in adulthood. Nepon, Belik, Bolton, and Sareen (2010) examined the relationship between anxiety disorders (PD, agoraphobia, SoP, SP, GAD, PTSD) and suicide attempts using data from the National Epidemiologic Survey on Alcohol and Related Conditions. Participants were 34,653 adults assessed for current and lifetime DSM-IV Axis I and Axis II conditions as well as lifetime suicide attempts. The presence of any anxiety disorder was associated with the presence of a lifetime suicide attempt, controlling for demographic factors and all other Axis I and II disorders (OR= 1.70). All anxiety disorders except agoraphobia were associated with the presence of a lifetime suicide attempt after controlling for demographic factors and other Axis I disorders. PD, GAD, and PTSD remained significantly associated with presence of a lifetime suicide attempt after further controlling for Axis II disorders. Finally, PD (OR= 1.44) and PTSD (OR= 1.89) were independently associated with the presence of a lifetime suicide attempt after controlling for demographic factors, all other Axis I and II disorders, and all other anxiety disorders. The limitations of the study include the cross-sectional nature of the data. However, the findings of this study provide support for the link between the entire spectrum of anxiety
disorders and suicidality, even after accounting for the risk associated with other Axis I disorders and the personality disorders.

**Evidence Failing to Support an Independent Association**

The findings of other research studies fail to support an independent association between anxiety and suicidality in adults. Horning and McNally (1995) reanalyzed the ECA data used in the initial Weissman et al. (1989) study. Horning and McNally examined the relationship between PD and suicide attempts, controlling for all Axis I comorbid conditions in the aggregate rather than one at time (as in Weissman et al., 1989). Using this alternative method of controlling for comorbid conditions, PD did not significantly increase risk for suicide attempt (OR= 1.20). The results of this re-analysis indicate that the association between anxiety and suicidality reported by Weissman and colleagues may be due to the shared association with comorbid conditions.

Other researchers have reported findings that fail to support an independent relationship between anxiety and suicidality in adults. As noted above, the findings of Vickers and McNally (2004) failed to support a relationship between panic and suicidality, although the results did indicate that GAD and PTSD independently increase risk for suicide attempts. In one of the few studies of anxiety and suicidality in treatment-seeking adults, Warshaw, Dolan, and Keller (2000) prospectively examined suicidal behavior in 498 adults with PD over a five-year follow-up period. Results indicated that PD is not associated with increased risk for suicidal behavior. Past suicidal behavior, depressive disorders, any personality disorder, substance use disorders, and eating disorders were risk factors for suicidal behavior among the adults with panic disorder.
Thus, the findings of several studies of adults fail to support an independent association between anxiety and suicidality.

The literature regarding the association between anxiety disorders and suicidality in adulthood remains mixed, with the findings of some research studies supporting an independent association after controlling for comorbidity and demographic factors and other findings failing to support this relationship. However, recent research that examines the full spectrum of anxiety disorders and uses a prospective design supports an independent association between anxiety disorders and suicidality, providing convincing evidence in support of the independent association. One important implication of the association between anxiety disorders and suicidality in adulthood is the potential for reducing risk for suicidality through successful assessment and treatment of anxiety disorders, particularly when comorbid with mood disorders. Furthermore, support for the relationship between anxiety disorders and suicidality in adulthood suggests that examination of the same relationship in children and adolescents is warranted.

**Anxiety Disorders and Suicidality in Youth**

Evidence for an independent association between anxiety disorders and suicidality in youth is growing, though the findings are mixed regarding this relationship in youth, as they are in the literature on adults. The findings of many studies using community-based and treatment-seeking samples have supported an independent association between anxiety disorders and suicidality in children and adolescents (Boden et al., 2007; Gould et al., 1998; Nelson et al., 2000; Pilowsky, Wu, & Anthony, 1999; Wunderlich et al., 1998), whereas other studies have found that anxiety is not associated with suicidality after
controlling for the shared association with depression and demographic factors (Esposito & Clum, 2002; Foley et al., 2006; Greene, Chorpita, & Austin, 2009; see Table 2). These studies are reviewed below.

**Evidence for an Independent Association**

Findings from several community-based studies of youth support the independent association between anxiety disorders and suicidality. Gould and colleagues (1998) examined this relationship in an epidemiological sample of 1,285 children and adolescents aged 9-17 years. Anxiety disorders (including SAD, GAD, avoidant disorder, overanxious disorder, OCD, SP, SoP, agoraphobia, PD) independently increased risk of suicidal ideation (OR= 1.90) and suicide attempts (OR= 2.40), after controlling for demographic factors and mood, substance use, and disruptive disorder diagnoses. Similarly, Wunderlich and colleagues (1998) examined a range of psychiatric diagnoses, including anxiety disorders, as predictors of suicide attempts in a sample of 3,021 adolescents and young adults aged 14-24 years recruited from the community. Anxiety disorders (SP (OR= 3.60), panic attack (OR= 2.30), and agoraphobia (OR= 2.30) were associated with the highest risk for suicide attempts, controlling for and compared to any bipolar disorder, depressive disorder, substance use disorder, eating disorder, and somatoform disorder. Furthermore, comorbidity increased risk beyond that of any individual disorder, particularly when anxiety and depressive disorders disorder were part of the presentation. The relationship between PD and suicidal ideation and suicide attempts was examined in a sample of 1,580 adolescents aged 13-14 years recruited from the community (Pilowsky et al., 1999). The youth were assessed for lifetime history of
panic attacks, major depression, and suicidal ideation and suicide attempts. Adolescents with a lifetime history of panic attacks were at greater risk for suicidal ideation (OR=3.34) and suicide attempts (OR=1.93) than adolescents with no history of panic, controlling for lifetime history of major depression, alcohol and drug use, and demographic factors. Together, the findings of these three studies using community-based samples of youth support the independent association between anxiety disorders and suicidality.

The findings of other studies using community-based samples add further support for this association. Nelson and colleagues (2000) examined the relationship between social anxiety and suicidality in a sample of 1,344 older adolescent females (M=18.2 years). Adolescents with SoP were at greater risk for a variety of suicidality symptoms compared to adolescents without SoP. After controlling for comorbid MDD, social phobia was independently associated with increased risk for suicidal ideation (OR=1.56), but not attempts. However, comorbid MDD and SoP was associated with greater risk for all suicidality symptoms compared to MDD without SoP. Thus, SoP independently increased risk for suicidal ideation in adolescent females, and increased risk for all suicidality in female adolescents with MDD. Also studying a sample of older adolescents recruited from the community, Boden and colleagues (2007) examined the relationship between anxiety and suicidality in 1,265 males and females longitudinally from ages 16-25. Anxiety disorders (including GAD, PD, and phobias, including agoraphobia, SoP, and SP) were independently associated with suicidal ideation and suicide attempts, after controlling for comorbidity and stressful life events. Thus, the evidence from community-
based studies for an independent association between anxiety disorders and suicidality in youth is considerable.

The findings of several studies of treatment-seeking samples of youth also provide support for anxiety as an independent risk factor for suicidality. Findings from several studies of psychiatrically-hospitalized adolescents have found support for an independent association between anxiety and suicidality (Ghaziuddin, King, Naylor, & Ghaziuddin, 2000; Goldston et al., 2009; Ohring et al., 1996; Pinto & Whisman, 1996). Ohring and colleagues (1996) examined the relationship between anxiety and suicidality in a sample of 118 hospitalized adolescents aged 12-21 years. Findings indicated that suicide attempters (n= 46) had higher levels of self-reported trait anxiety on the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) than non-attempters (n= 72), controlling for depressive symptoms. Similarly, Pinto and Whisman (1996) examined the role of various aspects of negative affect and cognitive biases in suicidality in youth. Participants were 228 hospitalized adolescents aged 13-18 years who were suicide attempters (n= 90), ideators (n= 68), or nonsuicidal (n= 70). Anxiety as reported on the Revised Children’s Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985) was uniquely related to suicidal ideation as reported on the Suicidal Ideation Questionnaire (SIQ; Reynolds, 1988), after controlling for depressive symptoms and other negative affect and cognitive bias variables.

Similar findings come from another treatment-seeking study of 56 hospitalized adolescents aged 13-18 years (Ghaziuddin, King, Naylor, & Ghaziuddin, 2000). Anxiety was assessed via self-report on the RCMAS and clinician ratings. Suicidal ideation was
assessed via youth self-report on the Suicidal Ideation Questionnaire- Junior version (SIQ-JR; Reynolds, 1988). Additionally, suicidality was rated by clinicians on the Spectrum of Suicidal behavior Scale (SSB; Pfeffer, Conte, Plutchik, & Jerrett, 1979). Anxiety severity on both self-report and clinician-rating was significantly associated with self-reported suicidal ideation but not clinician-rated suicidality. In a multivariate analysis of the contribution of self-reported anxiety and depressive symptoms to self-reported suicidal ideation, anxiety made a significant independent contribution to suicidal ideation. The findings of this study of hospitalized adolescents add further support for the independent association of anxiety and suicidality in youth.

Goldston and colleagues (2009) conducted a study of psychiatric disorders as risk factors for suicide attempts in a sample of 180 previously hospitalized adolescents, aged 12-19 years at the time of hospitalization. Psychiatric disorders and suicidality were assessed with a semi-structured interview. In univariate models, GAD, phobias, and panic disorder were associated with suicide attempts, but only panic disorder was independently associated with suicidality in the multivariate models. However, GAD and panic disorder (in addition to depressive disorders) appear to be especially common among repeat suicide attempters. The findings of this study bolster support for the independent association between anxiety and suicidality in youth.

There have been few investigations of the association between anxiety and suicidality in youth seeking outpatient treatment. Carter and colleagues (2008) examined the relative contribution of anxiety and depression to suicidal ideation in a sample of 252 youth aged 7-16 years seeking outpatient treatment for their anxiety disorder. A pool of
500 treatment-seeking youth was screened, and the final sample was composed of the anxiety-disordered youth who endorsed suicidal ideation (n= 126; 25.2% of original pool), as well as a comparison group of anxiety-disordered youth who did not endorse suicidal ideation, matched for age and gender (n= 126). Anxiety disorders were assessed via the Anxiety Disorders Interview Schedule for Children (ADIS-IV-C/P; Silverman & Albano, 1996). Anxiety and depressive symptomatology were assessed via self-report on the RCMAS and Children’s Depression Inventory (CDI; Kovacs, 1981, 1992). Both full versions of the measures and brief versions (with overlapping items of anxiety and depression omitted) were used in analyses in order to examine the unique contributions of anxiety and depression. Suicidal ideation was assessed with self-report on a single item on the CDI. Structural equation modeling analyses revealed that anxiety had an independent direct effect on suicidal ideation using the brief RCMAS, which eliminated items overlapping with depression. The findings of this study support an independent association between anxiety and suicidal ideation in youth seeking outpatient treatment of an anxiety disorder. However, there are methodological limitations of the study, including the use of a single item to measure suicidal ideation and reliance on a single informant regarding the youth’s suicidality. Future studies of anxiety and suicidality in treatment-seeking samples should attempt to address these methodological limitations.

Findings from a recent study also indicate an independent association between anxiety and suicidality in youth seeking outpatient treatment of an anxiety disorder. O’Neil and colleagues (2012) examined suicidal ideation in two studies with youth seeking treatment for a principal anxiety disorder. Diagnoses were assigned according to
the ADIS-IV-C/P. Suicidality was assessed by self-report on the suicidal ideation item on the CDI. Results of Study 1 indicated that among anxiety-disordered youth (N= 312, aged 7-17), 41% endorsed suicidal ideation at pre-treatment. Furthermore, anxiety disorder severity, level of global impairment, and severity of current depressive symptoms predicted suicidal ideation in a multivariate model. The second study compared rates of suicidal ideation in youth with and without anxiety disorders (N= 216, ages 7-14). Results indicated that youth with an anxiety disorder had higher rates of suicidal ideation as compared to non-anxiety-disordered youth. Furthermore, anxiety severity predicted suicidal ideation after controlling for comorbid depressive disorders, current depressive symptoms, and global impairment. Together, results of these two studies support an independent association between anxiety disorders and suicidal ideation in youth beyond the association accounted for by depressive symptoms and other clinical factors. However, these studies were limited by the reliance on a single item and a single informant to assess suicidality. Future research examining the association between anxiety disorders and suicidality in clinic-referred youth will benefit from use of continuous measures and multiple informants regarding suicidality.

**Evidence Failing to Support an Independent Association**

The findings from other studies of treatment-seeking and community-based samples of youth are not consistent with an independent relationship between anxiety disorders and suicidality (Esposito & Clum, 2002; Foley et al., 2006; Greene et al., 2009; Strauss et al., 2000). In one of these studies, Esposito and Clum (2002) examined psychiatric diagnoses and symptoms as predictors of suicidal ideation in a community
sample of 73 youth aged 14 to 18 years. Participants were youth identified by school personnel as displaying “emotional disturbance.” Diagnoses were assigned according to the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic Version (K-SADS-E; Orvaschel & Puig-Antich, 1987). Suicidal ideation was assessed via self-report on the Modified Scale for Suicidal Ideation (MSSI). GAD diagnosis, frequency of symptoms, and severity of symptoms were significantly associated with suicidal ideation, controlling for gender. However, GAD severity was not independently associated with suicidal ideation after controlling for MDD and other diagnoses. Furthermore, mediational analyses indicated that MDD mediated the relationship between all other psychiatric diagnoses (including GAD) and suicidal ideation. These findings do not support an independent relationship between anxiety and suicidality in youth and suggest that this relationship may be explained by shared association with depression. It is of note that GAD was the only anxiety disorder examined in this study, which limits the generalizability of these findings.

Findings from the Great Smoky Mountains Study, an epidemiological sample of 1,420 children and adolescents aged 9 to 16 years, also fail to support an association between anxiety disorders and suicidality in youth, except when comorbid with depression (Foley et al., 2006). The Child and Adolescent Psychiatric Assessment (CAPA; Angold et al., 1995) was used to measure psychiatric disorders and suicidality in this study. Anxiety disorders were associated with increased risk for suicidality both in univariate models and when controlling for other disorders, including depression. However, after controlling for demographic factors, this association was no longer
significant. Yet, anxiety disorders did increase risk for suicidality when comorbid with depression. Analyses of comorbidity profiles indicated that depression plus an anxiety disorder was the psychiatric profile at greatest risk for suicidality in this sample, specifically depression and GAD. In sum, findings from this epidemiological study fail to support an independent association between anxiety disorders and suicidality in youth after controlling for comorbidity and demographic factors. However, comorbid depression and anxiety appears to be a high-risk diagnostic profile for suicidality in youth.

Findings from two studies of treatment-seeking youth also fail to support an independent association between anxiety disorders and suicidality. Strauss and colleagues (2000) examined the relationship between anxiety disorders and suicidality in a sample of 1,979 youth aged 5 to 19 years referred to an outpatient anxiety and mood disorders clinic. Rates of anxiety disorders did not differ among suicidal ideators (n= 768), suicidal attempters (n= 768), and non-suicidal youth (n= 817). In fact, in youth younger than 15 years, suicide attempters had a lower prevalence of SAD than ideators or nonsuicidal youth, suggesting that SAD may serve as a protective factor for suicidality in younger youth. However, in adolescents older than 15 years, GAD was more prevalent in ideators than in nonsuicidal youth, suggesting that GAD may increase risk for suicidal ideation in older adolescents. Although the findings of this study do not support a general independent association between anxiety disorders and suicidality in youth, they do suggest that this relationship may differ by age and specific anxiety disorder. Future
research should examine age and various anxiety disorder diagnoses as potential moderators of the relationship between anxiety and suicidality in youth.

Greene and colleagues (2009) examined the relationships among anxiety, depression, negative affect, and suicidal ideation in a clinic-referred sample of 88 youth aged 7-18 years with primarily externalizing disorders. The authors hypothesized that both negative affect and anxiety would be directly related to suicidal ideation and that negative affect, anxiety symptoms, and depressive symptoms would be interrelated. Additionally, the study aimed to test two different models of the association between anxiety and suicidal ideation: (a) negative affect explains the association between anxiety and suicidal ideation, or (b) depression explains the association between anxiety and suicidal ideation in youth. Diagnoses were assigned according to the ADIS-IV-C/P or the Children’s Inventory for Psychiatric Syndromes (ChIPS; Weller, Weller, Rooney, & Fristad, 1999). Anxiety and depressive symptoms were assessed with self-report on the Generalized Anxiety and Major Depression scales of Revised Child Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000). Negative affect was assessed via self-report on the Positive and Negative Affect Schedule for Children (PANAS-C; Laurent et al., 1999). Finally, suicidal ideation was assessed via self-report on the SIQ-JR. Results supported the hypotheses that anxiety, depression, negative affect, and suicidality would be significantly interrelated. Anxiety was no longer significantly related to depression after controlling for depression, supporting the second model of the association between anxiety and suicidal ideation (i.e., the association between anxiety and suicidal ideation was explained by their common association with
These findings support an association between anxiety and suicidal ideation in clinic-referred youth, but suggest that this relationship is explained by shared association with depression. However, the study examined this relationship in a sample of youth with mostly principal externalizing disorders (70.5%) and limited the assessment of anxiety symptomatology to generalized anxiety symptoms (as opposed to the entire spectrum of anxiety symptomatology.) These methodological issues suggest that future studies of the association between anxiety and suicidality in youth referred for outpatient treatment are warranted.

**Evidence for an Association between Childhood Anxiety Disorders and Later Suicidality**

In addition to increasing proximal risk for suicidality, childhood anxiety disorders have been associated with increased risk for suicide attempts in young adulthood (Rudd, Joiner, & Rumzek, 2004). This study examined the relationship between childhood diagnoses and later risk for suicidality in adulthood. A sample of 327 adults who were suicide ideators or attempters completed measures of suicidality and a structured interview to assess lifetime and current psychiatric diagnoses. Results relevant to the current review indicated that a childhood anxiety disorder diagnosis was associated with higher levels of suicidal ideation and greater risk for multiple suicide attempts in adulthood. Limitations of the study include the retrospective nature of the data regarding childhood disorders. However, the findings indicate that the prospective association between childhood anxiety disorders and later suicidality warrants investigation in longitudinal studies. Furthermore, the findings suggest that the successful treatment of
anxiety disorders in youth may not only help to address co-occurring suicidality, but also reduce risk for later suicidality in adulthood.

Anxiety and Suicidality in Youth: Directions for Future Research

Taken together, the findings from community-based and treatment-referred studies of youth indicate mounting evidence for an independent association between anxiety disorders and suicidality in youth and an association between childhood anxiety disorders and later suicidality in adulthood. Findings from treatment-seeking samples indicate that 41% of anxiety-disordered youth endorse suicidal ideation (O’Neil et al., 2012). However, results remain mixed, with some studies failing to find support for this relationship.

Sample differences may contribute to the inconsistency in findings regarding the independent association between anxiety disorders and suicidality in youth. For example, there is variability in anxiety severity and the treatment setting across studies, ranging from community samples to psychiatrically hospitalized youth. Of greatest interest to the current review are samples of youth seeking treatment for a principal anxiety disorder at an outpatient specialty clinic, a relatively less impaired category. Carter and colleagues (2008) and O’Neil and colleagues (2012) both used such samples in their studies and demonstrated an independent relationship between anxiety and suicidal ideation.

The relationship between anxiety and suicidality may also vary by subtype of anxiety, explaining some of the discrepant findings to date. For example, several studies that failed to find support for an independent association between anxiety and suicidality (e.g., Esposito & Clum, 2002; Greene et al., 2009) examined this relationship using only
generalized anxiety severity or symptomatology, whereas many studies that support the association utilized the range of anxiety disorders or broader anxiety symptom measures (Carter et al., 2008; Ghaziuddin, et al., 2000; Gould et al., 1998). The possibility that the specific anxiety disorders have a different relationship to suicidal ideation warrants investigation in studies with larger numbers of participants in each diagnostic category of anxiety.

Another possible explanation for the inconsistent findings may be that anxiety may relate differently to the specific components of the broad spectrum of suicidality (e.g., suicidal ideation versus suicide attempts) and previous research has not always considered these components separately. The Interpersonal Theory of Suicide (Van Orden, Witte, Cukrowicz, Braithwaite, Selby, & Joiner, 2010) posits that the desire to complete suicide and the actual capability to engage in suicidal behavior are separate components of suicidality and that these components have distinct risk factors. Specifically, the theory suggests that passive suicidal ideation is caused by the interpersonal constructs of thwarted belongingness and perceived burdensomeness, and that suicidal desire is caused by the additional presence of hopelessness (Van Orden et al., 2010). According to the theory, other risk factors (e.g., psychological disorders) for suicide confer risk for suicidal desire by increasing the levels of these interpersonal constructs (Van Orden et al., 2010). Given the inconsistent findings regarding anxiety and suicidality, perhaps anxiety is specifically predictive of the suicidal ideation or desire component of suicidality (rather than the capability to engage in suicidal behavior).
Given the mixed findings regarding the relationship between anxiety disorders and suicidality and the methodological limitations of existing research, further research is necessary to examine this relationship in both community-based and treatment-seeking samples of children and adolescents using comprehensive and continuous measures of suicidality. Clarification of the relationship between anxiety disorders and suicidality will have important clinical implications. If anxiety disorders increase risk for suicidality, comprehensive and careful assessment of suicidality in these youth is critical. Furthermore, clinical attention to co-occurring suicidal ideation may be warranted either within the framework of current treatments or through treatment modifications. Additionally, successful treatment of anxiety disorders in youth may have the secondary benefit of preventing later onset of suicidal behaviors (Rudd et al., 2004). However, even in studies with findings that support the independent association between anxiety disorders and suicidality, it is clear that the majority of anxiety-disordered youth do not endorse suicidality on single-item measures (Carter et al., 2008; O’Neil et al., 2012). Thus, predictors of suicidality within anxiety-disordered youth warrant empirical investigation in order to help identify youth most at risk for suicidality, as well as to inform treatment modifications that will most successfully address co-occurring suicidality and reduce risk for later suicidality.

Potential predictors of suicidality within anxiety-disordered youth are numerous, and include demographic factors and established risk factors for suicidality in youth generally (e.g., family history of suicide and psychopathology, stressful life events). Investigation of these factors as predictors of suicidality in anxiety-disordered youth
would aid in identification of the youth most at-risk for suicidality. However, the predictors of suicidality of interest in the current review are factors with the potential both (a) to identify which anxiety-disordered youth are at risk for suicidality and (b) to inform treatment and potential treatment modifications. That is, what are the factors that may be addressed currently in cognitive-behavioral therapy (CBT) for childhood anxiety disorders or could be addressed in modifications of this treatment that will address co-occurring suicidality and reduce risk for later suicidality? The current review examines comorbid depressive disorders, emotion dysregulation, and distress intolerance as potential predictors of suicidality within anxiety-disordered youth. For each factor, evidence suggesting an association with both anxiety and suicidality in youth is reviewed and implications for potential treatment modifications are discussed.

**Comorbid Depressive Disorders**

Depressive disorders (i.e., MDD and DD) are common childhood psychological disorders with similar prevalence rates to anxiety disorders (i.e., 10%; Costello et al., 2003), as well as high recurrence rates (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Depressive disorders are associated with impairment in academic and social functioning (Puig-Antich et al., 1993). Youth with depressive disorders are at greater risk for mood and substance use disorders in adulthood (Kovacs, Akiskal, Gatsonis, & Parrone, 1994; Rao et al., 1995). Research also indicates that even subsyndromal levels of depression in youth and adults may be associated with impairment (e.g., Lewinsohn, Solomon, Seeley, & Zeiss, 2000).

**Comorbid Anxiety and Depressive Disorders in Youth**
Anxiety and depressive disorders are highly comorbid in youth, with rates as high as 75% in epidemiological samples (Angold, Costello, & Erkanli, 1999). Research indicates that anxiety-disordered youth with comorbid depressive disorders have more severe symptomatology (Franco, Saavedra, & Silverman, 2007; O’Neil, Podell, Benjamin, & Kendall, 2010), poorer global functioning (Manassis & Menna, 1999; O’Neil et al., 2010), and more family dysfunction (O’Neil et al., 2010) than anxious youth without comorbid depressive disorders. Furthermore, research suggests comorbid depressive disorders (Berman, Weems, Silverman, & Kurtines, 2000) and co-occurring depressive symptoms (O’Neil & Kendall, in press) predict less favorable treatment response to CBT for anxiety disorders in youth. Likewise, comorbid anxiety disorders predict less favorable treatment outcome for adolescent depression treatment (Brent et al., 1998). Thus, comorbid anxiety and depressive disorders in youth are associated with a more severe clinical presentation and poorer treatment outcome than anxiety disorders alone.

**Comorbid Anxiety and Depressive Disorders and Suicidality in Youth**

Evidence from studies of community-based samples of youth suggests that comorbid anxiety and depressive disorders may present a particularly high-risk profile for suicidality. As noted above, results from the Great Smoky Mountains Study indicated that risk for suicidal ideation, plans, and attempts was greatest for youth with current depression and GAD of any psychiatric profile, even after controlling for severity of psychopathology (Foley et al., 2006). Additionally, in a community sample of adolescent females, youth with comorbid SP and MDD were at increased risk for suicidality.
compared to youth with MDD only (Nelson et al., 2000). Finally, Lewinsohn, Rohde, and Seeley (1995) examined comorbidity in a community sample of 1,709 adolescents aged 14-19 years. Comorbid depression and anxiety disorders were associated with a greater likelihood of past suicide attempts compared to either a “pure” anxiety or depressive disorder. This difference was statistically significant for “pure” anxiety versus comorbidity but not for “pure” depression versus comorbidity. Taken together, findings from these community samples suggest that comorbid anxiety and depression may confer higher risk for suicidality in youth as compared to either disorder alone, and as compared to other comorbid conditions.

There is a paucity of research examining the suicidality risk associated with the comorbid depression and anxiety profile in treatment-seeking samples of youth. In one study of 90 female adolescents aged 15 to 20 years seeking outpatient treatment, findings indicated that comorbid anxiety and depression increased risk for suicide attempts (Pawlak, Pascual-Sanchez, Rae, Fischer, & Ladame, 1999). However, this study had methodological limitations, as diagnoses other than anxiety disorders were established clinically (i.e., a standardized measure such as a semi-structured diagnostic interview was not utilized). Given the methodological limitations of the few existing studies, investigations of the relationship of comorbid anxiety and depressive disorders to suicidality in treatment-seeking samples of youth are needed.

The numerous reports of increased risk for suicidality in youth with comorbid anxiety and depressive disorders in community samples suggest that comorbid depression warrants examination as a predictor of suicidality within anxiety-disordered youth
seeking treatment. Moreover, given the chronic course of anxiety disorders in contrast to
the episodic course of MDD, youth referred to outpatient clinics for anxiety treatment
may be a particularly useful sample for studying the presentation and treatment of this
potentially high-risk comorbid group.

**Implications for Treatment Modifications**

If comorbid depression is a predictor of suicidality in youth referred for treatment
for their anxiety disorder as it is in community samples, successful treatment of comorbid
anxious and depressed youth in the outpatient setting may help to address co-occurring
suicidality, prevent the onset of more severe suicidality, and reduce the likelihood of
other problems in adulthood (Reinhertz et al., 2006; Rudd et al., 2004). However, as
noted above, treatment response to traditional CBT for both childhood anxiety and
depression may be less favorable for comorbid youth (Berman et al, 2000; Brent et al.,
1998). Thus, successful treatment of youth with comorbid anxiety and depression may
require modified treatments that target both disorders. Efforts to develop such integrated
or “transdiagnostic” treatments are underway among several research groups (e.g., Chu,
Colognori, Weissman, & Bannon, 2009; Ehrenreich, Goldstein, Wright, & Barlow, 2009;
Kendall, Stark, Martinsen, O’Neil, & Arora, 2012; Weersing, Gonzalez, Campo, &
Lucas, 2008). Researchers have begun to develop integrated protocols for anxiety and
depressive disorders in child and adolescents in various settings, including primary care,
schools, and traditional outpatient clinics.

In one initial effort, Weersing and colleagues (2008) developed a brief integrated
treatment for anxiety and depression for implementation in the primary care setting. The
8 session treatment combines the core components of both CBT for childhood anxiety (exposure) and CBT for childhood depression (behavioral activation) into an integrated core technique of “graded engagement.” The first four sessions focus on building skills: psychoeducation, relaxation and coping with negative affect, problem-solving, and goal-setting. Three sessions are devoted to graded engagement in increasing anxiety-provoking or effort-requiring situations. The final session addresses relapse prevention techniques.

Weersing and colleagues conducted a pilot study of this integrated treatment. Participants were 45 youth aged 7 to 17 years with an anxiety disorder, depressive disorder, or comorbid anxiety and depressive disorders. Youth received integrated brief behavioral therapy for their anxiety or depression in the pediatric primary care setting. The authors reported on the clinical outcomes of two participants in the pilot study as case examples. Both participants presented with comorbid anxiety and depressive disorders and received a course of integrated brief behavioral therapy. In terms of outcomes, both participants experienced reduction in both anxiety and depressive symptoms and were rated as “much improved” at post-treatment and as “very much improved” at six-month follow-up on the Clinical Global Impression Scale. This pilot study provides initial support for an integrated brief behavioral treatment for youth anxiety and depressive disorders in the primary care setting, although additional research is necessary to examine this treatment in controlled and randomized trials.

Other researchers are conducting similar research in different settings. Chu and colleagues (2009) reported on a pilot study of group behavioral activation therapy for
anxious and depressed youth, implemented in the school setting. The group behavioral activation therapy combined adult behavioral activation protocols with exposure for anxiety. The 10-session program includes core components of psychoeducation, functional analysis, problem-solving, and graded exposures or behavioral tasks. Imaginal or *in vivo* exposures to anxiety-provoking situations and behavioral tasks such as role-plays begin in session 3, with the aim of at least one group member engaging in a practice during each session. The program was piloted with a group of five 7th and 8th grade students aged 12 to 14 years over the course of 13 weeks. Each participant met criteria for both an anxiety and depressive disorder. Four out of five youth completed the group treatment. Of those four youth, three students no longer meet criteria for their principal or secondary diagnosis following treatment. Parent and child reports also indicated improvement in anxiety and depressive symptoms. Results are promising regarding the feasibility of implementing this integrated group treatment for youth anxiety and depression in the school setting. Further research with controlled and randomized designs is warranted in order to investigate the efficacy of the integrated treatment.

Finally, Ehrenreich and colleagues (2009) developed an emotion-focused unified treatment protocol for anxiety and depressive disorders in adolescence for use in the traditional outpatient clinic setting. The protocol aims to address the commonalities among the emotional disorders and the role of emotion dysregulation in these disorders. This work will be described in greater detail in another section of the current review because the intervention is best characterized as an emotion-focused treatment rather than
traditional CBT. However, this unified protocol is promising as yet another integrated treatment for comorbid anxiety and depression in youth.

In sum, reports from several independent research teams indicate that efforts are underway to develop integrated treatments for comorbid anxiety and depression in youth. Such treatments may be warranted given reports of poorer treatment response for comorbid youth to CBT for child anxiety (Berman et al., 2000) and depression (Brent et al., 1998). Furthermore, if comorbid depression conveys greater risk for suicidality in anxiety-disordered youth referred for treatment as it does in community samples, integrated treatments that successfully target both anxiety and depression may help address co-occurring suicidality and reduce risk for future suicidality and other problems. Thus, these integrated treatments for comorbid anxiety and depression in youth warrant further examination as potential avenues to improve outcomes for comorbid youth in terms of both their anxiety and depression, as well as co-occurring suicidality.

**Emotion Dysregulation**

Emotion regulation has been defined as the extrinsic and intrinsic processes that monitor, evaluate, and modify emotional reactions in terms of intensity and length (Thompson, 1994). Emotion dysregulation has been theorized to be a central aspect of psychopathology in both adults (e.g., Cisler, Olatunji, Feldner, & Forsyth, 2010; Mennin, Heimberg, Turk, & Fresco, 2002) and youth (e.g., Cicchetti, Ackerman, & Izard, 1995; Cole, Michel, & Teti, 1994; Southam-Gerow & Kendall, 2002). There is evidence supporting this association for both childhood externalizing disorders (see Keenan, 2000, for a review) and internalizing disorders (e.g., Garber, Braafladt, & Weiss, 1995; Suveg
& Zeman, 2004). Aspects of emotion regulation theorized to play a role in the development of psychopathology when dysregulated include access to the full range of emotions, modulation of the intensity and duration of emotion states, smooth transitions between emotion states, knowledge and use of cultural display rules, integration of mixed emotions, verbal regulation of emotions, and the ability to monitor and evaluate one’s emotional responses (Cole et al., 1994).

**Emotion Dysregulation and Anxiety in Youth**

Research with both community-based and treatment-seeking samples of youth has examined the theorized relationship between emotion dysregulation and psychopathology in youth (Cicchetti et al., 1995; Cole et al., 1994; Southam-Gerow & Kendall, 2002). Findings from community samples of both children and adolescents support an association between internalizing symptoms and greater emotion dysregulation (Garber, Braafsladt, & Weiss, 1995; Keenan, Hipwell, Hinze, & Babinski, 2009; Silk, Steinberg, & Morris, 2003; Suveg, Hoffman, Zeman, & Thomassin, 2009; Zeman, Shipman, & Suveg; 2002). Furthermore, the limited research conducted in treatment-seeking samples indicates that anxiety-disordered youth show greater emotion dysregulation than non-anxious youth (Carthy, Horesh, Apter, & Gross, 2010; Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004). These findings are reviewed in greater detail below.

Findings from several investigations using community samples support the link between internalizing symptoms and emotion dysregulation in youth. Garber and colleagues (1995) investigated the relationship between emotion regulation strategies and depressive symptoms in 275 youth in kindergarten through 8th grade. Youth were
categorized as depressed or non-depressed based on self-report of depressive symptoms on the CDI. Youth reported on the strategies they would use in response to specific stressors (e.g., having a fight with a friend or losing a game) and their perceived efficacy of these strategies using the Child Affect Questionnaire (CAQ; Garber et al., 1995). The various emotion regulation strategies were grouped into six categories: problem solving, support, cognitive strategies, behavioral avoidance, affect change, and negative responses. Compared to non-depressed youth, depressed youth reported using emotion regulation strategies significantly less often. Specifically, depressed girls reported that they used problem-solving less often than non-depressed girls in response to the interpersonal situation. However, depressed boys indicated that they use more negative strategies (e.g., yelling) in this kind of situation than did non-depressed boys. For the stressor of losing a game, both depressed boys and girls reported using emotion regulation strategies (support seeking, cognitive strategies, affect change) less than did non-depressed youth. Furthermore, both depressed boys and girls rated emotion regulation strategies (i.e., problem solving, support seeking, cognitive strategies, behavioral avoidance, affect change) as less effective than did non-depressed youth. The results of this study provided early support for the link between poor emotion regulation strategies and internalizing symptoms in youth.

Keenan and colleagues (2009) examined the association between emotion dysregulation and depressive symptoms in community-based study of 232 girls aged 9 years old. Depressive symptoms and disorders were assessed with child and mother report on the Schedule for Affective Disorders and Schizophrenia for School-Age
Children- Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997). Emotion regulation was assessed via child report on the Children’s Emotion Management Scales (CEMS; Zeman, Cassano, Suveg, & Shipman, 2010; Zeman, Shipman, & Penza-Clyve, 2001) and the Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002). Emotion expression was also observed during a family problem-solving task and coded for disinhibition and inhibition of anger, sadness, and frustration. Disinhibition of negative emotion expression on a CEMS subscale and inhibition of negative emotion expression on an EESC subscale were associated with higher levels of depressive symptoms according to both child and parent report. In a multivariate model, more of the variance in child-reported depressive symptoms was explained by inhibition of negative emotion expression than by disinhibition. Observed inhibition was significantly associated with mother-reported depressive symptoms only. The findings of this study support the link between emotion dysregulation and internalizing symptoms in children and suggest that inhibition of negative emotion expression is an important component of the emotion dysregulation involved in depressive symptoms.

The findings of several other studies using community samples support the association between emotion dysregulation and internalizing symptoms. Zeman and colleagues (2002) examined the relationship between regulation of anger and sadness and both internalizing and externalizing symptoms in youth. Participants were 227 youth aged 9-13 years recruited from the community. Youth completed self-report measures of emotion awareness and regulation (EESC, CEMS). Internalizing symptoms were measured by self-report and externalizing symptoms were assessed by peer-report of
aggressive behaviors. Results indicated that poor emotion awareness as assessed by the EESC predicted internalizing symptoms. Inhibition of anger on the CEMS predicted internalizing symptoms, whereas inhibition of sadness did not. Dysregulated expression of both anger and sadness predicted internalizing symptoms, and poor coping with anger was also associated with internalizing symptoms. In contrast, only poor coping with anger predicted externalizing symptoms. Thus, findings of this study indicate that poor emotion awareness, inhibition of anger, dysregulated expression of anger and sadness, and poor coping with anger are associated with internalizing symptoms in youth. This study adds further support for the link between general emotion dysregulation (rather than emotion-specific dysregulation) and symptoms of anxiety and depression in children.

A more recent study with a similar methodology yielded comparable results. Suveg and colleagues (2009) examined the relationship between emotion-related constructs and anxiety and depressive symptoms in 187 youth aged 8-12 years. Anxiety and depressive symptoms were measured by self-report on the RCMAS and the CDI respectively. Several emotion-related constructs were examined; those of interest to the current review were emotion awareness, emotion regulation, and emotion regulation coping. Emotion awareness was measured by self-report on the EESC. Emotion regulation and emotion regulation coping were measured by self-report on the CEMS. Poor emotion awareness, emotion dysregulation, and poor emotion regulation coping were associated with both anxiety and depressive symptoms in this study. These findings
add to the growing support for the link between emotion dysregulation and internalizing symptoms in children.

There is also evidence for the association between difficulties with emotion regulation and depressive symptoms in adolescent samples. Silk and colleagues (2003) used an experience sampling method to examine the relationship between emotion regulation and depression in 152 adolescents aged 12-17 years. Depressive symptoms were measured using youth self-report on the CDI. Emotion regulation strategies were reported by youth using the Response to Stress Questionnaire (RSQ; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) for sampling moments for which the youth reported at least moderately intense negative affect. Emotion regulation strategies were categorized as: primary control (e.g., problem solving), secondary control (e.g., cognitive restructuring), disengagement (e.g., avoidance), and involuntary engagement (e.g., rumination). Adolescents who had lower regulation of their negative affect reported more depressive symptoms than those who were better able to regulate their affect. The associations between categories of emotion regulation strategies and depressive symptoms were also examined. Primary and secondary control strategies were not significantly associated with depressive symptoms. However, youth who reported greater use of disengagement or involuntary engagement strategies also reported more depressive symptoms. The findings from this study extend the association between emotion dysregulation and internalizing symptoms beyond childhood to adolescence.

Fewer investigations of the relationship between emotion regulation and internalizing psychopathology have been conducted in treatment-seeking samples of
youth. However, the existing research indicates that anxiety-disordered youth have greater emotion dysregulation than non-anxious youth. One study compared emotion regulation in youth aged 7-14 years referred for treatment for an anxiety disorder (n= 17) to non-referred youth (n= 21; Southam-Gerow & Kendall, 2000). Anxiety disorders (GAD, SoP, and SAD) were diagnosed according to parent report on the ADIS-IV-C/P. Emotion regulation was assessed with the Kusche Affective Interview—Revised (KAI-R; Kusche, Beilke, & Greenberg, 1988). Results indicated that youth referred for treatment of anxiety disorders demonstrated greater emotion dysregulation than non-referred youth. Specifically, anxiety-disordered youth showed poorer understanding of hiding emotional expressions and changing emotions. This study provided initial support for the association between anxiety disorders and emotion dysregulation in youth.

There is additional evidence for emotion dysregulation in anxiety-disordered youth. Suveg and Zeman (2004) studied emotion regulation in 26 anxiety-disordered youth aged 8-12 years compared to 26 non-anxiety-disordered youth. Anxiety disorders were diagnosed using composite report on the ADIS-IV-C/P. Emotion regulation was measured using child self-report (CEMS), parent report (Emotion Regulation Checklist, ERC; Shields & Cicchetti, 1997), and interview with the child (Emotion Regulation Interview, ERI; Suveg & Zeman, 2004). Anxiety-disordered youth reported more dysregulation in their expression of worry, sadness, and anger than youth without anxiety disorders. They also reported less adaptive coping with these emotions than youth without an anxiety disorder. Mothers of anxiety-disordered youth also rated their children as more emotionally labile and negative, as well as lower on appropriate emotion
expression and self-awareness, than mothers of youth without an anxiety disorder. Additionally, anxiety-disordered youth rated themselves as less efficacious at emotion coping than youth without anxiety disorders. Together, the results of this study provide further support for the association between emotion dysregulation and anxiety disorders in youth.

A recent examination of emotion regulation in anxiety-disordered youth provides information regarding these youth’s deficits in emotion regulation in situations that simulate “real-life” (Carthy et al., 2010). Anxiety-disordered youth (n= 49) aged 10-17 years were compared to non-anxious controls in terms of emotional reactivity and regulation. Anxiety diagnoses were assigned according to the ADIS-IV-C/P. Emotional reactivity and regulation was assessed with a computerized task designed for the study (Reactivity and Regulation Situation Task; Carthy et al., 2010). Youth were presented with ambiguous real-life family, social, performance, or physical situations that had potentially threatening meanings. After reading the situation on the computer screen, participants gave a free response as to their reaction to the situation, rated the intensity of their negative emotions, and reported on how they would help themselves calm down in this situation. In a second trial, youth were asked to reappraise the situation and report on whether the reappraisal would improve their emotions. Emotion regulation strategies were coded in eight categories: avoidance, problem solving, seeking help or comfort from others, distraction, reappraisal, emotional suppression, relaxing, and venting.

Results of the Carthy and colleagues (2010) study indicated that anxiety-disordered youth had more intense and frequent negative emotional responses to the
situations than did non-anxious controls. The anxiety-disordered youth were less capable of reappraising the situations both spontaneously and when cued to do so than the control youth. They also rated a lower proportion of those reappraisals as efficacious at improving their emotions than did control participants. As expected, anxiety-disordered youth also demonstrated poorer use of emotion regulation strategies than did non-anxious controls. The anxious youth used more avoidance, more seeking help, less problem-solving, and less reappraisal than controls. The anxious youth were also more likely to fail at regulation, meaning that they stated either that they couldn’t think of any way to help themselves calm down or that there is nothing that could help them calm down.

These findings provide evidence for the association between anxiety disorders and emotion dysregulation in youth using ambiguous situations that approximate those encountered in the everyday lives of children.

Taken together, findings from community-based and treatment-seeking samples of youth provide empirical evidence for the theorized association between emotion dysregulation and internalizing disorders in youth. Specifically, there is support for an association between emotion dysregulation and anxiety disorders in treatment-seeking samples (Carthy et al., 2010; Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004). However, the evidence remains limited to a handful of studies in each category and replications in both community and treatment-referred samples are needed. Given that multiple aspects of emotion dysregulation have been theorized to be implicated in child psychopathology (e.g., Cole et al., 1994), little is known about the specific deficits in regulation that youth with anxiety disorders may experience. Further research is
necessary to examine which aspects of emotion regulation are specifically affected in the various youth internalizing disorders. Additionally, there is little to no evidence regarding the temporal or risk relationship between emotion dysregulation and internalizing psychopathology. Longitudinal studies beginning in early childhood are necessary to test empirically whether prior emotion dysregulation contributes to the development of psychopathology or the deficits are a result of internalizing symptomatology.

**Emotion Dysregulation and Suicidality in Youth**

Emotion dysregulation has also been theorized to play a role in suicidality and self-harm behaviors (e.g., Klonsky, 2007; Linehan, 1993). Empirical support for this association is limited, although the findings of a few studies provide evidence for a link between emotion dysregulation and suicidality in youth. Emotion dysregulation was related to suicidal behaviors among hospitalized adolescents (Zlotnick, Donaldson, Spirito, & Pearlstein, 1997). A sample of 63 hospitalized adolescents with primarily mood disorders (51.2%) were classified as current suicide attempters or suicidal ideators. The Regulation of Affect and Impulses subscale of the Structured Interview for Measurement of Complex PTSD (SICP; Pelcovitz, van der Kolk, Roth, Mandel, & Kaplan, 1997) was used to assess emotion regulation. The Self-Injury Inventory (SII; Zlotnick et al., 1996) was administered to assess self-injury and self-mutilation. Results suggest that suicidal attempters experience greater levels of emotion dysregulation than suicidal ideators. However, the two groups did not differ in terms of history of prior suicide attempts or frequency of self-mutilation behavior in the past year. Across groups, emotion dysregulation was associated with prior suicide attempts, number of types of
self-mutilative behaviors, number of self-mutilative behaviors, and number of types of self-injurious behaviors in the past year. Further, in a multivariate model including all relevant variables, emotion dysregulation did not significantly distinguish suicidal ideators from suicide attempters. Thus, results support an association between emotion dysregulation and suicidality, and further suggest that this link occurs across the full spectrum of suicidality from ideation to attempt.

Additional support for a link between emotion dysregulation and suicidality in youth comes from a study conducted by Tamas and colleagues (2007). These researchers studied the relationships of temperament and emotion regulation to suicidality in a sample of 407 depressed youth aged 7-14 years. Youth were diagnosed with MDD according to the Interview Schedule for Children and Adolescents- Diagnostic Version (ISCA-D; Sherrill & Kovacs, 2000). Suicidality was categorized into five groups according to symptom ratings on the ISCA-D: suicide attempt, suicidal plan, suicidal ideation, recurrent thoughts of death, or no suicidality. Youth completed the Feelings and Me—Child Version (FAM-C; Kovacs, 2000) to assess youth’s self-report of emotion regulation strategies. The FAM-C has both an Adaptive and Maladaptive Emotion Regulation subscale. Results indicated that emotion regulation was not associated with recurrent thoughts of death. However, higher scores on Maladaptive Emotion Regulation subscale and lower scores on Adaptive Emotion Regulation subscale of the FAM-C were significantly associated with increased risk of suicidal ideation, suicide plans, and suicide attempts. These relationships held after controlling for MDD severity. The findings of this study point to emotion dysregulation as a potentially important predictor of
suicidality in youth with internalizing disorders. As in the Zlotnick et al. (1997) study, this link was supported across the full spectrum of suicidality from ideation to attempt.

A review of the literature indicates that research examining the link between emotion dysregulation and suicidality is limited, despite a theorized association. However, the existing research points to a link between emotion dysregulation and suicidality in youth with internalizing disorders (Tamas et al., 2007; Zlotnick et al., 1997). Importantly, in both of these studies the association between emotion dysregulation and suicidality was supported across the full spectrum of suicidality in youth, from ideation to attempt.

**Implications for Treatment Modifications**

Emotion dysregulation as a potential predictor of suicidality in anxiety-disordered youth implies the potential need to address emotion regulation in treatment for childhood anxiety disorders in order to address co-occurring suicidality and reduce risk for later suicidality. Emotion regulation focused treatments for the internalizing disorders are gaining support in the adult literature (e.g., Barlow, Allen, & Choate, 2004; Mennin 2004, 2006). There have been many similar calls to examine the role of emotion regulation in the treatment of childhood anxiety and depressive disorders (Hannesdottir & Ollendick, 2007; Southam-Gerow & Kendall, 2002; Suveg, Southam-Gerow, Goodman & Kendall, 2007; Trosper, Buzzella, Bennett, & Ehrenreich, 2009). Several researchers have responded to these calls with investigations of changes in emotion regulation following CBT for child anxiety (Suveg, Sood, Comer, & Kendall, 2009) and tests of
novel emotion regulation focused treatments for internalizing disorders in youth (Ehrenreich, et al., 2009; Kovacs et al., 2006; Suveg, Kendall, Comer, & Robin, 2006).

Emotion regulation in CBT for childhood anxiety disorders. There is evidence supporting the need for an emotion-focused component in CBT for childhood anxiety disorders. Suveg and colleagues (2009) examined changes in emotion regulation in anxiety-disordered youth following treatment with CBT. Participants were 37 youth ages 7-15 years with a principal diagnosis of GAD, SAD, or SoP. Emotion regulation was assessed with child self-report on the EESC and CEMS prior to and following 16 weeks of CBT. Results indicated that anxiety-disordered youth experienced pre-post improvements on the EESC and the CEMS: Worry subscale, but not the CEMS: Sadness or CEMS: Anger subscales. Thus, the findings suggest that anxiety-disordered youth show improved emotion regulation and coping with regards to worry after CBT for their anxiety disorder, but these changes do not generalize to similar improvements with regards to regulation of anger or sadness. Given that anxiety-disordered youth demonstrate emotion regulation deficits across the range of emotions (e.g., Suveg & Zeman, 2004), these findings provide empirical support for prior calls to examine the addition of a general emotion regulation component to CBT for childhood anxiety disorders.

Emotion regulation focused treatments for internalizing disorders in youth. There have been several initial efforts to develop emotion-focused treatments for internalizing disorders in youth. Researchers have developed and tested emotion focused
treatments for childhood anxiety disorders (Suveg et al., 2006), depressive disorders (Kovacs et al., 2006), and internalizing disorders (Ehrenreich et al., 2009).

One initial examination tested an emotion regulation focused treatment for childhood anxiety disorders. Suveg and colleagues (2006) conducted a multiple-baseline evaluation of emotion-focused cognitive-behavioral therapy (ECBT) for anxiety-disordered youth. Participants were six youth ages 7-13 years with GAD, SAD, or SoP. In addition to anxiety diagnoses and symptomatology, emotional understanding and regulation were assessed pre- and post-treatment with child report on the EESC, parent report on the ERC, and clinician ratings on the KAI-R. The youth received 16 weeks of ECBT (Kendall & Suveg, 2005). The ECBT was a modified version of the *Coping Cat* treatment (Kendall & Hedtke, 2006) that incorporated efforts to extend the development of emotion understanding and regulation skills to full range of emotions (not just anxiety). Emotion understanding was a component of every session in ECBT (as compared to a single session in CBT). Furthermore, efforts were made to develop skills to regulate any emotion that the child may have difficulty with (not just anxiety). Results suggest initial support for ECBT. Four of the six participants no longer met criteria for their principal anxiety disorder following treatment with ECBT. Further, most children experienced improvements in emotion understanding and emotion regulation following treatment. Findings indicate initial support for ECBT in treating childhood anxiety disorders and addressing the broad deficits in emotion regulation experienced by these youth. However, further research is necessary to replicate these findings in a larger sample using a randomized controlled trial to compare the efficacy of ECBT to CBT.
Similar efforts have been made with respect to treatment for childhood depressive disorders. Kovacs and colleagues (2006) developed and pilot-tested a contextual emotion-regulation therapy (CERT) for depressive disorders in youth. CERT was developed based on the assumption that dysregulation of distress and depressed mood contributes to the development of depressive disorders in youth. Within CERT, the emotion regulatory responses that the youth has utilized in the past are assessed, and those that have been helpful are reinforced and facilitated. New ways of regulating distress are introduced. Emotional regulation strategies are categorized as biological, behavioral, cognitive, or social/interpersonal. Contextual factors are considered in order to facilitate adaptive emotion regulation strategies. Participants in the open trial were 20 youth aged 7-12 years with a chronic depressive disorder (DSM dysthymic disorder or depressive disorder not otherwise specified). The treatment was conducted in four phases over 10 months, with up to 30 sessions. Of the 20 participants, 15 completed the treatment protocol. At the post-treatment assessment, 53.3% of the completers experienced full remission of their depressive disorder and 13.3% experienced partial remission. This percentage increased to 79% at 6-month follow-up and 92% by 12-month follow-up. Furthermore, there were significant improvements in both depressive and anxiety symptoms as assessed by self-report at post-treatment. CERT appears to be a promising emotion-focused intervention for chronic depressive disorders in youth. However, replication with a randomized controlled trial in a larger sample is necessary.

Finally, other researchers have sought to develop emotion regulation-focused interventions to address both anxiety and depressive disorders in youth. Ehrenreich and
colleagues (2009) developed an emotion-focused unified treatment protocol for emotional disorders (i.e., anxiety and depressive disorders) in adolescence in order to address the commonalities among the emotional disorders and the role of emotion dysregulation in these disorders. The treatment protocol was based on the adult version of a unified protocol which involved the major components of antecedent cognitive reappraisal, preventing emotional avoidance, and encouraging action tendencies that are not associated with the dysregulated emotion (Barlow et al., 2004). A pilot study with three participants provided initial support for this treatment, and resulted in modifications to the protocol. In the modified version of the protocol, emotion regulation skills such as strategies for preventing emotional avoidance and cognitive appraisal and reappraisal are taught. In the second half of treatment, adolescents engage in individualized emotion exposure activity and the emotion regulation skills are reinforced. An open trial is currently being conducted with the modified version of the protocol. Although further research is necessary to examine the efficacy of this unified protocol in both a larger open and a randomized controlled trial, the initial results lend further support focused interventions for internalizing disorders in youth.

Taken together, the findings of these three studies suggest that emotion-focused interventions for internalizing disorders in youth may be promising vehicles for improving both disorder-related outcomes and general emotion regulation skills. If emotion dysregulation is a predictor of suicidality in anxiety-disordered youth, these interventions may also address risk for co-occurring suicidality. However, several limitations must be noted. First, all of the trials conducted thus far have been open pilot
trials. Randomized controlled trials comparing these emotion-focused interventions to CBT for the internalizing disorders are clearly necessary before drawing any meaningful conclusions about these novel interventions. Furthermore, of the three investigations, only Suveg and colleagues (2006) directly assessed changes in emotion regulation following treatment in addition to disorder- and symptom-related outcomes. Given theorized treatment mechanisms, this is certainly surprising. The findings resulting from these additional assessments will be critical in supporting the argument for the added benefits of an emotion-focused treatment and in allowing for future examinations of treatment mechanisms.

**Distress Intolerance**

Broadly, the construct of distress tolerance may include tolerance of ambiguity, tolerance of uncertainty, discomfort tolerance, tolerance for negative emotional states, frustration tolerance, physical pain tolerance, and cognitive tolerance for psychological frustration (Leyro, Zvolensky, & Bernstein, 2010). For the purposes of this review, distress tolerance is defined as the ability to experience and withstand negative emotional states (Simons & Gaher, 2005) and the ability to persist at goal-directed tasks when distressed (e.g., Daughters et al., 2009). Distress intolerance (or low distress tolerance) involves finding negative emotion unbearable and unacceptable (Simons & Gaher, 2005). Distress intolerance may affect individuals’ use of emotion regulation strategies by increasing avoidance of negative emotion, suppression of negative emotion, and the use of any method that will quickly alleviate the distress (e.g., substances; Simons & Gaher,
Individuals with low distress tolerance may also find that negative emotions absorb their attention and impair their functioning (Simon & Gahe, 2005).

Distress intolerance has been theorized to be a risk or maintenance factor in a wide range of psychological disorders in adulthood (e.g., Mennin, Heimberg, Turk, & Fresco, 2002; Zvolensky & Otto, 2007). There is a growing body of evidence supporting the association of distress intolerance with substance use disorders and internalizing symptoms (see Leyro, Zvolensky, & Bernstein, 2010, for a review). Furthermore, distress tolerance has been the target of several empirically-supported treatments for various conditions in adults (e.g., Barlow et al., 2004; Linehan, 1993). Although less frequently studied in youth, distress tolerance may be an important construct to consider in relation to psychopathology and suicidality in children and adolescents.

Assessment of distress tolerance. Distress tolerance has been measured both in terms of the “perceived capacity to withstand negative emotional states” and the “actual behavioral acts of withstanding negative emotional states.” (Leyro et al., 2010). The former has typically been measured with self-report questionnaires in adults, whereas the latter is measured with behavioral tasks of persistence on frustrating tasks (Leyro et al., 2010). Recent evidence indicates that self-report and behavioral measures of distress tolerance are not significantly associated with each other in adults (McHugh et al., 2011), suggesting that these methods may in fact be measuring different constructs. In the limited research conducted on distress tolerance in youth, only behavioral measures of distress tolerance have been utilized (Daughters et al., 2009; Nock & Mendes, 2008).
Although there is a paucity of evidence regarding the association between distress tolerance and psychopathology in youth, there is considerable evidence for this association in adulthood (Leyro et al., 2010). The findings of examinations of this relationship in young adult samples support this link in terms of borderline personality disorder (BPD), alcohol and substance use disorders, eating disordered symptoms, and anxiety and depressive symptoms and disorders.

Although distress intolerance has been theorized to be a central aspect of BPD (Linehan, 1993), few empirical studies have examined distress tolerance in individuals with BPD. Gratz and colleagues (2009) examined willingness to persist in a goal-related task while experiencing distress in a sample of 35 adults aged 18-50 years with BPD (n=17) and without BPD (n=18). In addition to other measures not relevant to the current review, participants completed a behavioral task of distress tolerance, the Paced Auditory Serial Addition Task—Modified Computer Version (PASAT-C; Lejuez, Kahler, & Brown, 2003). On the PASAT-C, participants engage in an increasingly difficult task in which points are earned for correct answers. As the task difficulty increases, it is nearly impossible for the participant to provide a correct answer in time. The participant is then invited to participate in the task for a second time, with his or her compensation depending on the number of correct answers. The participant is told that he or she can quit at any time. Results of the study indicated that individuals with BPD terminated the task more quickly than individuals without BPD, controlling for distress during the task and task performance. They were also more likely to quit the task. These findings indicate lower distress tolerance in individuals with BPD than individuals without BPD,
which is consistent with theories that suggest that distress intolerance is a central aspect of BPD (Linehan, 1993).

The association between distress intolerance and substance use disorder symptoms and outcomes also has empirical support. Low distress tolerance has been associated with pre-treatment dropout among women seeking smoking cessation treatment (MacPherson, Stipelman, Dulpinsky, Brown, & Lejuez, 2008) as well as poor smoking cessation outcome and early relapse (Abrantes et al., 2008; Brandon et al., 2003; Brown, Lejuez, Kahler, & Strong, 2002). Additionally, low distress tolerance has also been associated with early treatment drop-out among adults seeking treatment for substance use (Daughters, Lejuez, Strong, Brown, Breen, & Lesieur, 2005) and shorter duration of alcohol and drug abstinence attempts among adults seeking treatment for substance use (Daughters, Lejuez, Kahler, Strong, & Brown, 2005). Finally, low distress tolerance interacted with high levels of major life events to predict greater depressive symptoms, alcohol and cocaine use, substance use coping, and medication adherence in HIV-positive adults (O’Cleirigh, Ironson, & Smits, 2007). Thus, there is considerable support for a relationship between distress tolerance and substance use symptoms and outcomes in adulthood.

Findings from young adult samples also support a link between distress tolerance and internalizing symptoms and disorders. Anestis, Selby, Fink, and Joiner (2007) examined the relationship between distress intolerance and bulimic symptoms. A sample of 200 undergraduates completed the Distress Tolerance Scale (DTS; Simons & Gaither, 2005), as well as measures of premeditation, perseverance, sensation seeking, depressive
symptoms, anxiety symptoms, positive and negative affect, anxiety sensitivity, and eating disorder symptomatology. Levels of distress tolerance predicted bulimic symptoms, controlling for gender, depressive symptoms, anxiety symptoms, anxiety sensitivity, negative affect, urgency, sensation seeking, premeditation, perseverance, and all other eating disorder symptoms. Distress tolerance also mediated the previously demonstrated relationship between anxiety sensitivity and bulimic symptoms. The authors concluded that distress tolerance is a predictor of psychopathology beyond substance use in adults, and that the general inability to tolerate negative emotions is a better predictor of bulimic symptoms that was anxiety sensitivity specifically. Of note, distress tolerance was significantly associated with anxiety symptoms, depressive symptoms, and anxiety sensitivity in this study, suggesting a link between distress intolerance and internalizing symptoms in young adults.

There is additional evidence to suggest a link between distress tolerance and internalizing symptoms in adults. Buckner, Keough, and Schmidt (2007) examined the role of both distress tolerance and discomfort tolerance (for physical pain) in problematic alcohol and cannabis use in young adults. A sample of 265 undergraduates completed the DTS, the Discomfort Intolerance Scale (DIS; Schmidt, Richey, & Fitzpatrick, 2006), and measures of depressive symptoms and alcohol and cannabis use and problems. Low distress tolerance was related to depressive symptoms and alcohol use and alcohol and cannabis problems. Furthermore, distress intolerance mediated the relationship between depression and both alcohol and cannabis problems. Surprisingly, although low distress tolerance was associated with low discomfort tolerance, high discomfort tolerance and
depression predicted greater levels of cannabis problems. The findings support the link between internalizing symptoms and distress intolerance, and further suggest that distress intolerance may explain the relationship between internalizing symptoms and risk behaviors (such as problematic alcohol and substance use) in young adults.

Additional evidence for the association between internalizing symptoms and distress tolerance in young adults comes from research regarding hoarding (Timpano, Buckner, Richey, Murphy, & Schmidt, 2009). A series of three studies examined distress intolerance and anxiety sensitivity as vulnerability factors for hoarding behaviors in adults. A sample of 270 undergraduates completed the DTS, and measures of anxiety sensitivity, hoarding behaviors, depressive symptoms, and anxiety symptoms. Findings suggest that anxiety sensitivity and low distress tolerance predict hoarding behavior. However, the relationship between distress intolerance and hoarding behaviors may be explained by shared associations with depressive symptoms, as it was reduced to non-significance after controlling for BDI score. Yet, the interaction between high anxiety sensitivity and low distress tolerance predicted hoarding behaviors even when controlling for depressive and other anxiety symptoms. The findings of this study provide further evidence for an association between distress tolerance and both anxiety and depressive symptoms in young adults.

Research indicates that the association between anxiety and distress intolerance extends to worry symptoms. Huang, Szabo, and Han (2009) examined the relationship between distress tolerance and worry in a sample of 119 undergraduates. Participants completed the DTS, and measures of worry, anxiety, depression, and stress. Lower
distress tolerance on the DTS was significantly associated with greater levels of excessive worry, depression, anxiety, and stress. Lower distress tolerance also predicted excessive worry after controlling for negative affect (anxiety, depression, and stress). The findings of this study extend support for the link between distress intolerance and internalizing symptoms in adults to the generalized anxiety symptom of worry.

Findings from another recent examination further extend the link between distress tolerance and anxiety in young adults to a wide range of anxiety symptoms (Keough, Riccardi, Timpano, Mitchell, & Schmidt, 2010). Undergraduate participants (N = 418) completed the DTS to assess distress tolerance. They also reported on anxiety sensitivity and a wide range of internalizing symptoms. Results indicated that lower distress tolerance on the DTS was associated with greater levels of worry, social anxiety, panic, and obsessive compulsive symptoms, after controlling for their shared association with anxiety sensitivity, depression, and general anxiety. These findings indicate that distress intolerance is associated with a wide range of anxiety symptomatology in young adults, and suggest that this construct may play a role in the related disorders.

Fewer studies have examined the relationship between distress tolerance and internalizing symptoms using behavioral measures of distress tolerance rather than self-report. In one recent exception, Ellis, Fischer, and Beevers (2010) examined distress tolerance in dysphoric young adults. In this study, undergraduate participants (N = 63) were categorized as dysphoric (n = 28) and non-dysphoric (n = 35) based on scores on the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996). Participants completed two behavioral measures of distress tolerance: the PASAT-C and the Mirror
Tracing Persistence Task—Computerized Version (MTPT-C; Strong et al., 2003). The dysphoric group demonstrated lower distress tolerance than the non-dysphoric group on the MTPT-C, but not the PASAT-C. Follow-up analyses to explore this unexpected inconsistency suggested that the PASAT-C may have been more distressing to both dysphoric and non-dysphoric groups. Despite this inconsistency, the findings of this study are suggestive of an association between distress intolerance and internalizing symptoms in adults when measured by a behavioral task. Further research is clearly needed to replicate this finding, particularly given the inconsistent findings between tasks of distress tolerance.

In sum, there is considerable evidence for the concurrent association between distress intolerance and a wide range of psychopathology in adults, including BPD, substance use disorders, eating disordered symptomatology, and depressive symptoms. Importantly, there is evidence for a specific link between anxiety and distress intolerance in adults (Huang et al., 2009: Keough et al., 2010; Timpano et al., 2009). Additionally, there is support for the relationship between distress intolerance and internalizing symptomatology using both self-report and behavioral measures of distress intolerance, which is important given the lack of measurement agreement regarding this construct (McHugh et al., 2011). These findings from cross-sectional studies suggest that further examination of the relationship between distress intolerance and psychopathology in longitudinal studies is warranted in order to examine the temporal and risk relationship between distress tolerance and the development of psychopathology. Furthermore, the consistent association between distress intolerance and psychopathology, specifically
anxiety, in adults indicates the need to examine the same relationship in children and adolescents.

**Distress Tolerance and Anxiety in Youth**

Despite the growing research base on this topic for adults, distress tolerance and its relationship to psychopathology have been infrequently studied in youth. Daughters and colleagues (2009) conducted one of very few studies of distress tolerance in youth to date. The study examined the relationship between distress tolerance and internalizing and externalizing symptoms in a diverse community sample of youth aged 9-13 years. In accordance with negative reinforcement models, the researchers hypothesized that low distress tolerance may contribute to either avoidance/withdrawal or risky behavior, which is negatively reinforced, and contributes to internalizing or externalizing symptoms. The researchers further hypothesized that the relationship between distress intolerance and psychopathology would be moderated by gender and ethnicity. Substance use and risky behavior was measured by self-report on a modified version of the CDC Youth Risk Behavior Survey. Internalizing symptoms were assessed via self-report on the RCADS. Finally, distress tolerance was assessed with the Behavioral Indicator of Resiliency to Distress (BIRD; Lejuez, Daughters, Danielson, & Ruggiero, 2006), a computerized distress tolerance task for youth based on a similar adult task (PASAT-C). The BIRD requires youth to quickly respond to visual stimuli. The task becomes increasingly difficult with time, with shorter response latencies allowed over time. A pleasant noise is heard and a point is earned if the youth responds correctly. If the child does not respond correctly or in time, an unpleasant noise is heard. After the child’s skill level is assessed
with an initial level of the task, the child is invited to participate in another round of the
task. The child is told that he or she can quit the task at any time, but his or her prize is
dependent on performance on the task. The task becomes very difficult during this final
round of the task, which lasts up to five minutes. Distress tolerance was measured
categorically as whether the child persisted on or quit the task, as well as continuously as
the length of time for which the child persisted on the task.

Results indicated that as hypothesized, the relationships between distress
intolerance and internalizing and externalizing psychopathology were moderated by
gender and ethnicity. Low distress tolerance predicted past year alcohol use for
Caucasian youth only. Low distress tolerance predicted past year delinquent behavior for
African-American youth only. Finally, low distress tolerance predicted greater levels of
internalizing symptoms for female youth but not males. These findings are consistent
with theorized relationships between distress intolerance and poor emotion regulation
strategies and psychopathology in youth. Given that the community sample used in this
study had low rates of both externalizing and internalizing symptomatology, the
relationship between distress intolerance and psychopathology warrants investigation in
treatment-seeking samples of youth with externalizing and internalizing disorders.

**Distress Tolerance and Suicidality in Youth**

There is no empirical evidence available regarding the specific relationship
between distress tolerance and suicidality in youth, despite the frequent theoretical
connection made between distress tolerance and suicidality or self-harm behaviors
(Chapman, Gratz, & Brown, 2006; Klonsky, 2007; Linehan, 1993). However, there is
some initial support for the connection between distress intolerance and self-injury in adolescents. Nock and Mendes (2008) examined physiological arousal, distress tolerance, and social problem-solving in adolescents ages 12-19 who self-injure (n=62) compared to those who do not self-injure (n =30). The participants were recruited from the community. However, 76.6% of the adolescents met diagnostic criteria for a current psychiatric disorder. Anxiety disorders were the most common diagnosis (46.7%), followed by mood disorders (32.6%), alcohol and substance use disorders (14.1%), impulse-control disorders (10.9%), and eating disorders (6.5%). The Self Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007) was administered to youth in order to assess for lifetime engagement in non-suicidal self-injury. Adolescents with any lifetime history of self-injury were included in the self-injury group. Distress tolerance was assessed with a behavioral task created for the study (Distress Tolerance Task, Nock & Mendes, 2008). Stimulus cards from the Wisconsin Card Sort Test were used to create a frustrating task. After a set number of presentations of cards, the option to escape the task was given. The behavioral measure of distress tolerance was the number of card presentations the participant persisted for on the task. The main finding relevant to the current review is that adolescent self-injurers persisted on the distress tolerance task for significantly fewer cards than the adolescents who did not self-injure. Thus, distress intolerance was associated with history of self-injury in a sample of adolescents, a large portion of which was diagnosed with an anxiety or mood disorder. Although suicidality was not measured in this study, the findings regarding self-harm suggest that this link warrants exploration in future research. Given the findings of
Nock and Mendes, a sample of youth with anxiety disorders may be an appropriate group in which to examine this relationship.

**Implications for Treatment Modifications**

The addition of distress tolerance skills to traditional CBT for childhood anxiety disorders may help to address co-occurring suicidality and reduce risk for later suicidality. Distress tolerance skills are targeted within skills training in dialectical behavior therapy (DBT) for borderline personality disorder and other conditions (Linehan, 1993). The goal is to tolerate and accept distress as a part of life. In DBT, the distress tolerance skills such as distraction (such as with other activities), self-soothing, and improving the moment (such as with relaxation) are taught (Linehan, 1993). DBT has empirical support as a treatment for adults with borderline personality disorder (e.g., Linehan, 2006), bulimia nervosa (Safer, Telch, & Agras, 2001), and binge-eating disorder (Safer, Robinson, & Jo, 2010; Telch, Agras, & Linehan, 2001). DBT has also been used with adolescents with suicidal behaviors (e.g., Rathus & Miller, 2002) or binge eating disorder (e.g., Safer, Lock, & Couturier, 2007). Although DBT has not been studied as a treatment for childhood anxiety disorders, the goal of increasing distress tolerance is consistent with aspects of both traditional CBT for anxiety and emotion-focused treatments for childhood internalizing disorders (Ehrenreich et al., 2009; Kovacs et al., 2006; Suveg et al., 2006). Modifications of these treatments to include some general distress tolerance skills may be warranted, particularly if distress intolerance is found to be a predictor of suicidality in anxiety-disordered youth.

**Conclusions and Directions for Future Research**
A review of the evidence from community-based and treatment-seeking samples of youth suggests growing support for an independent association between anxiety disorders and suicidality in youth, beyond demographic factors and depression. However, findings remain mixed, with some studies failing to support this relationship. The inconsistent findings to date may be explained by sample differences among studies or the relationship between anxiety and suicidality may vary by subtype of anxiety or the specific components of suicidality. Furthermore, investigations of the association between anxiety disorders and suicidality in treatment-seeking samples are limited. The existing investigations of suicidality in youth referred for treatment for anxiety disorders indicate that 41% of anxiety-disordered youth endorse suicidal ideation (O’Neil et al., 2012). However, suicidality was measured in this study with one item on a self-report measure of depression. Further research is necessary to examine the independent relationship between anxiety and suicidality in treatment-seeking anxiety-disordered youth using continuous measures of suicidality and multiple informants regarding suicidality. Such research will extend the limited knowledge of the rates and severity of suicidality in anxiety-disordered youth. Importantly, the findings of this research would contribute to the ongoing debate regarding the independent association between anxiety and suicidality beyond the association accounted for by demographic factors and depression. Suicidal ideation is an appropriate target for initial investigations of suicidality in anxiety-disordered youth, as suicidal ideation precedes and predicts suicidal behavior (Lewinsohn et al., 1996) and is more prevalent than suicidal behavior in both community and treatment-seeking samples of youth (Lewinsohn et al., 1996, O’Neil et
al., 2012). Furthermore, suicidal ideation in adolescence predicts suicidal ideation, suicide attempts, and poorer functioning in adulthood (Reinhertz et al., 2006), suggesting that suicidal ideation is deserving of research and clinical attention even in the absence of suicidal behaviors. Thus, a study examining the independent relationship between anxiety and suicidal ideation in anxiety-disordered youth using a continuous measure and multiple informants is the appropriate next step for this line of research.

However, despite growing evidence of an independent association between anxiety disorders and suicidality in youth, it is clear that not all anxiety-disordered youth experience suicidal ideation or behaviors. Therefore, future research should also examine predictors of suicidality in anxiety-disordered youth in order to identify youth most at-risk for suicidality and to inform treatment and potential treatment modifications. The current review identified three potential predictors of suicidality in anxiety-disordered youth: comorbid depressive disorders, emotion dysregulation, and distress intolerance. For each potential predictor, there is evidence of an association to both anxiety and suicidality in youth. Furthermore, there are implications of each for potential modifications to current CBT treatments for childhood anxiety disorders. However, these potential predictors of suicidality have yet to be examined empirically in treatment-seeking samples of anxiety-disordered youth. Such investigations are warranted.

Additional avenues for future research include examining the effect of CBT for childhood anxiety disorders on co-occurring suicidality and later risk for suicidality in adulthood, as well as comparing the efficacy of CBT to modified treatments (e.g., integrated treatments for anxiety and depression, emotion focused treatments) in reducing co-occurring
suicidality and future risk for suicidality. Together, these research programs will help to identify predictors of and inform treatment for co-occurring suicidality in anxiety-disordered youth. Importantly, such research will advance our understanding of how to help those children and adolescents who experience both of these distressing and impairing conditions.
### Table 1

**Studies of the Relationship between Anxiety and Suicidality in Adults**

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Anxiety Disorder(s)</th>
<th>Suicidality</th>
<th>Covariates</th>
<th>Independent Association?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cougle et al., 2009</td>
<td>4,131</td>
<td>SocAD, GAD, PD, PTSD</td>
<td>Ideation and attempts</td>
<td>DF, Axis I and II</td>
<td>Yes, for ideation (SocAD OR= 1.68, GAD OR= 1.58, PD OR= 1.59, PTSD OR= 1.80) and attempts (SocAD OR= 1.60, GAD OR= 1.74, PTSD OR= 1.96)</td>
</tr>
<tr>
<td>Goodwin et al., 2006</td>
<td>5,877</td>
<td>PD</td>
<td>Ideation and attempts</td>
<td>DF, MDD, SUD</td>
<td>Yes, for ideation (past year OR= 2.5, lifetime OR= 1.5) and past year attempts (OR= 4.3) (No for lifetime attempts)</td>
</tr>
<tr>
<td>Horning et al., 1995</td>
<td>18,208</td>
<td>PD</td>
<td>Attempts</td>
<td>SCH, DD, SUD, MDD, BP, AG, OCD, DF</td>
<td>No (OR = 1.2)</td>
</tr>
<tr>
<td>Nepon et al., 2010</td>
<td>34,653</td>
<td>PD, AG, SocAD, SP, GAD, PTSD</td>
<td>Attempts</td>
<td>DF, Axis I and II</td>
<td>Yes (any anxiety disorder OR= 1.70, PD OR= 1.44, PTSD OR= 1.89)</td>
</tr>
<tr>
<td>Sareen et al., 2005</td>
<td>7,076</td>
<td>PD, AG, SocAD, GAD, PTSD</td>
<td>Ideation and attempts</td>
<td>DF, MDD, BD, DD, ED, SUD, SCH</td>
<td>Yes, in cross-sectional analysis for ideation (any anxiety disorder OR= 2.29) and attempts (any anxiety disorder OR= 2.48)</td>
</tr>
<tr>
<td>Vickers et al., 2004</td>
<td>5,872</td>
<td>PD, AG, SocAD, GAD, PTSD</td>
<td>Attempts</td>
<td>DF, MDD, DD, SUD, CD, APD, SCH, BD</td>
<td>No for PD (OR= 1.12). Yes for GAD (OR= 1.62) and PTSD (OR= 3.22)</td>
</tr>
<tr>
<td>Warshaw et al., 2000</td>
<td>498</td>
<td>PD</td>
<td>Attempts</td>
<td>None (all subjects had PD)</td>
<td>No</td>
</tr>
<tr>
<td>Weissman et al., 1989</td>
<td>18,011</td>
<td>PD</td>
<td>Ideation and attempts</td>
<td>MDD, SUD</td>
<td>Yes (OR = 2.62)</td>
</tr>
</tbody>
</table>
Note. AG = Agoraphobia; Antisocial Personality Disorder; BD = Bipolar Disorder; CD = Conduct Disorder, DD = Dysthymic Disorder; DF = Demographic Factors; ED = Eating Disorder; GAD = Generalized Anxiety Disorder; OCD = Obsessive Compulsive Disorder; OR = Odds Ratio; PD = Panic Disorder; PTSD = Posttraumatic Anxiety Disorder; MDD = Major Depressive Disorder; SCH= Schizophrenia or Psychosis; SocAD = Social Anxiety Disorder; SP = Specific Phobia; SUD = Substance Use Disorder.
## Table 2

### Studies of the Relationship between Anxiety and Suicidality in Youth

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Ages</th>
<th>Sample Source</th>
<th>Anxiety Disorder(s)</th>
<th>Suicidality</th>
<th>Covariates</th>
<th>Independent Association?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boden et al., 2007</td>
<td>1,265</td>
<td>16-25</td>
<td>Community</td>
<td>GAD, PD, Phobia (AG, SocP, SP)</td>
<td>Ideation and attempts</td>
<td>MDD, SUD, CD, APD, life stress</td>
<td>Yes (for ideation, Phobia OR= 2.14, GAD OR= 6.35, PD OR= 1.89)</td>
</tr>
<tr>
<td>Carter et al., 2008</td>
<td>252</td>
<td>7-16</td>
<td>Treatment-referred</td>
<td>Anxiety symptoms</td>
<td>Ideation</td>
<td>DF (matched on age and gender),</td>
<td>Yes, when using brief measure of anxiety</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Outpatient)</td>
<td></td>
<td></td>
<td>Depressive symptoms</td>
<td></td>
</tr>
<tr>
<td>Esposito et al., 2002</td>
<td>73</td>
<td>14-18</td>
<td>Community</td>
<td>GAD</td>
<td>Ideation</td>
<td>DF (gender), severity of MDD, DD, DBD, SUD</td>
<td>No</td>
</tr>
<tr>
<td>Foley et al., 2006</td>
<td>1,420</td>
<td>9-16</td>
<td>Community</td>
<td>All</td>
<td>Ideation, plans, attempts</td>
<td>DF (age, gender), MDD, DBD, SUD</td>
<td>No</td>
</tr>
<tr>
<td>Ghazuiddin et al., 2000</td>
<td>56</td>
<td>13-18</td>
<td>Treatment-referred</td>
<td>Anxiety symptoms</td>
<td>Ideation</td>
<td>Depressive symptoms</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Hospitalized)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldston et al., 2009</td>
<td>180</td>
<td>12-19</td>
<td>Treatment-referred</td>
<td>All</td>
<td>Attempts</td>
<td>DF, MDD, DD, DBD, SUD</td>
<td>Yes, for PD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Hospitalized)</td>
<td></td>
<td></td>
<td></td>
<td>No, other anxiety disorders</td>
</tr>
<tr>
<td>Gould et al., 2019</td>
<td>1,285</td>
<td>9-17</td>
<td>Community</td>
<td>SAD, GAD,</td>
<td>Ideation</td>
<td>DF, BP, DD</td>
<td>Yes (for ideation, any anxiety</td>
</tr>
<tr>
<td>Year</td>
<td>Sample Size</td>
<td>Age Range</td>
<td>Setting</td>
<td>Symptom(s)</td>
<td>Diagnosis</td>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------</td>
<td>---------</td>
<td>------------</td>
<td>-----------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Greene et al.</td>
<td>88</td>
<td>7-18</td>
<td>Treatment-referred (Outpatient) AD, OAD, OCD, SP, SocP, AG, PD GAD symptoms (within primarily externalizing disorders) and attempts</td>
<td>Ideation</td>
<td>Depressive symptoms</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Nelson et al.</td>
<td>1,344</td>
<td>M=18.2</td>
<td>Community Treatment-referred (Hospitalized) SocP</td>
<td>Ideation, attempts</td>
<td>MDD</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Ohring et al.</td>
<td>118</td>
<td>12-21</td>
<td>Anxiety symptoms Ideas for trait anxiety symptoms (No, for state anxiety)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>O’Neil et al.</td>
<td>217</td>
<td>7-17</td>
<td>Treatment-referred (Outpatient) Anxiety symptoms Ideation</td>
<td>Depressive symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>Pilowsky et al.</td>
<td>1,580</td>
<td>13-14</td>
<td>Community PA</td>
<td>Ideation and attempts</td>
<td>DF, MDD, alcohol/drug use</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Pinto et al.</td>
<td>228</td>
<td>13-18</td>
<td>Treatment-referred (Hospitalized) Anxiety symptoms Ideation</td>
<td>Yes (for ideation OR= 3.34, for attempts OR= 1.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Strauss et al.</td>
<td>1,979</td>
<td>5-19</td>
<td>Treatment-referred (Outpatient) SAD, GAD, SocP</td>
<td>Ideation and attempts</td>
<td>DF, MDD, DD, BD, ED, DBD, SUD</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Wunderlich et al.</td>
<td>3,021</td>
<td>14-24</td>
<td>Community PTSD, SP, PA, GAD,</td>
<td>Attempts</td>
<td>BP, DD, MDD, SUD, ED,</td>
<td></td>
</tr>
</tbody>
</table>

No, except GAD for youth older than 15

Yes, SP OR= 3.6, AG OR= 2.3, PA OR= 2.3
SocP, OCD, AG
Somatoform

Note. AD = Avoidant Disorder; AG = Agoraphobia; APD = Antisocial Personality Disorder; BD = Bipolar Disorder; CD = Conduct Disorder; DD = Dysthymic Disorder; DF = Demographic Factors; DBD = Disruptive Behavior Disorder; ED = Eating Disorder; GAD = Generalized Anxiety Disorder; OAD = Overanxious Disorder; OCD = Obsessive Compulsive Disorder; OR = Odds Ratio; PA = Panic Attacks; PD = Panic Disorder; PTSD = Posttraumatic Anxiety Disorder; MDD = Major Depressive Disorder; Schizophrenia = SCH; SAD = Separation Anxiety Disorder; SP = Specific Phobia; SocP = Social Phobia, SUD = Substance Use Disorder.
CHAPTER THREE

RESULTS

Power Analyses

Prior estimates of effect sizes are not readily available given that the relationships among anxiety, depression, emotion regulation, distress tolerance, and suicidal ideation have been infrequently studied in treatment-seeking samples. However, the few studies that have examined the relationship between anxiety and suicidal ideation in treatment-seeking youth have found medium to large effect sizes for the independent relationship between anxiety and suicidal ideation, controlling for depression. Greene et al. (2009) reported that anxiety symptoms accounted for 27% of the variance in suicidal ideation in a clinic-referred sample, which corresponds to an effect size of $f^2 = .37$. In the Ghaziuddin et al. (2000) sample of hospitalized depressed adolescents, anxiety accounted for 24% of variance in suicidal ideation, which corresponds to an effect size of $f^2 = .32$. According to Cohen’s (1988) guidelines for small ($f^2 = .02$), medium ($f^2 = .15$), and large ($f^2 = .35$), effect sizes, these effects can be considered to be medium to large.

A sample size of 85 is adequately powered (.80) to detect a medium effect size ($f^2 = .15$) in a hierarchical multiple regression analysis with four predictors, according to a power analysis conducted in G*Power.

Missing Data

In cases where a participant was missing one or more items of a measure and the missing items comprised 15% or fewer of the total number of items, total scores were pro-rated using mean scores on that measure. In cases where the missing items comprised
more than 15% of the total number of items, these participants were excluded from all analyses involving that measure.

**Preliminary Analyses**

None of the demographic factors (age, gender, race, or family SES) or clinical characteristics (principal diagnosis, level of global functioning) examined was significantly associated with youth self-report of suicidal ideation either when suicidal ideation was examined continuously or categorically (Table 1). Thus, none of these factors were included as covariates in subsequent analyses. Higher levels of depressive symptomatology significantly predicted youth self-report of suicidal ideation both when examined continuously ($B = .46, p < .001$) and categorically ($t (84) = 2.51, p = .01$). Thus, depressive symptomatology was included as a covariate in subsequent analyses.
Table 1

Descriptive Information for Study Participants by Suicidal Ideation Status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Suicidal Ideation Status</th>
<th>Significance Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AD-SI (N-50)</td>
<td>AD–NSI (N=36)</td>
</tr>
<tr>
<td>Child age in years (SD)</td>
<td>11.92 (3.27)</td>
<td>10.90 (2.75)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( t) (84) = 1.52</td>
</tr>
<tr>
<td>Males (%)</td>
<td>30 (60%)</td>
<td>15 (41.6%)</td>
</tr>
<tr>
<td></td>
<td>( \chi^2 ) (1, N = 86) = 2.82</td>
<td></td>
</tr>
<tr>
<td>Race (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>43 (86%)</td>
<td>30 (83.33%)</td>
</tr>
<tr>
<td></td>
<td>( \chi^2 ) (1, N = 86) = 0.17</td>
<td></td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>7 (14%)</td>
<td>6 (16.67%)</td>
</tr>
<tr>
<td>Principal Anxiety Diagnosis (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAD</td>
<td>23 (46%)</td>
<td>11 (30.56%)</td>
</tr>
<tr>
<td></td>
<td>( \chi^2 ) (1, N = 86) = 2.36</td>
<td></td>
</tr>
<tr>
<td>SAD</td>
<td>4 (8%)</td>
<td>6 (16.67%)</td>
</tr>
<tr>
<td></td>
<td>( \chi^2 ) (1, N = 86) = 1.53</td>
<td></td>
</tr>
<tr>
<td>Social Phobia</td>
<td>13 (26%)</td>
<td>11 (30.56%)</td>
</tr>
<tr>
<td></td>
<td>( \chi^2 ) (1, N = 86) = 0.22</td>
<td></td>
</tr>
<tr>
<td>Specific Phobia</td>
<td>5 (10%)</td>
<td>6 (16.67%)</td>
</tr>
<tr>
<td></td>
<td>( \chi^2 ) (1, N = 86) = 0.83</td>
<td></td>
</tr>
<tr>
<td>Panic Disorder</td>
<td>3 (6%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td></td>
<td>Fisher’s exact ( p = .26 )</td>
<td></td>
</tr>
<tr>
<td>OCD</td>
<td>2 (4%)</td>
<td>1 (2.78%)</td>
</tr>
<tr>
<td></td>
<td>Fisher’s exact ( p = 1.0 )</td>
<td></td>
</tr>
<tr>
<td>AD-NOS</td>
<td>0 (0%)</td>
<td>1 (2.78%)</td>
</tr>
<tr>
<td></td>
<td>Fisher’s exact ( p = .42 )</td>
<td></td>
</tr>
<tr>
<td>CGAS Composite (SD)</td>
<td>53.74 (6.11)</td>
<td>55.08 (6.70)</td>
</tr>
<tr>
<td></td>
<td>( t) (84) =0.97</td>
<td></td>
</tr>
<tr>
<td>Principal Disorder CSR (SD)</td>
<td>5.44 (0.93)</td>
<td>5.28 (0.94)</td>
</tr>
<tr>
<td></td>
<td>( t) (84) =0.79</td>
<td></td>
</tr>
<tr>
<td>CDI (SD)</td>
<td>10.88 (5.88)</td>
<td>7.44 (6.78)</td>
</tr>
<tr>
<td></td>
<td>( t) (84) =2.51*</td>
<td></td>
</tr>
</tbody>
</table>

Note. N= 86. AD-SI = Anxiety Disorder with Suicidal Ideation, AD-NSI = Anxiety Disorder without Suicidal Ideation, GAD = Generalized Anxiety Disorder, SAD = Separation Anxiety Disorder, OCD= Obsessive Compulsive Disorder, AD-NOS= Anxiety Disorder, Not Otherwise Specified, CDI = Child Depression Inventory, CGAS = Clinician Global Assessment Scale, CSR = Clinician Severity Rating, *\( p < .05 \)
Rates and Severity of Suicidal Ideation

With regards to child self-report of suicidality, scores on the SIQ-JR ranged from 0 to 49 ($M=5.29$, $SD=8.53$). Of the 86 participating youth, 50 youth (58.1%) reported some level of suicidal ideation (a non-zero total score on the SIQ-JR). In contrast, only 9 (10.5%) youth had any level of suicidal talk or behavior according to parent report (a non-zero score on the CBCL suicidality items).

Relationships among Predictor Variables

In order to ensure that assumptions of multiple and logistic regression were met, the predictor variables were examined for multicollinearity. Tolerance statistics below .1, VIF statistics above 10, and Pearson’s correlations above .8 may indicate problems with multicollinearity (Fields, 2005). An examination of the Tolerance and VIF statistics and Pearson’s correlations indicated that there was not multicollinearity among predictor variables (Table 2).

---

1 Given concerns about the non-normal distribution of the SIQ scores, all analyses involving SIQ scores were also conducted using a categorical approach (SIQ score of zero or non-zero) in logistic regression, as well as using a log transformation of the SIQ scores in multiple regression. There were no differences in the significance of any reported findings using these alternate analytic approaches. Thus, multiple regression analyses using non-transformed SIQ scores are presented for ease of interpretation.
Table 2

Bivariate correlations between predictor variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MASC Youth Report</td>
<td>--</td>
<td>.49**</td>
<td>.48**</td>
<td>-.04</td>
<td>.09</td>
<td>-.36**</td>
<td>.09</td>
<td>-.23*</td>
</tr>
<tr>
<td>2. CDI Youth Report</td>
<td>--</td>
<td>.55**</td>
<td>.11</td>
<td>.23*</td>
<td>-.13</td>
<td>-.03</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>3. CEMS Youth Report (Dysregulation)</td>
<td>--</td>
<td>.21</td>
<td>.07</td>
<td>-.29*</td>
<td>-.31*</td>
<td>-.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. CEMS Parent Report (Dysregulation)</td>
<td>--</td>
<td>.52**</td>
<td>-.14</td>
<td>-.31*</td>
<td>.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ERC Parent Report (Lability/Negativity)</td>
<td>--</td>
<td>.06</td>
<td>-.06</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. DTS Youth Report</td>
<td>--</td>
<td>.16</td>
<td>.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. DTS Parent Report</td>
<td>--</td>
<td>-.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. BIRD Quit Time</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* MASC= Multidimensional Anxiety Scale for Children, CDI= Children’s Depression Inventory, CEMS= Children’s Emotion Management Scales, ERC= Emotion Regulation Checklist, DTS= Distress Tolerance Scale, BIRD= Behavioral Indicator of Resiliency to Distress. 
* = p <.05, ** p < .01.
Primary Aim: Independent Relationship between Anxiety and Suicidal Ideation

Anxiety symptomatology independently predicted youth-reported suicidal ideation, above and beyond the relationship accounted for by depressive symptomatology ($\beta = .42, p < .001$). Anxiety symptomatology was not significantly associated with suicidal talk or behavior on parent report (operationalized as a score $> 0$ on parent report items) after controlling for depressive symptomatology (odds ratio $= 1.01, p = .52$).

Contrary to my hypothesis, anxiety-disordered youth had significantly lower total scores on the SIQ-JR than the normative group ($t(1374) = 3.97, p < .001$). However, when the current sample was restricted to youth in 7th grade and higher, as in the normative group, this difference is no longer statistically significant ($t(1318) = 1.89, p = .06$).

Table 3
Hierarchical Regression Analysis for Anxiety Predicting Self-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th>Block 1</th>
<th>B</th>
<th>SE</th>
<th>$\beta$</th>
<th>$R^2$</th>
<th>$R^2_{\text{change}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.40</td>
<td>1.46</td>
<td></td>
<td>.21</td>
<td>.21</td>
</tr>
<tr>
<td>CDI</td>
<td>0.60</td>
<td>0.13</td>
<td>.46***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-7.28</td>
<td>2.16</td>
<td></td>
<td>.34</td>
<td>.13</td>
</tr>
<tr>
<td>CDI</td>
<td>0.33</td>
<td>0.14</td>
<td>.25*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MASC</td>
<td>0.19</td>
<td>0.05</td>
<td>.42***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N= 86$. CDI= Children’s Depression Inventory. MASC= Multidimensional Anxiety Scale for Children. * $p < .05$, *** $p < .001$.

Table 4
Logistic Regression Analysis for Anxiety Predicting Parent-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th>Block 1</th>
<th>B</th>
<th>SE</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.60</td>
<td>0.83</td>
<td>.03</td>
</tr>
<tr>
<td>CDI</td>
<td>0.13</td>
<td>0.06</td>
<td>1.14*</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-4.18</td>
<td>1.26</td>
<td>.02</td>
</tr>
<tr>
<td>CDI</td>
<td>0.11</td>
<td>0.06</td>
<td>1.12</td>
</tr>
<tr>
<td>MASC</td>
<td>0.01</td>
<td>0.02</td>
<td>1.01</td>
</tr>
</tbody>
</table>

Note. $N= 86$. CDI= Children’s Depression Inventory. MASC= Multidimensional Anxiety Scale for Children. * $p < .05$. Nagelkerke $R^2 = .14$. 
Primary Aim: Comorbid Depressive Disorders and Suicidal Ideation

Youth-reported suicidal ideation. Anxiety-disordered youth with and without comorbid depressive disorders did not differ in levels of suicidal ideation according to youth self-report ($t(84)= 0.17, p = .87$) or presence of any suicidal ideation according to youth self-report ($\chi^2 (1, N = 86) = 0.77, p = .38$).

Parent-reported suicidal ideation. Anxiety-disordered youth with and without comorbid depressive disorders did not differ in presence of suicidality according to parent report (Fisher’s exact $p = .62$).

Table 5
Suicidal Ideation by Comorbid Depressive Disorder Status

<table>
<thead>
<tr>
<th>Comorbid Depressive Disorder Status</th>
<th>Variable</th>
<th>AD-DD (n= 13)</th>
<th>AD-NDD (n=73)</th>
<th>Significance Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIQ-JR (SD)</td>
<td>4.92 (6.40)</td>
<td>5.35 (8.89)</td>
<td>$t(84)= 0.17, p = .87$</td>
<td></td>
</tr>
<tr>
<td>SIQ-JR Presence (%)</td>
<td>9 (69%)</td>
<td>41 (56.16%)</td>
<td>$\chi^2 (1, N = 86) = 0.77, p = .38$</td>
<td></td>
</tr>
<tr>
<td>CBCL- Presence (%)</td>
<td>2 (15.38%)</td>
<td>7 (9.59%)</td>
<td>Fisher’s exact $p = .62$</td>
<td></td>
</tr>
</tbody>
</table>

Note. $N= 86$. AD-DD = Anxiety Disorder with Comorbid Depressive Disorder, AD-ND = Anxiety Disorder without Comorbid Depressive Disorder, SIQ-JR = Suicidal Ideation Questionnaire- Junior Version, CBCL= Children’s Behavior Checklist.
Primary Aim: Emotion Regulation and Suicidal Ideation

**Youth-reported suicidal ideation.** More severe emotion dysregulation as reported by youth significantly predicted higher levels of youth self-reported suicidal ideation ($\beta = .46, p < .001$). This relationship remained significant after controlling for depressive symptomatology ($\beta = .29, p = .02$). Parent report of emotion dysregulation was not predictive of youth-reported suicidal ideation according to either the CEMS ($\beta = -.02, p = .90$) or the ERC ($\beta = .19, p = .10$).

**Parent-reported suicidal ideation.** More severe emotion dysregulation as reported by youth significantly predicted the presence of parent-reported suicidality (odds ratio= 1.34, $p = .02$). However, this relationship was no longer significant after controlling for depressive symptomatology. More severe emotion dysregulation as reported by parents on the CEMS also predicted the presence of parent-reported suicidality at a level approaching significance (odds ratio= 1.27, $p = .05$). However, this relationship was not significant after controlling for depressive symptomatology. More severe emotion dysregulation (lability/negativity) as reported by parents on the ERC also significantly predicted the presence of parent-reported suicidality (odds ratio= 1.16, $p = .03$). However, this relationship was no longer significant after controlling for depressive symptomatology.
Table 6
Linear Regression Analysis for Emotion Regulation Predicting Self-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMS Youth Report</td>
<td>.99</td>
<td>.22</td>
<td>.46***</td>
</tr>
</tbody>
</table>

*Note.* n= 78. CEMS= Children’s Emotion Management Scales. ***p < .001.

Table 7
Linear Regression Analysis for Emotion Regulation Predicting Self-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMS Parent Report</td>
<td>-.12</td>
<td>.34</td>
<td>-.04</td>
</tr>
</tbody>
</table>

*Note.* n= 68. CEMS= Children’s Emotion Management Scales.

Table 8
Linear Regression Analysis for Emotion Regulation Predicting Self-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC Lability/Negativity</td>
<td>.30</td>
<td>.18</td>
<td>.19</td>
</tr>
</tbody>
</table>

*Note.* n= 78. ERC= Emotion Regulation Checklist.

Table 9
Logistic Regression Analysis for Emotion Regulation Predicting Parent-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>( \text{Exp (B)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMS Youth Report</td>
<td>.29</td>
<td>.12</td>
<td>1.34*</td>
</tr>
</tbody>
</table>

*Note.* n= 78. CEMS= Children’s Emotion Management Scales, *p < .05, Nagelkerke \( R^2 = .16 \).

Table 10
Logistic Regression Analysis for Emotion Regulation Predicting Parent-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>( \text{Exp (B)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMS Parent Report</td>
<td>.24</td>
<td>.12</td>
<td>1.27</td>
</tr>
</tbody>
</table>

*Note.* n= 68. CEMS= Children’s Emotion Management Scales, Nagelkerke \( R^2 = .23 \).

Table 11
Logistic Regression Analysis for Emotion Regulation Predicting Parent-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>( \text{Exp (B)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC Lability/Negativity</td>
<td>.15</td>
<td>.07</td>
<td>1.16*</td>
</tr>
</tbody>
</table>

*Note.* n= 78. ERC= Emotion Regulation Checklist, * p < .05, Nagelkerke \( R^2 = .13 \).
Primary Aim: Distress Tolerance and Suicidal Ideation

**Behavioral indicator of distress tolerance.** Youth persisted on the BIRD for an average of 163.4 seconds (SD= 107.5). Of the 75 youth who completed the BIRD task, 66 (76.7%) quit the task before the five minute time limit. However, youth did not self-report an increase in negative affect during the first two levels of the task as measured by the PANAS-C ($r(73)= 0.98, p = .33$).

**Youth-reported suicidal ideation.** Youth self-report of distress tolerance significantly predicted youth self-report of suicidal ideation, such that lower levels of distress tolerance on the DTS predicted higher scores on the SIQ-JR ($\beta = -.35, p = .005$). This relationship remained significant after controlling for depressive symptomatology ($\beta = -.29, p = .009$). Parent-report of distress tolerance was not significantly predictive of youth self-report of suicidal ideation ($\beta = -.06, p = .60$). Duration of persistence on the behavioral distress tolerance task, controlling for skill level on the task, was not predictive of higher levels of youth-reported suicidal ideation ($\beta = -.10, p = .42$). Similarly, distress tolerance classification (low or high, operationalized as terminated the task or persisted for the duration of the task), controlling for skill level on the task, was unrelated to youth-reported suicidal ideation ($F (2, 74) = .03, p = .87$).

**Parent-reported suicidal ideation.** Youth self-report was not predictive of parent report of suicidality (odds ratio= .40, $p = .11$). Parent report of distress tolerance was also unrelated to parent report of suicidality (odds ratio= .89, $p = .80$). Duration of persistence on the distress tolerance task, controlling for skill level on the task, was unrelated to presence of parent-reported suicidality (odds ratio= 1.0, $p = .23$). Similarly, distress
tolerance classification (low or high), controlling for skill level on the task, was unrelated to presence of parent-reported suicidality (odds ratio=.67, p = .64).

Table 12
*Linear Regression Analysis for Distress Tolerance Predicting Self-Reported Suicidal Ideation*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTS Youth Report</td>
<td>-3.05</td>
<td>1.05</td>
<td>-.35**</td>
</tr>
</tbody>
</table>

*Note.* n= 65. DTS= Distress Tolerance Scale. ** p < .01.

Table 13
*Linear Regression Analysis for Distress Tolerance Predicting Self-Reported Suicidal Ideation*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTS Parent Report</td>
<td>-.73</td>
<td>1.39</td>
<td>-.06</td>
</tr>
</tbody>
</table>

*Note.* n= 72. DTS= Distress Tolerance Scale.

Table 14
*Linear Regression Analysis for Distress Tolerance Predicting Self-Reported Suicidal Ideation*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIRD Score</td>
<td>.09</td>
<td>.09</td>
<td>.12</td>
</tr>
<tr>
<td>BIRD Quit Time</td>
<td>-.01</td>
<td>.01</td>
<td>-.10</td>
</tr>
</tbody>
</table>

*Note.* n= 75. BIRD= Behavioral Indicator of Resiliency to Distress.

Table 15
*Logistic Regression Analysis for Distress Tolerance Predicting Parent-Reported Suicidal Ideation*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTS Youth Report</td>
<td>-.93</td>
<td>.58</td>
<td>.40</td>
</tr>
</tbody>
</table>

*Note.* n= 65. DTS= Distress Tolerance Scale. p < .05. Nagelkerke R² = .09.

Table 16
*Logistic Regression Analysis for Distress Tolerance Predicting Parent-Reported Suicidal Ideation*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTS Parent Report</td>
<td>-.12</td>
<td>.48</td>
<td>.89</td>
</tr>
</tbody>
</table>

*Note.* n= 72. DTS= Distress Tolerance Scale. p < .05. Nagelkerke R² = .002.
Table 17
Logistic Regression Analysis for Distress Tolerance Predicting Parent-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIRD Score</td>
<td>-.03</td>
<td>.04</td>
<td>.97</td>
</tr>
<tr>
<td>BIRD Quit Time</td>
<td>-.004</td>
<td>.004</td>
<td>.97</td>
</tr>
</tbody>
</table>

Note. n=75. BIRD= Behavioral Indicator of Resiliency to Distress. p < .05. Nagelkerke R² =.049.

Secondary Aim: Unique Contributions of Risk for Suicidal Ideation

In a multivariate analysis comparing all predictors with a significant relationship to youth-reported suicidal ideation in the univariate analyses, only anxiety symptomatology was uniquely predictive of youth self-report of suicidal ideation (β =.36, p = .008, Table 18). The relationships to suicidal ideation of depressive symptomatology (β =.19, p = .15), youth report of emotion dysregulation (β =.12, p = .36), and youth report of distress tolerance (β =-.16, p = .15), were all reduced to nonsignificance in the multivariate analysis.

Table 18
Hierarchical Multiple Regression Analysis for Predictors of Self-Reported Suicidal Ideation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R²</th>
<th>R² change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-6.09</td>
<td>2.00</td>
<td></td>
<td>.36</td>
<td></td>
</tr>
<tr>
<td>CDI</td>
<td>.25</td>
<td>.13</td>
<td></td>
<td>.22</td>
<td></td>
</tr>
<tr>
<td>MASC</td>
<td>.17</td>
<td>.04</td>
<td>.46***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-3.50</td>
<td>5.35</td>
<td></td>
<td>.40</td>
<td>.04</td>
</tr>
<tr>
<td>CDI</td>
<td>.21</td>
<td>.14</td>
<td></td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td>MASC</td>
<td>.13</td>
<td>.05</td>
<td>.36**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEMS Youth Report</td>
<td>.28</td>
<td>.30</td>
<td>.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTS Youth Report</td>
<td>-1.43</td>
<td>.97</td>
<td>-1.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. n= 64. CDI= Children’s Depression Inventory. MASC= Multidimensional Anxiety Scale for Children, CEMS= Children’s Emotion Management Scales, DTS= Distress Tolerance Scale. ** p < .01, *** p < .001.
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