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The Longitudinal Effect of Emotion Regulation Strategies on Anxiety Levels in Children and Adolescents

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Abstract

Objective: There is growing evidence linking emotion dysregulation to anxiety. However, few studies have examined this relationship longitudinally or developmentally. Additionally, no studies have specifically examined the predictive relevance of the emotion regulation skills taught in mindfulness- and acceptance-based therapies. We explore whether specific emotion regulation processes differentially predict specific anxiety symptoms over time among children and adolescents.

Methods: Initial emotion non-awareness, nonacceptance, and difficulties with goal-directed behavior were assessed in a community sample ($n = 312$, age range = 8–16, mean age = 11.68, 59% female, 69% Caucasian). Social anxiety, separation anxiety, and physical anxiety symptoms were assessed every 3 months for 3 years. Hierarchical linear modeling was used to examine the concurrent and longitudinal effects of emotion dysregulation assessed at baseline or 18 months on anxiety.

Results: After controlling for depression, age, and gender, all three processes concurrently predicted physical and social anxiety, and all but nonacceptance predicted separation anxiety. Only difficulties with goal-directed behavior, however, predicted longitudinal change in separation anxiety over time with covariates. Additionally, emotion non-awareness and difficulties with goal-directed behavior predicted subsequent changes in social anxiety.

Conclusions: Emotion dysregulation may serve as a potential risk factor for the development of anxiety symptoms among youth. It may be beneficial to target reductions in maladaptive strategies in prevention or intervention work.

Keywords

emotion regulation; children and adolescents; anxiety; mindfulness- and acceptance-based treatments; longitudinal

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Introduction

Emotion regulation (ER) refers to the set of processes through which emotions are modified, managed, or changed (Esbjorn, Bender, Reinholdt-Dunne, Munck, & Ollendick, 2012; Gross & Thompson, 2007). One promising approach to assessing emotion regulation has been to examine particular strategies for regulating one's emotions and several such strategies have been identified (Aldao & Nolen-Hoeksema, 2011). In contrast, emotion *dysregulation* refers to a variety of difficulties with emotion regulation (Gross & Jazeiri, 2014); here we use this term specifically to refer to the maladaptive use of these regulation strategies, such that they do not lead to the desired emotional, behavioral, or cognitive outcomes (Aldao & Nolen-Hoeksema, 2012; Gross, 1998). In general, suppression (inhibiting emotion experience and expression), avoidance (attempting to escape or avoid unwanted situations and/or private experiences), nonacceptance (experiencing secondary negative emotions as a result of the emotional experience), and worry and rumination (unproductive, repetitive thought) often serve as less adaptive strategies for regulating emotions, whereas acceptance (acknowledging emotions without trying to change them), cognitive reappraisal (reframing a situation to change the emotional impact), and problem-solving (conscious, directed attempts to change a situation) often serve as more adaptive strategies (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Kashdan, Zvolensky, & McLeish, 2008).

Emotion Dysregulation and Anxiety

Emotion dysregulation has become an increasingly important part of our conceptualization of anxiety disorders (Cisler, Olatunji, Feldner, & Forsyth, 2010; Esbjorn, et al., 2012; Mennin, Holaway, Moore, & Heimberg, 2007). This dysregulation can begin early in life, affecting the psychosocial functioning and mental health of children and adolescents (Gross & Muñoz, 1995; Suveg, Southam-Gerow, Goodman, & Kendall, 2007). In that anxiety disorders also begin early in life, with a median onset of approximately 11 years (Kessler, Berglund, Demler, Jin, & Walters, 2005), studying the interplay between emotion dysregulation and anxiety symptoms among youth may elucidate an important pathway for the development of anxiety disorders.

While adults with elevated anxiety symptoms and anxiety or mood disorders have been found to employ more nonacceptance (Kashdan, et al., 2008; Tull, Rodman, & Roemer, 2008; Tull & Roemer, 2007), suppression (mediated by the presence of high nonacceptance; Campbell-Sills, Barlow, Brown, & Hofmann, 2006), avoidance (Tull, Rodman, & Roemer, 2008; Tull & Roemer, 2007), worry (Fresco, et al., 2002), and rumination (Fresco, et al., 2002) than adults with lower levels of anxiety and mood disturbance, fewer studies have examined such relationships among anxious youth. However, children with anxiety disorders (and other internalizing disorders) tend to have poor emotion understanding, low self-efficacy about their ER abilities, and have difficulty expressing certain emotions (Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). In addition, children with anxiety disorders use less problem solving (Suveg et al., 2008) and reappraisal (Carthy, Horesh, Apter, Edge, & Gross, 2010) than those without anxiety disorders.

Among the anxiety disorders, emotion dysregulation can be experienced in a variety of different ways, depending in part on the particular anxiety symptoms or disorder. Adults with generalized anxiety disorder, for example, tend to experience heightened emotional intensity combined with difficulties understanding emotions and self-soothing after experiencing negative emotions (Mennin et al., 2005; Mennin, Turk, Heimberg, & Carmin, 2004). Among children, those with social anxiety disorder show increased focus on physiological arousal and catastrophic cognitions, which result in increased difficulties regulating affect in social situations (Hannesdottir & Ollendick, 2007). Children with panic disorder have lower self-efficacy about their ability to cope with heightened emotions (Ollendick, 1995). Since there is evidence that separation anxiety disorder is a risk factor for the development of panic disorder, with both disorders characterized by high levels of anxiety sensitivity (Hannesdottir & Ollendick, 2007; Mattis & Ollendick, 1997; Silove, Manicavasagas, Curtis, & Blaszyński, 1996), it is possible that separation anxiety disorder shows a pattern of emotion dysregulation similar to that in panic disorder. Together, these findings provide evidence that different aspects of emotion dysregulation characterize different anxiety disorders, at least in part. However, it remains unknown whether the patterns of difficulties with emotion regulation *strategies* is also different across the individual anxiety symptom clusters or disorders.

Longitudinal Studies

Although there is growing evidence linking emotion dysregulation to elevated anxiety, few studies have explored this relationship using a longitudinal design to elucidate how this relationship unfolds over time (Aldao et al., 2010). Rather, the majority of studies to date have employed either cross-sectional designs at a single time point (e.g., Bender, Reinholdt-Dunne, Esbjorn, & Pons, 2012; Suveg & Zeman, 2004) or examined emotion regulation strategies within a single laboratory or experimental session (e.g., Campbell-Sills, et al., 2006; Sheppes & Levin, 2013). However, cross-sectional study designs are unable to draw conclusions about the direction of causality, and the external validity of experimental study designs may be limited. Studies that examine this relationship longitudinally over many months, rather than merely over several days or weeks, are particularly helpful for distinguishing the longitudinal unfolding of these relationships over time. That is, although studies that examine emotion dysregulation over shorter periods of time can speak to the immediate effects of emotion dysregulation, it is also important to examine the effects of emotion dysregulation on anxiety over a more extended period of time. This relationship as it unfolds over time in everyday contexts has important implications for treatment and prevention work; thus, additional research elucidating this path is needed.

In the available longitudinal studies, different forms of emotion dysregulation predict later anxiety problems. Cognitive avoidance (trying to avoid thinking about an unwanted experience) predicted increases in anxiety over a three-week period in college women (Balock & Joiner, 2000). Further, changes in experiential avoidance (avoiding unwanted internal experiences) predicted both the development of and recovery from depression and anxiety disorders across a 2-year period (that is, increases in avoidance predicted disorder development whereas decreases in avoidance predicted disorder recovery) in a sample of nearly 3,000 adults (Spinhoven, Drost, de Rooij, van Hemert, & Penninx, 2014). Low

emotional suppression interacted with low social anxiety in another study to predict heightened positive affect over a three-month period (Kashdan & Breen, 2008).

In a community sample of children and adolescents, over an 8–10 week period high levels of the response style rumination predicted increases in anxiety, while high levels of distraction predicted decreases in anxiety (Roelefs et al., 2009). Similarly, another study found that rumination (but not distraction) predicted increased anxiety in adolescents over 6 weeks (Schwartz & Koenig, 1996). However, rumination did not prospectively predict anxious arousal in two additional studies (Hankin, 2008; Oppenheimer, Technow, Hankin, Young, & Abela, 2012). Finally, to our knowledge the only youth-focused longitudinal study assessing general emotion dysregulation (as opposed to specific response styles) and anxiety¹ (McLaughlin et al., 2011) found that over a 7-month period, emotion dysregulation among adolescents (assessed by combining measures of poor emotional understanding, dysregulated emotional expression, and rumination) predicted increases in anxiety symptoms (as well as aggressive behavior and eating pathology), but not increases in depressive symptoms. However the reverse was not true. That is, psychopathology (including anxiety) symptoms did not predict increases in emotion dysregulation. This important finding suggests that poor emotional knowledge and regulation confer prospective risk for the development of anxiety symptoms and disorders. However, it is unknown whether emotion dysregulation predicts increases in anxiety across a longer time period. It is also unknown whether specific types of emotion dysregulation (as opposed to a composite measure emotion of dysregulation) have different effects on anxiety, or whether such effects differ by the type of anxiety.

Finally, these longitudinal studies have all examined the impact of emotion dysregulation on anxiety using two to three assessment points over time. While this is an adequate approach, repeated measures designs that capture additional time points allow for more powerful modeling of the relationship between emotion regulation strategies and anxiety levels over time. The current study aimed to address these gaps by examining the relationship between specific forms of emotion dysregulation and specific forms of anxiety using multiple (and more than three) longitudinal assessment points of anxiety symptoms over a significant period of time.

Targeting Emotion Dysregulation in Treatment

Rather than assess the prediction of anxiety symptoms from all forms of emotion dysregulation indiscriminately, we aimed to establish a theoretical basis for selecting the specific emotion regulation strategies that would be expected to prospectively predict affective symptoms. We reasoned that the forms of emotion dysregulation commonly targeted in behavioral treatments might also function as the forms of emotion dysregulation that predict the development of affective symptoms such as anxiety. Therefore, to determine the forms of emotion dysregulation to examine more closely, we turned to the existing evidence-based treatments for anxiety disorders and related phenomenon to identify which forms of emotion dysregulation are most commonly targeted. However, in reality few

¹Several studies examined ER in infancy or in preschool-aged children (e.g., Bosquet & Egeland, 2006), but the current study (consistent with most of the anxiety disorder developmental literature) focuses on school-age youth

treatments for anxious youth specifically target emotion dysregulation (Afshari, Neshat-Doost, Maracy, Ahmady, & Amiri, 2014; Hannesdotir & Ollendick, 2007; Suveg, Sood, Comer, & Kendall, 2006). For example, CBT targets behaviors and cognitions surrounding the anxiety, but lacks an affective component beyond that (Hannesdotir & Ollendick, 2007; Suveg, Kendall, Comer, & Robin, 2009). More recent mindfulness- and acceptance-based behavior therapies, such as acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) and dialectical behavior therapy (DBT; Linehan, 1993) offer alternative approaches that focus more explicitly on emotion regulation and are increasingly studied in youth (Coyne, McHugh, & Martinez, 2011; Robins & Chapman, 2004). Further, several such treatments have been successfully employed to treat anxiety disorders among adults (e.g., Arch et al., 2012; Hayes-Skelton, Roemer & Orsillo, 2013). In addition, a related integrative approach known as “emotion regulation therapy” has also been developed to enhance deficient emotion regulation skills in the context of adult generalized anxiety disorder, with initial promise (Mennin & Fresco, 2014). Emotion-focused therapies for youth with emotional disorders (e.g., anxiety, depression) have been developed with initial success (Afshari et al., 2014; Ehrenreich, Goldstein, Wright, & Barlow, 2009; Suveg et al., 2009; Trosper, Buzzella, Bennett, & Ehrenreich, 2009).

Emotion awareness.

One key aspect of these mindfulness- and acceptance-based therapies is a focus on mindfulness, or contacting the present moment in an open, curious, nonjudgmental manner (Kabat-Zinn, 1994). Mindfully bringing attention to one’s experience, including one’s emotional experience, predicts greater emotional awareness and clarity and reduced emotion lability and dysregulation (Arch & Craske, 2006; Hill & Updegraff, 2012). Thus, it is possible that mindfulness decreases anxiety at least in part by increasing emotion awareness, which represents a key component of emotion regulation processes (Halberstadt, Denham, & Dunsmore, 2001; Hofmann, Sawyer, & Witt, 2010; Lane & Schwartz, 1987; Lieberman et al., 2007; Vine & Adao, 2014) that is impaired among the anxiety disorders (Mennin, Heimberg, Turk, & Fresco, 2002; Novick-Kline, Turk, Mennin, Hoyt, & Gallagher, 2005; Roemer et al., 2009). Not only is the awareness of one’s emotions an important prerequisite for successful employment of regulation strategies, but impaired emotion regulation mediates the relationship between impaired emotional clarity and psychopathology (Vine & Aldao, 2014), and the ability to identify and describe one’s emotions (affect labeling) has been found to function as an emotion regulation strategy by itself (Lieberman et al., 2007). These findings support the notion that emotion awareness represents an emotion regulation strategy in its own right.

Nonacceptance.

Acceptance is another core skill taught in mindfulness- and acceptance-based therapies that has implications for emotion regulation. Acceptance teaches clients to acknowledge their feelings and emotions without trying to modify or interpret them (e.g., Hayes et al., 1999). Several studies have linked decreased acceptance and increased avoidance or nonacceptance to increases in anxiety symptoms among adults (Eifert & Heffner, 2003) and the development of anxiety disorders (Forsyth, Eifert, & Barrios, 2006). However, no study has

examined this relationship among youth to assess its relevance for the initial emergence of anxiety-related pathology.

Goal-directed behavior.

Another core component in ACT and DBT - committed action and opposite action, respectively - also has implications for emotion regulation. Specifically, committed action teaches clients to continue moving in valued life directions even in the face of challenging situations and emotions (Blackledge & Hayes, 2001), whereas opposite action teaches the similar ability to “do the opposite” of what strong negative emotions would dictate (e.g., to approach a feared situation rather than to avoid it, to respond directly and respectfully to a perceived insult rather than ignore it and later blow up, etc.). Although the negative effects of avoidance have been studied extensively (Chawla & Ostafin, 2007; Kashdan, Barrios, Forsyth, & Steger, 2006), to our knowledge there has been no study that specifically explores the connection between the capacity to pursue goal-directed behavior in the face of strong emotion and anxiety levels. Given the centrality of the former to mindfulness- and acceptance-based approaches, this relationship is in particular need of investigation.

Current Study

The current study aims to replicate and extend the limited number of findings demonstrating that difficulties with emotion regulation (e.g., emotion dysregulation) -- specifically, those difficulties targeted in mindfulness- and acceptance-based approaches -- predict change in anxiety symptoms over time. We analyze data collected from a moderately large community sample of children and adolescents followed across a 36-month time period. To address critical gaps in the extant literature, we focus on the extent to which specific aspects of emotion dysregulation prospectively predict specific constellations of anxiety symptoms. In doing so, we aim to increase understanding of how distinct types of anxiety symptoms are differentially affected by use of specific emotion regulation strategies over time. Examining how difficulties with ER predict specific anxiety symptoms, rather than overall anxiety, is particularly important given that emotion dysregulation can be experienced differently depending on the type of anxiety (as noted above, e.g., Hannesdottir & Ollendick, 2007, Mattis & Ollendick, 1997, Ollendick, 1995, Tull, et al., 2008). We also explore whether different forms of difficulties with emotion regulation relate to anxiety differently over time than concurrently.

Specifically, we examined how emotion non-awareness, nonacceptance, and difficulties with goal-directed behavior (defined herein as the capacity to pursue meaningful goals in the face of negative emotions), each predict both initial levels of and subsequent changes in social anxiety, separation anxiety, and physical anxiety symptoms. We predicted that poorer emotion awareness (i.e., greater emotion non-awareness), higher nonacceptance, and greater difficulties with goal-directed behavior would each be associated with higher concurrent levels of anxiety, and lead to an increase in anxiety symptoms over time, irrespective of baseline levels of anxiety.

Methods

Participants and Procedures:

Participants were 312 children and adolescents (n varied based on analysis) from the Gene-Environment Mood (GEM) study (see Hankin, et al., 2015, for greater details on sample characteristics and overall study design), who were recruited in Colorado as part of a multi-wave, longitudinal study. Brief information letters were sent home directly to the participating school districts of families around the broader Denver metropolitan area with a child in third, sixth, or ninth grades. The final sample for the current study consisted of up to 312 youth (41% male, 59% female) who ranged in age from 8 to 16 years (mean age = 11.68, $SD = 2.3$). This study used data from the Colorado site collected every 3 months over 3 years. ER strategies were assessed at either baseline or month 18, with subsequent time points of anxiety symptoms used as outcomes, and thus there were either 7 assessment points total (for strategies assessed at month 18) or 13 assessment points total (for strategies assessed at baseline), each of which ended at month 36.

Measures:

Assessment of Anxiety—Levels of anxiety were measured dimensionally at each time point using self-report.

Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997): The MASC is a 39-item self-report measure of anxiety symptoms designed for youth aged 8–19 years. Scores are divided into four subscales: social anxiety, separation anxiety, harm avoidance, and physical anxiety symptoms. However, the subscale of harm avoidance has questionable discriminant validity (Baldwin & Dadds, 2007; Snyder et al., 2015). Therefore, we examined the overall course of anxiety within each subscale to determine whether to assess total anxiety or to use select subscales. Mean score decreased for the separation anxiety, social anxiety, and physical anxiety subscales from baseline to 36 month time points, but increased for the harm avoidance subscale. In addition, scores on harm avoidance were significantly higher overall than scores on the other subscales. Therefore, it appears that harm avoidance may be tapping into a different process than the other subscales with a distinct developmental trajectory. Based on this as well as on the mixed evidence for the harm avoidance subscale's validity (Grills-Tauchel, Ollendick, & Fisak, 2008; van Gastel & Ferdinand, 2008), we focused exclusively on the remaining three subscales, which are associated more clearly with risk for their referenced disorders. That is, the social anxiety subscale has been shown to predict social anxiety disorder, the separation anxiety subscale has been shown to predict separation anxiety disorder, and the physical anxiety subscale has been shown to predict panic disorder (van Gastel & Ferdinand, 2008; Wei, et al., 2014). The MASC shows good reliability and validity (March et al., 1997). Internal consistency was adequate for all subscales across all time points ($\alpha > .80$ for physical anxiety, $\alpha > .80$ for social anxiety, and $\alpha > .63$ for separation anxiety).

Assessment of Emotion Regulation Difficulties

Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002): The EESC is a 16-item self-report measure designed to assess lack of emotion awareness (i.e.,

emotion non-awareness) and lack of motivation to express emotion. In that awareness is more closely associated with the mindfulness component of the aforementioned therapies, this study focused on the 8-item, emotion awareness factor subscale (measuring *lack* of emotion awareness), which asks children to rate how true statements are, such as “I often do not know how I am feeling.” The EESC has demonstrated construct validity, high internal consistency, and adequate test-retest reliability (Penza-Clyve & Zeman, 2002). Internal consistency was excellent ($\alpha = .90$). This measure was administered at baseline as part of the initial battery of questionnaires administered during the study.

Difficulties in Emotion Regulation Scale-Youth Adapted (DERS; Gratz & Roemer, 2004): The DERS-Y is a brief, 11-item version of the original 36-item DERS adapted for use with children and adolescents in the current study. It was developed by choosing the 2–3 items with the highest factor loadings within the awareness, nonacceptance, goals, and impulse subscales and rewording them, as needed, to be more youth-friendly. Since measuring impulsivity is more relevant for externalizing disorders (e.g., Olson, Schilling, & Bates, 1999) and the EESC already provides a full-length measure of awareness, only the nonacceptance and goals subscales (3 items each) were examined in this study. The nonacceptance scale refers to a lack of acceptance of one’s own emotional responses (e.g., “When I’m upset, I feel bad for feeling that way”). The goals scale refers to difficulties engaging in goal-directed behavior when experiencing negative emotion (e.g., “When I’m upset, I have a hard time doing things”). The published DERS has demonstrated high internal consistency, good test-retest reliability, and adequate construct and predictive validity (Gratz & Roemer, 2004). Internal consistency was good ($\alpha = .83$ for both nonacceptance and goal-directed behavior). This measure was given at 18 months as part of a battery of questionnaires administered at the midpoint of the study.

Assessment of Depression—Since depression frequently co-occurs with anxiety and has also been linked to emotion dysregulation (Zeman et al., 2006), we used a self-report measure of depression to control for concurrent depressive symptoms.

Children’s Depressive Inventory (CDI; Kovacs, 1985): The CDI is a 27-item self-report measure designed to assess depressive symptoms in youth aged 7–17 years. Each item is rated on a scale from 0 to 2, with possible scores ranging from 0 to 54. The CDI has demonstrated good reliability and validity (Kovacs, 1985). We used the CDI to account for depressive symptoms at the same time points at which the emotion regulation measures were administered (i.e., baseline and 18 months). Internal consistency was good ($\alpha = .81$ at baseline and $\alpha = .87$ at 18 months).

Statistical Approach

Analyses were conducted using hierarchical linear modeling (HLM) in HLM 6 to model predictors of time-varying outcomes within and across individuals. On level 1, MASC subscale scores were entered as the repeated, time-varying outcome variable. Separate models were estimated for the separation anxiety, social anxiety, and physical anxiety subscales. For analyses using the EESC, which was administered at baseline, the outcome variables either included the MASC from baseline through 36 months (for concurrent

analyses) or the MASC from 3 months through 36 months (for longitudinal analyses), with baseline MASC scores excluded from the outcome variables in order to control for this baseline variable on level 2 in the model. Similarly, for analyses using the DERS, which was administered at 18 months, the outcome variables either included the MASC from 18 months through 36 months (for concurrent analyses), or the MASC from 21 months through 36 months (for longitudinal analyses), with 18-month MASC scores excluded to control for this variable on level 2. Linear time terms were entered as predictors on level 1 and matched in starting point to the MASC outcome variables. Time terms were centered at baseline (for EESC; coded 0, 1, 2, ..., 12) and 18 month time points (for DERS; coded 0, 1, 2, ..., 6) for concurrent analyses, and centered at the endpoint of the study (36 months) for longitudinal analyses (coded -11, -10, ..., 0 for EESC; coded -5, -4, ..., 0 for DERS). Since preliminary graphs showed that change in anxiety over time occurred in a relatively linear manner, we only included linear time in our models to minimize Type I error. Models were built to capture both distinct patterns of change over time in anxiety (slope), and the levels of anxiety that individuals initially experience and ultimately develop at the 36-month endpoint (intercept).

The continuous between-individual predictors of interest entered on level 2 were grand mean centered in order to describe the average child; gender was dummy-coded. These level 2 emotion regulation predictors included emotion awareness (EESC awareness at baseline), nonacceptance (DERS nonacceptance at 18 months), and difficulties with goal-directed behavior (DERS goals at 18 months).

We first examined all level 2 predictors alone in the model to test for the main effect of each individually on anxiety (see Tables 1 and 2). To examine concurrent relationships, we ran models that included an emotion regulation predictor and controlled for age, gender, and concurrent depression (see Table 3). Similar models were run to examine longitudinal relationships, with the additional covariate of initial anxiety (i.e., either baseline or 18 month anxiety) on level 2 to control for initial levels of anxiety (see Table 4). Thus, for example, an analysis examining the effect of 18-month nonacceptance in predicting 36-month physical anxiety was as follows:

Level-1 Model

$$MASC_PH_{ti} = \pi_{0i} + \pi_{1i} * (Time_NoBL_36_{ti}) + e_{ti}$$

Level-2 Model

$$\begin{aligned} \pi_{0i} = & \beta_{00} + \beta_{01} * (MASC_PH_18_i) + \beta_{02} * (AGE_i) + \beta_{03} * (DERS_NONACCEPTANCE_i) + \beta_{04} * (CDI_18MO_i) + \beta_{05} * (GENDER_DUMMY_i) + r_{0i} \end{aligned}$$

$$\pi_{1i} = \beta_{10} + \beta_{11} * (MASC_PH_18_i) + \beta_{12} * (AGE_i) + \beta_{13} * (DERS_NONACCEPTANCE_i) + \beta_{14} * (CDI_18MO_i) + \beta_{15} * (GENDER_DUMMY_i) + r_{1i}$$

Results

Sample Characterization

See Table 5 for correlations among the measures. Symptoms of social anxiety, physical anxiety, and separation anxiety (slope $ps < .001$) significantly decreased over the course of the three year follow-up period, with preliminary graphs showing a relatively linear rate of change (see Table 6 for initial symptom scores).

Demographics

Age.—As presented in Table 2, age predicted separation anxiety symptoms at 36 months, such that older youth had lower levels of separation anxiety ($p < .001$), but not social anxiety or physical anxiety symptoms at 36 months ($ps > .32$). Age did not predict rate of change in any anxiety symptoms ($ps > .08$).

Gender.—There was a gender difference in both social anxiety and physical anxiety at 36 months (see Table 2), such that females had higher levels of social anxiety ($p < .001$) and physical anxiety symptoms ($p = .02$), and this difference was stable over time (i.e., gender did not affect linear rate of change in social or physical anxiety; $ps > .11$). There was no significant gender difference in levels of separation anxiety ($p = .07$) or in linear rate of change in separation anxiety ($p = .39$).

Emotion Regulation Processes

Emotion awareness.—When it was the only predictor in the model, poor emotion awareness was concurrently associated with greater levels of social anxiety ($p < .001$), physical anxiety ($p < .001$), and separation anxiety symptoms ($p = .01$) at baseline. These findings held when controlling for age, gender, and baseline depression for all anxiety symptoms ($ps < .01$).

Emotion awareness alone also predicted 36-month levels of social anxiety ($p < .001$) and physical anxiety ($p < .001$), but not separation anxiety ($p = .08$), such that poorer emotion awareness at baseline predicted greater social and physical anxiety symptoms 3 years later. When controlling for age, gender, and baseline depression and anxiety, this held for social anxiety symptoms ($p = .01$), but not physical anxiety symptoms ($p = .11$). Separation anxiety symptoms ($p = .07$) remained nonsignificant.

Emotion awareness predicted linear rate of change in physical anxiety symptoms ($p = .04$), such that physical anxiety declined more steeply among those higher in non-awareness, but did not affect rate of change in either separation anxiety or physical anxiety symptoms ($ps > .15$). This steeper decrease may reflect natural regression to the mean. When controlling

for age, gender, and baseline depression and anxiety, emotion awareness did not affect rate of change in any anxiety symptoms ($ps > .11$).

Nonacceptance.—Greater nonacceptance of emotions at 18 months was concurrently related to both higher social anxiety ($p < .001$) and physical anxiety symptoms ($p < .001$), but not separation anxiety symptoms ($p = .14$). This held when controlling for age, gender, and 18-month depression for both social anxiety symptoms ($p < .001$) and physical anxiety symptoms ($p < .001$). When controlling for these variables, separation anxiety symptoms remained non-significant ($p = .05$).

Greater nonacceptance also predicted higher levels of social anxiety ($p < .001$) and physical anxiety ($p < .001$) at 36 months. However, this did not hold when controlling for age, gender, and 18-month depression and anxiety for either social anxiety symptoms ($p = .65$) or physical anxiety symptoms ($p = .08$). Nonacceptance did not predict separation anxiety symptoms longitudinally either alone ($p = .23$) or when controlling for age, gender, and 18-month depression and anxiety ($p = .21$).

Nonacceptance predicted linear rate of change in social anxiety symptoms ($p = .02$), such that social anxiety declined more steeply among those higher in nonacceptance, but did not affect rate of change in either separation anxiety or physical anxiety symptoms ($ps > .43$). When controlling for age, gender, and 18-month depression and anxiety, nonacceptance did not affect rate of change in any anxiety symptoms ($ps > .15$).

Goal-directed behavior.—Greater difficulties with goal-directed behavior in the face of negative emotions at 18 months was concurrently associated with greater social anxiety symptoms ($p < .001$) and physical anxiety symptoms ($p < .001$), but not separation anxiety symptoms ($p = .06$). When controlling for age, gender, and 18-month depression, difficulties with goal-directed behavior predicted all three MASC subscales ($ps < .04$).

Additionally, difficulties with goal-directed behavior longitudinally predicted all three MASC subscales. Specifically, greater difficulty with goal-directed behavior at 18 months predicted greater social anxiety ($p < .001$), physical anxiety ($p < .001$), and separation anxiety symptoms ($p = .02$) at 36 months. When controlling for age, gender, and 18-month depression and anxiety, this held for social anxiety symptoms ($p = .03$) and separation anxiety symptoms ($p = .03$), but not for physical anxiety symptoms ($p = .16$).

Goal-directed behavior did not affect linear rate of change in any anxiety symptoms either alone ($ps > .56$) or with covariates ($ps > .23$).

Discussion

The current study contributes developmental evidence that difficulties with specific emotion regulation processes and strategies prospectively predict specific symptom types for some, but not all, anxiety symptoms among youth. As hypothesized, higher levels of emotion dysregulation (operationalized as poorer awareness, higher levels of nonacceptance, and greater difficulties with goal-directed behavior) prospectively predicted higher levels of anxiety symptoms across a period of up to 36 months, even after accounting for initial levels

of anxiety and depression. Emotion dysregulation should therefore be investigated as a risk factor for the subsequent development of (or increase in) anxiety symptoms among youth – a particularly important finding given that the median age for anxiety disorder onset is 11 years (Kessler et al., 2005). This finding is supported by and strengthens previous research demonstrating the longitudinal impact of emotion dysregulation on anxiety in youth (McLaughlin et al., 2011; Roelofs et al., 2009; Schwartz & Koenig, 1996).

Study Findings and Implications

After controlling for depression, age, and gender, all three forms of emotion dysregulation concurrently were associated with physical and social anxiety symptoms, supporting previous cross-sectional research on the relationship between anxiety symptoms and difficulties with emotion awareness (Mennin, Heimberg, Turk, & Fresco, 2002; Novick-Kline, Turk, Mennin, Hoyt, & Gallagher, 2005; Roemer et al., 2009) and acceptance (Eifert & Heffner, 2003; Forsyth, Eifert, & Barrios, 2006), and adding to the literature on goal-directed behavior (Blackledge & Hayes, 2001; Gratz & Roemer, 2004). However, at present, only emotion non-awareness and difficulties with goal-directed behavior were related to separation anxiety symptoms. Only difficulties with goal-directed behavior, however, *longitudinally* predicted separation anxiety, that is, predicted greater levels of separation anxiety at 36 months, over and above initial levels of separation anxiety at 18 months. This set of findings demonstrates the importance of examining the relationship between emotion regulation strategies and anxiety levels prospectively and longitudinally, rather than at a single time point, as is characteristic of most previous research (e.g., Bender, et al., 2012; Suveg & Zeman, 2004).

In addition, all three forms of emotion dysregulation longitudinally predicted physical and social anxiety symptoms. After initial levels of anxiety and depression were controlled for, these effects were somewhat attenuated but still held for emotion non-awareness and goal-directed behavior predicting subsequent social anxiety symptoms.

Interestingly, although emotion non-awareness and goal-directed behavior longitudinally predicted anxiety symptoms over and above initial anxiety symptoms, the majority of slopes tested were non-significant. This suggests that there is a strong main effect of emotion dysregulation on anxiety levels that is relatively stable over time, even as overall anxiety in the sample decreased. In addition, the direction of the two significant slopes –greater non-awareness predicting steeper decline in physical anxiety symptoms and greater nonacceptance predicting steeper decline in social anxiety symptoms – was in the opposite direction of what would be expected given the overall pattern of our findings. Regression to the mean represents one possible explanation for these results. It may also be the case that high levels of non-awareness and nonacceptance, as measured in this study, are not always maladaptive. To better clarify the nature of these relationships, further work on the slope impact of emotion dysregulation on anxiety is needed.

In summary, it appears that poor emotion awareness, nonacceptance, and difficulties with goal-directed behavior are each important concurrent predictors of social and physical anxiety, and, with the exception of nonacceptance, of separation anxiety. Poor emotion awareness and difficulties with goal-directed behavior also represent significant factors in

the prospective development of social anxiety symptoms. Difficulties with goal-directed behavior also prospectively predicted separation anxiety, making it an especially robust predictor of subsequent anxiety symptoms. Interestingly, nonacceptance failed to prospectively predict any anxiety symptoms once initial anxiety and depression were controlled for. An examination of the correlations among covariates revealed that nonacceptance (but not emotion non-awareness or difficulties with goal-directed behavior) was significantly correlated with age ($r = .13, p = .04$). Thus, since age would account for some of the significant variance it shared with nonacceptance when added to the model, this may explain why nonacceptance became non-significant in predicting social and physical anxiety symptoms (when age was added as a covariate). In contrast, because difficulties with goal-directed behavior was not significantly correlated with age, adding age as a covariate in the model likely functioned to reduce model error and therefore served to highlight the relationship between goal-directed behavior and separation anxiety symptoms.

Unlike goal-directed behavior, which is concrete and easier to evaluate (i.e., you are either able to do your homework when you are anxious or not), nonacceptance refers to a more abstract, internal concept that can be more difficult to accurately access and report. Therefore, difficulties with goal-directed behavior may be appearing to be a stronger predictor of future anxiety symptoms than nonacceptance perhaps because it was more easily and accurately assessed. Alternatively, it may be that nonacceptance in and of itself is not necessarily predictive of anxiety symptoms, but only becomes maladaptive over time when it contributes to behavioral changes, such as increasing behavioral avoidance or difficulties with goal-directed behavior. This explanation speaks to the importance of measuring the functional consequences of anxiety in addition to assessing its emotional consequences (Barrera & Norton, 2009; Mendlowicz & Stein, 2000).

Study Contributions

This was the first longitudinal study in youth to focus on these three important aspects of emotion dysregulation – emotion non-awareness, emotion nonacceptance, and difficulties with goal-directed behavior in the presence of negative emotions – and how these constructs differentially affected specific anxiety symptoms. It also represents the first known study in any population to longitudinally examine the relationship between difficulties with goal-directed behavior and anxiety.

The effect of each emotion regulation strategy on anxiety depended in part on the type of anxiety symptom, thereby demonstrating the importance of assessing the different manifestations of anxiety expressions separately, rather than combining these expressions into a single composite representing general anxiety. If we had averaged these symptoms into a single composite, our effects may have been obscured (i.e., it is possible that one nonsignificant anxiety type may cancel out a different anxiety manifestation that was significantly predicted). Anxiety disorders and symptoms are heterogeneous (Nandi, Beard, & Galea, 2009; Schniering, Hudson, & Rapee, 2000), and our results show the importance of having a multidimensional measure of different forms of anxiety.

In addition, the currently studied forms of emotion dysregulation are interesting in that they represent an *absence* of (generally) adaptive regulation skills, rather than the *presence* of

maladaptive skills (e.g., the absence of emotion awareness, acceptance, and goal-directed behavior rather than the presence of, for example, emotion suppression). Previous studies have found that maladaptive strategies are more strongly related to psychopathology than adaptive strategies (Aldao & Nolen-Hoeksema, 2010; Aldao & Nolen-Hoeksema, 2011). Thus, given that we found a significant relationship even without testing the presence of maladaptive skills, our findings can be seen as particularly robust.

Implications for Prevention and Intervention

These findings hold important implications for prevention and intervention work in children and adolescents. Increasing emotion awareness and the capacity to pursue goal-directed behavior (in the face of negative emotion) and decreasing emotion nonacceptance among children at risk for the development of anxiety disorders may help prevent their anxiety from reaching problematic levels. Our findings also lend support to the emotion awareness, acceptance, and committed action processes targeted in acceptance and commitment therapy and to similar processes targeted in dialectical behavior therapy. The importance of emotion dysregulation in the development of anxiety indirectly supports therapies with a more explicit focus on emotion regulation skills, such as Emotion-focused CBT (Afshari et al., 2014; Suveg et al., 2006), Contextual Emotion-Regulation Therapy (Kovacs et al., 2006), and the Unified Protocol for Youth (Ehrenreich et al., 2009; Trosper et al., 2009). The use of therapeutic strategies that either reduce maladaptive emotion regulation strategies, teach more adaptive emotion regulation strategies, or both may be especially potent dimensions of treatments.

Study Limitations and Future Directions

Although this study provides novel information on the role of emotion regulation strategies in the development of anxiety symptoms, there were several limitations. First, since emotion regulation was only measured at a single time point we were unable to test for potential bi-directional influence. That is, we found that emotion regulation predicted changes in anxiety, but were unable to test whether anxiety predicted subsequent changes in emotion regulation. Examining how change in emotion regulation at multiple time points affects change in anxiety will help to better elucidate the relationship between emotion regulation and anxiety. Earlier work by McLaughlin et al. (2011) found that emotion dysregulation predicted anxiety symptoms and other psychopathology symptoms across a 7-month period, but the opposite stream did not occur – anxiety did not predict change in emotion dysregulation. Based on this, it is plausible that we would find similar findings in our sample as well, but direct testing is needed. We were also unable to test whether these emotion regulation constructs were stable over time, and thus were unable to determine whether changes in anxiety mapped on to changes in emotion dysregulation or whether change in these two variables occurred independently.

Second, we relied on self-report data to assess anxiety symptoms and emotion regulation, the latter of which requires some degree of insight and may be biased by more recent or more intense experiences (Fredrickson, 2000). It will therefore be important to replicate these results using broader measures such as parent ratings, clinical interviews, observation, or physiological measures of emotion regulation. The current study used a measure of

anxiety symptoms, the MASC, that assesses a dimensional level of anxiety that does not perfectly map onto anxiety disorders. However, its discriminant validity makes it one of the most clinically useful self-report measures of anxiety for children available (Baldwin & Dadds, 2007). Therefore, although this study captured broad change in anxiety over time that has been shown in previous studies to be linked to specific DSM anxiety disorders, it did not specifically examine the development of anxiety disorders – another area for future research.

Future studies should assess whether the current findings hold in a specifically clinical sample. Future studies should also examine moderators of the relationship between these emotion regulation strategies and anxiety, specifically whether differences in individual characteristics or in the psychosocial context affect the consequences of these emotion regulation strategies. Finally, it will also be important for future work to examine the predictive utility of other commonly used emotion regulation strategies, such as cognitive reappraisal and suppression.

Conclusion

Our study replicates and extends the previous finding that emotion dysregulation serves as a risk factor for the subsequent development of elevated anxiety among youth (McLaughlin et al., 2011). Overall, poor emotion awareness, nonacceptance, and difficulties with goal-directed behavior predicted increases in physical anxiety, social anxiety, and separation anxiety symptoms. Over and above initial levels of anxiety or depression, poor emotion awareness continued to predict social anxiety symptoms, and difficulties with goal-directed behavior continued to predict social and separation anxiety symptoms. These findings suggest that these strategies are generally maladaptive with regard to the development of anxiety, and thus youth may benefit from targeting reductions in these strategies or enhancing adaptive strategies that counter these less adaptive ones in the context of prevention or intervention work.

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TABLE 1.

Main effects, concurrent time, alone in model.

	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Intercepts, Level 2</i>				
<i>Age, BL</i>				
<i>Social Anxiety</i>	0.13	0.12	1.06	.29
<i>Physical Anxiety</i>	0.03	0.13	0.20	.84
<i>Separation Anxiety</i>	−0.79	0.10	−7.89	<.001**
<i>Gender, BL</i>				
<i>Social Anxiety</i>	1.61	0.53	3.04	<.01**
<i>Physical Anxiety</i>	1.56	0.57	2.72	<.01**
<i>Separation Anxiety</i>	1.36	0.47	2.88	<.01**
<i>Depression, BL</i>				
<i>Social Anxiety</i>	0.35	0.05	7.25	<.001**
<i>Physical Anxiety</i>	0.47	0.05	9.16	<.001**
<i>Separation Anxiety</i>	0.04	0.05	0.82	.41
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	0.28	0.05	5.76	<.001**
<i>Physical Anxiety</i>	0.41	0.05	7.97	<.001**
<i>Separation Anxiety</i>	0.11	0.04	2.56	.01*
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	1.29	0.21	6.04	<.001**
<i>Physical Anxiety</i>	1.42	0.24	6.02	<.001**
<i>Separation Anxiety</i>	0.30	0.20	1.47	.14
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	1.13	0.19	5.96	<.001**
<i>Physical Anxiety</i>	1.32	0.20	6.76	<.001**
<i>Separation Anxiety</i>	0.33	0.17	1.89	.06 ⁺
<i>Slopes, Level 2</i>				
<i>Age, BL</i>				
<i>Social Anxiety</i>	−0.01	0.01	−0.46	.65
<i>Physical Anxiety</i>	0.01	0.01	1.08	.28
<i>Separation Anxiety</i>	0.01	0.01	1.31	.19
<i>Gender, BL</i>				
<i>Social Anxiety</i>	0.08	0.05	1.58	.11
<i>Physical Anxiety</i>	−0.003	0.05	−0.06	.95
<i>Separation Anxiety</i>	−0.06	0.04	−1.56	.12
<i>Depression, BL</i>				

	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Social Anxiety</i>	−0.01	0.005	−2.62	<.01 **
<i>Physical Anxiety</i>	−0.01	0.005	−1.55	.12
<i>Separation Anxiety</i>	−0.003	0.003	−1.00	.32
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	−0.004	0.004	−0.94	.35
<i>Physical Anxiety</i>	−0.01	0.004	−2.04	.04 *
<i>Separation Anxiety</i>	−0.003	0.003	−0.84	.40
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	−0.05	0.03	−1.92	.06 +
<i>Physical Anxiety</i>	−0.004	0.04	−0.12	.91
<i>Separation Anxiety</i>	−0.01	0.03	−0.45	.66
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	0.01	0.03	0.26	.80
<i>Physical Anxiety</i>	−0.01	0.03	−0.23	.82
<i>Separation Anxiety</i>	0.005	0.02	0.23	.82

Note:

+ = p< .10

* = p<.05

** = p<.01

TABLE 2.

Main effects, longitudinal, alone in model.

	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Intercepts, Level 2</i>				
<i>Age, BL</i>				
<i>Social Anxiety</i>	0.05	0.15	0.35	.73
<i>Physical Anxiety</i>	0.16	0.16	0.99	.32
<i>Separation Anxiety</i>	−0.64	0.09	−6.93	<.001**
<i>Gender, BL</i>				
<i>Social Anxiety</i>	2.68	0.67	4.02	<.001**
<i>Physical Anxiety</i>	1.71	0.71	2.42	.02*
<i>Separation Anxiety</i>	0.78	0.43	1.81	.07 ⁺
<i>Depression, BL</i>				
<i>Social Anxiety</i>	0.22	0.06	3.43	<.001**
<i>Physical Anxiety</i>	0.39	0.07	5.83	<.001**
<i>Separation Anxiety</i>	0.02	0.04	0.44	.66
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	0.25	0.06	4.09	<.001**
<i>Physical Anxiety</i>	0.29	0.06	4.70	<.001**
<i>Separation Anxiety</i>	0.09	0.05	1.75	.08 ⁺
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	0.85	0.25	3.41	<.001**
<i>Physical Anxiety</i>	1.32	0.27	4.88	<.001**
<i>Separation Anxiety</i>	0.20	0.17	1.19	.23
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	1.15	0.21	5.46	<.001**
<i>Physical Anxiety</i>	1.19	0.23	5.28	<.001**
<i>Separation Anxiety</i>	0.36	0.16	2.28	.02*
<i>Slopes, Level 2</i>				
<i>Age, BL</i>				
<i>Social Anxiety</i>	−0.02	0.01	−1.35	.18
<i>Physical Anxiety</i>	0.01	0.01	0.84	.40
<i>Separation Anxiety</i>	0.01	0.01	1.76	.08 ⁺
<i>Gender, BL</i>				
<i>Social Anxiety</i>	0.09	0.05	1.63	.11
<i>Physical Anxiety</i>	0.06	0.05	1.18	.24
<i>Separation Anxiety</i>	−0.03	0.04	−0.85	.39
<i>Depression, BL</i>				

	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Social Anxiety</i>	−0.01	0.005	−2.19	.03 *
<i>Physical Anxiety</i>	−0.003	0.01	−0.56	.57
<i>Separation Anxiety</i>	−0.002	0.003	−0.51	.61
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	−0.003	0.005	−0.64	.52
<i>Physical Anxiety</i>	−0.01	0.005	−2.09	.04 *
<i>Separation Anxiety</i>	−0.004	0.003	−1.43	.15
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	−0.08	0.03	−2.27	.02 *
<i>Physical Anxiety</i>	−0.03	0.04	−0.79	.43
<i>Separation Anxiety</i>	−0.01	0.03	−0.27	.79
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	0.01	0.03	0.37	.71
<i>Physical Anxiety</i>	−0.02	0.04	−0.59	.56
<i>Separation Anxiety</i>	0.005	0.03	0.20	.84

Note:

⁺
= p< .10

^{*}
= p<.05

^{**}
= p<.01

TABLE 3.

Main effects, concurrent time, controlling for age, initial depression, and gender.

	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Intercepts, Level 2</i>				
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	0.18	0.05	3.66	<.001 **
<i>Physical Anxiety</i>	0.27	0.05	5.19	<.001 **
<i>Separation Anxiety</i>	0.13	0.04	3.09	<.01 **
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	0.84	0.19	4.35	<.001 **
<i>Physical Anxiety</i>	1.02	0.22	4.71	<.001 **
<i>Separation Anxiety</i>	0.35	0.18	1.96	.05 ⁺
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	0.63	0.16	3.86	<.001 **
<i>Physical Anxiety</i>	0.87	0.18	4.79	<.001 **
<i>Separation Anxiety</i>	0.33	0.16	2.07	.04*
<i>Slopes, Level 2</i>				
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	0.001	0.01	0.25	.80
<i>Physical Anxiety</i>	-0.01	0.01	-1.40	.16
<i>Separation Anxiety</i>	-0.002	0.003	-0.50	.62
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	-0.03	0.03	-0.99	.33
<i>Physical Anxiety</i>	0.001	0.04	0.03	.98
<i>Separation Anxiety</i>	-0.004	0.03	-0.16	.87
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	0.04	0.03	1.17	.24
<i>Physical Anxiety</i>	-0.003	0.03	-0.10	.92
<i>Separation Anxiety</i>	0.01	0.02	0.66	.51

Note:

⁺ = p < .10

* = p < .05

** = p < .01

TABLE 4.

Main effects, longitudinal, controlling for age, initial anxiety and depression, and gender.

	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Intercepts, Level 2</i>				
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	0.16	0.06	2.46	.01 [*]
<i>Physical Anxiety</i>	0.10	0.07	1.59	.11
<i>Separation Anxiety</i>	0.08	0.04	1.83	.07 ⁺
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	0.09	0.20	0.46	.65
<i>Physical Anxiety</i>	0.39	0.22	1.79	.08 ⁺
<i>Separation Anxiety</i>	0.16	0.13	1.26	.21
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	0.41	0.18	2.23	.03 [*]
<i>Physical Anxiety</i>	0.26	0.18	1.42	.16
<i>Separation Anxiety</i>	0.25	0.11	2.20	.03 [*]
<i>Slopes, Level 2</i>				
<i>Emotion Awareness, BL</i>				
<i>Social Anxiety</i>	0.004	0.01	0.80	.43
<i>Physical Anxiety</i>	−0.01	0.01	−1.62	.11
<i>Separation Anxiety</i>	−0.003	0.003	−0.76	.45
<i>Nonacceptance, 18mo</i>				
<i>Social Anxiety</i>	−0.05	0.04	−1.44	.15
<i>Physical Anxiety</i>	−0.04	0.05	−0.75	.46
<i>Separation Anxiety</i>	−0.0003	0.03	−0.01	.99
<i>Goal-directed Behavior, 18mo</i>				
<i>Social Anxiety</i>	0.04	0.04	1.20	.23
<i>Physical Anxiety</i>	−0.02	0.04	−0.58	.56
<i>Separation Anxiety</i>	0.01	0.03	0.55	.59

Note:

⁺ = p < .10^{*} = p < .05^{**} = p < .01

TABLE 5.

Correlations among measures.

	MASC SA, BL	MASC SP, BL	CDI, BL	EESC Awareness	DERS Nonacceptance	DERS Goals
MASC PH, BL	0.49 <.0001	0.42 <.0001	0.46 <.0001	0.39 <.0001	0.31 <.0001	0.29 <.0001
MASC SA, BL		0.43 <.0001	0.37 <.0001	0.33 <.0001	0.16 0.01	0.09 0.13
MASC SP, BL			0.10 0.052	0.12 0.03	0.09 0.14	0.04 0.50
CDI, BL				0.45 <.0001	0.20 <0.001	0.19 <0.01
EESC Awareness					0.15 0.02	0.27 <.0001
DERS Nonacceptance						0.51 <.0001

NOTE: MASC = Multidimensional Anxiety Scale for Children; PH, BL = MASC physical anxiety at baseline; SA, BL = social anxiety at baseline; SP, BL = separation anxiety at baseline; CDI = Children's Depressive Inventory; EESC = Emotion Expression Scale for Children; DERS = Difficulties in Emotion Regulation Scale–Youth Adapted.

TABLE 6.

Sample characteristics.

	<i>Mean</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>
<i>MASC, BL</i>				
<i>Social Anxiety</i>	9.28	5.49	0.00	24.00
<i>Physical Anxiety</i>	8.90	6.03	0.00	33.00
<i>Separation Anxiety</i>	7.16	4.71	0.00	26.00
<i>CDI, BL</i>				
<i>Depression</i>	6.27	5.34	0.00	35.00
<i>EESC, BL</i>				
<i>Awareness</i>	16.46	6.05	8.00	40.00
<i>DEERS, 18mo</i>				
<i>Nonacceptance</i>	2.60	1.45	1.00	7.00
<i>Goal-directed behavior</i>	3.59	1.60	1.00	7.00