

EMOTIONAL AWARENESS: A TRANSDIAGNOSTIC FACTOR IN CHILD AND  
ADOLESCENT PSYCHOPATHOLOGY?

By

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## ABSTRACT OF THE THESIS

Emotional Awareness: A Transdiagnostic Factor in Child and Adolescent

Psychopathology?

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Emotional awareness is consistently conceptualized as the first step in the process of emotion regulation and has been associated with a range of child and adolescent disorders. However, because most of this research has been cross-sectional, it has remained unclear whether low emotional awareness is a risk factor or corollary of youth psychopathology. Furthermore, most studies of emotional-awareness have been disorder-specific, and it remains unclear whether low emotional awareness represents a transdiagnostic factor for a range of poor mental health outcomes. The current study used longitudinal data to examine the predictive role of emotional awareness in the development of depressive and anxiety symptoms over the course of one year. Participants were 204 youth, ages 7 to 16, who completed assessments every 3 months for a year. Results from hierarchical mixed effects modeling indicated that poor emotional awareness predicted both depressive and anxiety symptoms for up to one year follow-up, after controlling for child age, gender, baseline symptomatology and stress. These findings suggest that emotional awareness may constitute a transdiagnostic factor in the development and/or maintenance of symptoms of depression and anxiety, which has important implications for youth treatment and prevention programs.

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## I. Introduction

### *Emotion Regulation and Psychopathology*

There is increasing recognition of the critical role of emotion regulation in the development and maintenance of psychopathology. While there are several existing approaches to the conceptualization and measurement of emotion regulation, Thompson (1994, p. 27-28) has defined emotion regulation as, “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals.” Ineffective emotion regulation, therefore, includes strategies that are either unsuccessful at managing emotion or are associated with long term costs that move a person farther from accomplishing their goals (Campbell-Sills & Barlow, 2007). Importantly, effective emotion regulation may require efforts to both increase and decrease the intensity of different emotions depending on the situational context (Gross, 1998).

Adolescence is a critical period of development for many emotion regulation processes. Not surprisingly, adolescence is also a time period during which many types of psychopathology begin to emerge, such as depression, substance abuse and suicidal behavior (Kazdin, 1993). One of the central challenges of adolescence is learning how to independently regulate both positive and negative emotions, without the assistance of adults (Steinberg et al., 2006). This occurs as changes in biological, cognitive and social resources present many emotionally intense situations and an increased sense of stress (e.g. Brooks-Gunn, Graver, & Paikoff, 1994, Larson & Ham, 1993; Larson & Richards, 1991). As a result, adolescents report higher rates and intensity of negative emotion than preadolescents, as well as more negative emotion and more extreme mood swings than

adults (Larson & Lampman-Petratis, 1989; Larson, Csikzentmihalyi, & Graef, 1980). The development of adaptive strategies for regulating emotion therefore has important implications for child and adolescent well-being, social functioning, life satisfaction, self-esteem, physical health, and academic success (e.g., Denham et al., 2003; Eisenberg et al., 1993; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Gross & John, 2003; Saarni, 1999; Salovey, Rothman, Detweiler, & Steward, 2000; Zins, Weissberg, Wang, and Walberg, 2004).

In addition to its role in healthy development, emotion regulation has also been implicated as an essential feature of youth mental health (Gross & Munoz, 1995), and deficits in healthy emotion regulation skills have consistently been associated with child and adolescent psychopathology (Bradley, 2000; Cicchetti, Ackerman, & Izard, 1995; Keenan, 2000). Deficits in the ability to effectively regulate emotions have been implicated in a wide range of both adult and child psychiatric disorders, including depression (Garber, Braafladt, & Zeman, 1991; Silk, Steinberg & Morris, 2003), anxiety disorders (Mennin, Heimberg, Turk, & Fresco, 2002; Southam-Gerow & Kendall, 2000), eating disorders (Fairburn, Cooper & Shafran, 2003; Sim & Zeman, 2004), posttraumatic stress disorder (Cloitre, Koenen, Cohen, & Han, 2002), aggression (Bohnert, Crnic, & Lim, 2003; Cole, Zahn-Waxler, & Smith, 1994; Dearing et al., 2002; Eisenberg et al., 2000; Shields & Cicchetti, 1998), ADHD (Walcott & Landau, 2004), and self-injurious/suicidal behavior (Nock, Wedig, Holmberg & Hooley, 2008; Selby, Yen, & Spirito, in press). It is therefore not surprising that the field of clinical psychology has witnessed an “emotion revolution,” as increasing attention is being given to the role of emotion in the development, treatment, and prevention of psychopathology (Sueveg,

Southam-Gerow, Goodman & Kendall, 2007).

### *Emotion Regulation as a Transdiagnostic Factor*

Given the role of emotional regulatory processes in such a wide range of disorders, poor emotion regulation is increasingly conceptualized as a transdiagnostic mechanism of psychopathology (Harvey, Watkins, Mansell, & Shafran, 2004; Kring & Sloan, 2010). Transdiagnostic processes are distinguished in that: 1) they occur across multiple disorders, and 2) they contribute to the etiology and maintenance of a range of disorders (Egan, Wade, & Shafran, 2011). There is a growing movement in the field towards a transdiagnostic approach toward understanding psychopathology, in which the focus is placed on understanding common processes that cause and maintain symptoms. Within this approach, the current diagnostic classification system (DSM-IV-TR) would be replaced or supplemented with functional diagnostic dimensions that cut across diagnoses and describe processes influencing behaviors of interest (Sanislow et al., 2010; Hayes, Wilson, Strosahl, Gifford, & Follette, 1996). Such a system might offer more clinical utility by identifying the specific issues that should be targeted for assessment and intervention, rather than primarily focusing on a specific diagnosis.

In their recent book, Harvey and colleagues (2004) describe the many advantages of adopting a transdiagnostic perspective. The transdiagnostic approach, they suggest, may help explain high rates of comorbidity among current DSM disorders and frequent instability of diagnosis by focusing on processes that occur and contribute to symptoms across disorders. In particular, certain disorders are known to co-occur at high rates, suggesting there may be underlying traits or vulnerabilities specific to that group of



disorders (Krueger & Markon, 2006; Watson, 2009). One common example is that major depressive disorder is frequently comorbid with anxiety disorders, such as social anxiety and generalized anxiety disorder (Brown & Barlow, 2009). A better understanding of common, transdiagnostic processes underlying these internalizing disorders may help inform the development of more effective and efficient treatments. The development of transdiagnostic treatments may also reduce the number of protocols a clinician must learn in order to provide evidence-based treatment for a wide range of disorders, thus enhancing dissemination and implementation of evidence based protocols (Harvey et al., 2004). By addressing common mechanisms across disorders, transdiagnostic treatments may provide a more efficient approach to reduce the clinical burden associated with the treatment of community youth presenting with a wide range of disorders and high rates of comorbidity.

For these reasons, transdiagnostic treatments are increasingly being developed, with each model drawing from “a unifying theoretical model that explains disparate conditions via common mechanisms” (Chu, 2012). Existing models focus largely on the treatment of comorbid depression and anxiety by targeting common mechanisms such as behavioral avoidance (Chu, Merson, Zandberg, & Areizaga, 2012), negative appraisals of threat and avoidance (Ehrenreich-May & Bilek, 2012), and exposure and behavioral activation (Weersing et al., 2012). One of the most promising transdiagnostic models, the Unified Protocol (Barlow, Allen & Choate, 2004), has recently been developed to treat emotional disorders by targeting common processes of maladaptive emotion regulation, including goals such as improving emotional avoidance and behavioral responses to difficult emotions. Research has begun to suggest the efficacy of this transdiagnostic

approach for treating adults (e.g. Barlow et al., 2004; Hayes et al., 1996), and there is increasing interest in applying similar transdiagnostic models to children and adolescents (e.g. Unified-Protocol for Youth; Ehrenreich, Goldstein, Wright, & Barlow, 2009). These treatments have been developed based on current knowledge of the role of emotion regulation in psychopathology, which is understudied in adolescents and often limited to cross-sectional designs. An improved understanding of the prospective role of emotion regulation in influencing later development and maintenance of psychopathology is needed to better inform the development and improvement of transdiagnostic treatments.

### *Emotional Awareness*

Emotion regulation is not one unitary construct, but rather a multidimensional process consisting of many facets, such as identification of emotional states, tolerance of emotional arousal, and employment of adaptive coping strategies (Saarni, 1999; Thompson & Calkins, 1996). Accordingly, it is critical to understand the different roles of distinct facets of emotion regulation in the development and maintenance of psychopathology. One of the initial steps in the process of emotion regulation is emotional awareness, which refers to the ability to recognize internal emotional experience (Lane & Schwartz, 1987). Emotional awareness is distinct from emotional expression, which can be mistaken for emotional awareness in children, in that awareness does not necessarily involve an outward display, but rather an internal cognitive recognition of the emotion that is present (Croyle & Waltz, 2002). This awareness has been highlighted as a critical and necessary prerequisite for the execution of other effective emotional regulatory processes (Barrett & Gross, 2001; Saarni, 1999).

Indeed, awareness of one's emotional experience has consistently been conceptualized as the first component of emotional intelligence and competence (e.g. Bar-On, Maree, & Elias, 2007; Goleman, 1998; Saarni, 2007). Individuals differ in their ability to notice, attend to, and differentiate internal emotional cues, and these individual differences have important implications for effective emotion regulation. The ability to effectively recognize and identify one's emotions enables a person to develop and activate an appropriate repertoire of behavioral, cognitive and emotional regulatory responses for dealing with experience, and is therefore associated with the increased use of a range of regulatory strategies (Barrett & Gross, 2001; Shields et al., 2001). In essence, in order to initiate effective emotion regulation strategies, one must first recognize the presence of an aversive emotional state to be regulated. In addition, the ability to attend to and understand one's emotions enables one to allocate fewer resources towards deciphering their internal experiences, allowing one to direct more resources towards the formulation of adaptive responses (Gohm & Clore, 2002). Consistent with this understanding of the role of emotional awareness, research has shown that children and adolescents with low awareness of their emotional experiences identify fewer constructive coping strategies and demonstrate a diminished ability to cope with negative emotions and interpersonal stress (Flynn & Rudolph, 2010; Shields et al., 2001; Sim & Zeman, 2005, 2006).

Emotional awareness may play a particularly important role in emotion regulation among adolescents. The development of emotional awareness may require abstract and meta-cognitive abilities that develop during early adolescence, allowing adolescents increased capacity to observe and think about their own emotions (Gottman, Katz, &

Hooven, 1997). Further, adolescence may not only be a period during which this capacity emerges, but also one in which it is sorely needed. As stress and negative emotion increases, the demand for effective emotion regulation rises, and the benefits of awareness on adaptive regulation become increasingly salient (Barrett & Gross, 2001). When faced with the increased stressors of adolescence, youth that have difficulty recognizing their emotions might therefore have more difficulty developing effective strategies for emotion regulation, leaving them particularly at risk for the development of psychopathology.

It is not surprising therefore, that low emotional awareness has been implicated in a range of disorders among children and adolescents. The inability to identify emotional states is associated with a range of internalizing symptoms in school age children (Zeman, Shipman & Suveg, 2002). For example, low emotional awareness has been associated with childhood anxiety disorders (Southam-Gerow & Kendall, 2000), acute depression (Berthoz et al., 2000), and disordered eating (Leon, Fulkerson, Perry & Early-Zald, 1995; Sims & Zeman, 2005; Sims & Zeman, 2006), with disordered eating hypothesized to be a means to manage ambiguous negative emotional arousal (Leon et al., 1995). In addition, low emotional awareness has also been associated with youth externalizing disorders such as Oppositional Defiant Disorder and Conduct Disorder (Casey, 1996).

Although increasing evidence indicates an association between emotional awareness and youth psychopathology, the majority of these studies have used cross-sectional methods, precluding analyses of temporal or causal relationships. As a result, it remains unclear whether low emotional awareness is a risk factor or corollary of

psychopathology. Longitudinal studies are needed to establish the prospective role of low emotional awareness on symptom development and maintenance, and rule out the possibility that the presence of low emotional awareness across disorders is just epiphenomenal (Mansell, Harvey, Watkins, & Shafran, 2009). Indeed, one might argue that the increased presence of pathology and upsetting emotions might make it more challenging to understand and be aware of one's emotional experiences, and not the other way around.

Furthermore, most studies of emotional-awareness have been disorder-specific, and it remains unclear whether low emotional awareness represents a transdiagnostic risk factor for a range of poor mental health outcomes, or is specific to certain types of psychopathology. In one recent study, McLaughlin and colleagues (2011) presented the first prospective evidence supporting poor emotional regulation as a risk factor for the development of subsequent adolescent psychopathology. In this study, low emotional awareness was associated with decreased emotional expression and decreased adaptive responses to negative affect. All three constructs loaded onto a single latent factor of "emotion dysregulation", which predicted subsequent increases in symptoms of anxiety, aggressive behavior, and disordered eating, but not depression. These findings present initial support for the role of emotion regulation as a transdiagnostic risk factor.

### *The Current Study*

The current study was designed to further examine the prospective role of emotional awareness as a transdiagnostic factor in child and adolescent internalizing disorders. Given that only one study has examined the transdiagnostic role of emotional

dysregulation longitudinally (McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011), additional prospective research is needed to replicate and extend these findings by further examining the specific role of emotional awareness. Furthermore, the McLaughlin et al. (2011) study examined emotion regulation in middle school children (grades 6-8), and assessed symptomatology at only two time points, separated by seven months. The current study extends their work by examining the prospective role of emotional awareness in a wider range of development (grades 3-9) with multiple assessments of symptoms for 12-months follow up. This design enabled me to better examine the predictive role of emotional awareness over time and the stability of its effects.

There has been a call from the National Advisory Mental Health Council's Behavioral Science Workgroup (2000) to use basic research to inform the development of prevention and treatment programs. In light of the recent "emotion revolution" in the field of clinical psychology, there has been a particular call for the application of findings from emotion science to intervention development for children and adolescents (Suveg, Southam-Gerow, Goodman, & Kendall, 2007). The purposes of this study are consistent with these goals and will have important implications for treatment and preventive interventions. If emotional awareness is a global risk factor for multiple types of psychopathology, then interventions may be enhanced through the inclusion of emotional awareness training.

However, if low emotional awareness is in fact a result, and not a precipitant, of psychopathology, the inclusion of emotional awareness training in preventive interventions may not be warranted. Results from this longitudinal study will provide important information about the prospective role of emotional awareness in symptom

development.

It is also possible that emotional awareness may in fact not be transdiagnostic, but rather represent a disorder-specific risk factor. Indeed, results from the Mclaughlin et al. (2011) study suggest that emotional understanding predicted changes in anxiety but *not* depressive symptoms. If this is the case, treatment modules targeting emotional awareness may not be appropriate components of transdiagnostic prevention programs, and programs should be tailored accordingly. In either case, knowledge about the predictive role of emotional awareness will help inform both transdiagnostic and disorder-specific interventions.

The purpose of the current study was to clarify the distinct role of emotional awareness in the development of internalizing symptoms. I hypothesized that adolescents with lower emotional awareness, who are less able to identify their internal emotional experiences, would be more likely to experience subsequent symptoms of depression and anxiety. I therefore expected that lower levels of baseline emotional awareness would predict higher levels of depressive and anxiety symptoms over the course of a year, after controlling for baseline depressive and anxiety symptoms. Second, given the increased importance of emotional awareness in the presence of intense negative emotions (Barrett & Gross, 2001), I expected that this effect would be moderated by baseline levels of stress, with low emotional awareness serving as a predictor of higher levels of pathology for those experiencing higher levels of stress. In addition, I examined age and gender effects and their influence on the role of emotional awareness.

## II. Method

### Participants

Data were drawn from a large longitudinal study of the development of depression in children and adolescents. The original sample consisted of 316 youth (143 boys and 173 girls) who ranged in age from 7 to 16. However, the Emotional Expression Scale for Children (EESC) measure, which was used to assess emotional awareness in the current study, was at the end of a take-home packet of measures, and was therefore not completed by many participants. As a result, this study includes data from the 204 youth that completed the EESC at baseline (86 boys and 118 girls). Of those, 72.5% completed all four follow-up assessments and 98.9% completed at least one follow-up assessment. The average age was 11.65 (SD= 2.41) years. In terms of race/ethnicity, 67.6 % of the sample (N= 138) was White, 13.2 % was African-American (N=27), 15.2% was Asian (N=31), .5% was American Indian (N=1), and 3.4% was multiracial (N=7), with 7.4% identifying as Hispanic/Latino (N= 15).

### Procedure

Letters were mailed home to the parents of 24,022 students at participating schools in 3 school districts, describing the study and asking if mothers and their children were interested in participating. 407 mother-child pairs initially responded to these flyers and were invited for a 3-hour in-lab assessment. Of these, 316 actually attended and completed the first in-lab assessment, during which time mothers and youth were told about the study details and signed consent and assent forms explaining the risks, benefits, and reimbursements involved. Participants were asked to provide demographic



information and complete a battery of measures including questionnaires assessing depressive and anxious symptoms. Following this initial in-lab assessment, participants received a take-home packet of additional questionnaires, including the Emotional Expression Scale for Children as a measure of emotional awareness. In addition, after the full initial assessment, participants were contacted by phone every 3 months over a period of 12 months in order facilitate completion of questionnaires about depressive and anxious symptoms and stressful life events, which were provided at the baseline assessment. Emotional awareness was not assessed at these follow-up assessments. Participants were compensated \$10 for every hour of assessment they completed. For this study, because parental knowledge of emotional awareness was not assessed, only youth report data was examined.

Regarding compliance to the study, 72.5% of participants in this study completed all 4 follow-up sessions, 91.1% completed 3 of the follow-up sessions, 96% completed 2 of the follow-ups, and 98.9% completed at least one follow-up session. No significant differences were found between individuals who did not complete the full battery of measures on baseline symptoms of depression ( $t(202) = .10, p = .90$ ) or anxiety ( $t(200) = 2.0, p = .27$ ).

This study was approved by the Institutional Review Board at Rutgers University.

## Measures

### Baseline Measures:

*Emotional Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002).*

The EESC is a 16-item measure of emotional expression, and was only administered at baseline in this study. Items comprise two 8-item subscales: a) emotional awareness and understanding and b) emotional expression. For this study, I was primarily interested in the emotional awareness and understanding subscale. Children were asked to rate how true statements are about themselves on a 5-point Likert scale ranging from not at all true (1) to extremely true (5). The 8 items from each subscale were summed to generate a total subscale score ranging from 8 to 40, with higher scores indicating less emotional awareness and greater expressive reluctance. For this study, scores on the emotional awareness subscale ranged from 8 to 38. A representative item from this subscale of the measure is, “I have feelings that I can’t figure out.” The EESC has been shown to have high internal consistency and moderate test retest reliability, and construct validity has previously been established (Penza-Clyve & Zeman, 2002). In this study I obtained good reliability, with a coefficient alpha of .90.

*Acute Life Events Questionnaire (ALEQ; Haeffel et al., 2007).* The ALEQ is a 37-item self-report questionnaire that measures a broad range of stressful live events, such as school/achievement and interpersonal/romantic stress. For each item, participants are asked to indicate how often they have experienced each event in the past 3 months (e.g. death of a family member) from “1 (never)” to “5 (always).” Higher scores indicate the occurrence of more stressful events. In this study I obtained good reliability, with a

coefficient alpha of .92.

### Repeated Assessments

*Children's Depression Inventory (CDI; Kovacs, 2003).* The CDI is a 27-item widely used self-report questionnaire that assesses cognitive, affective, and behavioral symptoms of depression. Each item on the CDI consists of three statements, which vary in the severity of a given symptom (e.g. "I am sad once in a while", "I am sad many times", "I am sad all of the time"). For each item, participants are asked to select the statement which best describes how they were feeling during the past week. Items are scored from 0 to 2 with a higher score indicating greater symptom severity. Total scores for this measure range from 0 to 54. The CDI has been shown to possess a high level of internal consistency and to distinguish children with major depressive disorders from non-depressed children (Saylor, Finch, Spirito, & Bennett, 1984). In this study I obtained coefficient alphas that ranged between .82 and .85 over the 5 time points, indicating good reliability. The CDI was administered at baseline, and every 3 months over the following year.

*Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997).* The MASC is a widely used 39-item self-report measure of anxious symptoms designed for youth aged 8–19. Children are asked to indicate how often each item has been true for them in the last week, on a 4-point Likert scale. Items are scored from 0 ("never applies to me") to 3 ("often applies to me"), with a higher score indicating greater symptom severity. Total scores for this measure are calculated by summing all items, and range from 0 to 117. The MASC is comprised of 4 subscales: physical

symptoms of anxiety, harm avoidance, social anxiety, and separation anxiety. For the present study I examined total anxiety scores. The MASC has demonstrated good reliability and validity (March et al., 1997). In this study I obtained coefficient alphas that ranged between .88 and .90 over the 5 time points, indicating good reliability. The MASC was administered at baseline, and every 3 months over the following year.

### *Data Analytic Strategy*

I first examined descriptive information and correlations between the predictor, emotional awareness, and baseline levels of anxiety and depression. I then conducted regression analyses on baseline data only, to examine whether the cross-sectional relationship between emotional awareness and baseline symptomatology remained significant after controlling for participant age and gender.

Next, I used hierarchical mixed effects modeling to assess the predictive role of emotional awareness on symptoms of depression and anxiety at follow-ups 3, 6, 9, and 12 months later. The mixed model approach accounts for two levels of data: within-subject (Level 1), where outcomes vary within subjects as a function of a person-specific growth curve, and between-subjects (Level 2), where the person-specific change parameters vary as a function of the participant's level of baseline vulnerability or other between-subjects differences. The mixed effects model approach models the scores of individuals at each time point and the covariance between the repeated measures over the assessments, allowing for examination of variance in non-independent observations. Analyses were run using the AR1 covariance structure, which accounts for auto-regression of observations repeated over time. Variables were examined as fixed effects and all cases

(N=204) were included in the analyses, which were conducted using the restricted maximum likelihood (REML) estimation method. The significance level for all tests was  $\alpha = 0.05$  (two sided). All analyses were conducted using SPSS 19.0.

In this study, my dependent variables were within-subject levels of depressive and anxiety symptoms. The primary predictors of these dependent variables were: Time (continuous; Level 1), and baseline emotional awareness (Level 2). For each hypothesis, following examination of main effects, participant age, gender, baseline stress, and baseline symptomatology were entered as covariates to examine how robust the effects were. In addition, I included the cross-level interaction between emotional awareness and Time as a Level 2 predictor in the model to determine whether the association between emotional awareness and psychopathology changed over time. The mixed effects model equations are displayed below to further delineate model specification. The same model structure was implemented to examine anxiety symptoms.

$$\text{Level 1: (Depression}_{ij}) = \beta_{0j} + \beta_{1j}(\text{Time})_{ij}$$

$$\begin{aligned} \text{Level 2: (Individual): } \beta_{0j} &= \gamma_{00} + \gamma_{01}(\text{Emotional Awareness})_j + \gamma_{02}(\text{Baseline} \\ &\text{depression})_j + \gamma_{03}(\text{age})_j + \gamma_{04}(\text{gender})_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11}(\text{Emotional Awareness})_j \end{aligned}$$

$$\begin{aligned} \text{Reduced Equation: (Depression}_{ij}) &= \gamma_{00} + \gamma_{10}(\text{Time})_j + \gamma_{01}(\text{Emotional} \\ &\text{Awareness})_j + \gamma_{02}(\text{Baseline depression})_j + \gamma_{03}(\text{age})_j + \gamma_{04}(\text{gender})_j + \\ &\gamma_{11}(\text{Time*Emotional Awareness})_j + u_{0j} \end{aligned}$$

Emotional awareness scores were rescaled as deviations from the overall sample mean (grand mean centering), as doing so improves stability in model estimation and interpretability (Blanton & Jaccard, 2006; Enders & Tofighi, 2007).

In addition, I examined potential moderators of the effects of emotional awareness on depressive and anxiety symptoms. Specifically, I examined the potential moderating effects of: age, gender, baseline stress, and baseline depressive and anxiety symptoms. For each potential moderator, a two-way interaction with baseline emotional awareness was entered into the model. I also examined the model when stress was entered as a time-variant variable.

Finally, in order to examine whether my inferences were impacted by the pattern of missing data, I implemented pattern-mixture models (Hedeker & Gibbons, 1997). This approach was chosen instead of imputation methods such as last observation carried forward because imputation does not result in real data but merely educated guesses, and imputation techniques each have potential for biasing results (Tasca & Gallop, 2009; Gueorguieva & Krystal, 2004). I examined only one pattern, in which participants were considered either completers or dropouts, as has been done in previous studies (e.g. Hedeker & Gibbons, 1997; Dimidjian et al., 2006). As described by Gallop and Tasca (2009), a binary factor was created, in which dropouts were coded as 0 and completers were coded as 1. To examine whether the effects of emotional awareness on symptoms was dependent on the missing data pattern, an interaction between each significant effect and the pattern factor was entered into the model. Significant effects of this interaction would suggest that observed effects were influenced by the pattern of missing data.

### III. Results

#### **Baseline Analyses**

##### *Descriptive Statistics*

Upon visually investigating scatterplots of the baseline data, the EESC and CDI variables appeared positively skewed, and accordingly each was transformed using a square root transformation. After transformation, the SPSS skewness statistic for each was reduced to a satisfactory level below 2.0. Table 1 displays the means, standard deviations, and intercorrelations between the baseline variables. Scores on the CDI (baseline mean= 7.64) should be interpreted with reference to the clinical cutoff of 20 for the general population, indicating subclinical levels of depressive symptoms within our sample at baseline. Low emotional awareness, anxiety, depressive symptoms, and baseline stress demonstrated small-moderate significant correlations in the anticipated directions. Contrary to what might have been expected, low emotional awareness was also positively associated with age (as illustrated in Figure 1), suggesting that older youth demonstrated greater deficits in emotional awareness.

##### *Regression Analyses*

A regression analysis was conducted to examine the baseline cross-sectional relationship between emotional awareness and baseline depression and anxiety symptoms, and whether these associations held after controlling for participant age and gender. As predicted, low emotional awareness was a significant predictor of both baseline depression ( $t(203) = 3.52, p = .001, \beta = .22$ ) and baseline anxiety ( $t(201) = 3.74, p < .001, \beta = .28$ ), after controlling for age, gender, and baseline stress, replicating

previous findings (e.g. Zeman, Shipman & Suveg, 2002; Southam-Gerow & Kendall, 2000).

### **Longitudinal Analyses**

Hierarchical mixed effects models were used to assess the predictive role of emotional awareness on symptoms of depression and anxiety at follow-ups 3, 6, 9, and 12 months later. The observations-within-individuals nesting structure was justified by significant ICCs for both depressive symptoms ( $ICC = .86$ ) and anxiety symptoms ( $ICC = .88$ ), indicating that 86% of the variance in depressive symptoms and 88% of the variance in anxiety symptoms was between persons, with the remainder being within-person variation. Data were graphed and visually examined and since there was no noticeable curve it was determined that a quadratic term was not needed to model non-linear growth.

Separate mixed effects models were examined for anxiety and depressive symptoms. In the first set of models, I entered only emotional awareness to obtain simple main effects. Results indicated a significant main effect of emotional awareness on both depressive symptoms ( $t(245) = 8.27, p < .001, \beta = .55$ ) and anxiety symptoms ( $t(241) = 5.46, p < .001, \beta = 5.23$ ). As illustrated in Figures 2 and 3, youth with lower emotional awareness demonstrate significantly more symptoms of depression and anxiety for up to one year follow-up.

Next, time-invariant Level 2 covariates were entered in each model, including participant age, gender, and baseline stress. Baseline depressive and anxiety symptoms were also entered as covariates in both models, leaving four evaluation periods of symptoms (at 3, 6, 9, and 12 month follow-ups) for analysis. While emotional awareness



was the primary predictor in these models (Level 2), I also examined if there was an influence of Time (continuous; Level 1). In addition, the cross-level interaction between emotional awareness and Time was included as a Level 2 predictor in the model to determine whether effects were maintained over time. Table 2 displays results from these hierarchical mixed effects models. Again, low emotional awareness significantly predicted higher levels of both depressive and anxiety symptoms, even after controlling for key covariates. The two-way interaction between time and emotional awareness was not significant in either model, suggesting that the significant effects of emotional awareness at baseline remained stable over time. As displayed in Figures 2 and 3, symptoms of depression and anxiety decreased over time for youth with both low and high emotional awareness, but those with low emotional awareness consistently demonstrated elevated symptomatology.

### *Moderation Analyses*

I also examined potential moderators of the effects of emotional awareness on depressive and anxiety symptoms including age, gender, baseline stress, and baseline depressive and anxiety symptoms. For each potential moderator, a two-way interaction with baseline emotional awareness was entered one-by-one into each model. When interactions were entered into the model predicting depressive symptoms, results indicated that there was no significant interaction between emotional awareness and age ( $t(321) = 1.10, p = .28, B = .02$ ), gender ( $t(322) = -.16, p = .87, \beta = -.01$ ), baseline stress ( $t(338) = -.60, p = .55, B = -.001$ ), or baseline depressive symptoms ( $t(336) = -.51, p = .61, B = -.003$ ). When interactions were entered into the model predicting anxiety

symptoms, results similarly indicated that there was no significant interaction between emotional awareness and age ( $t(324) = .75$ ,  $p = .46$ ,  $B = .17$ ), gender ( $t(324) = .19$ ,  $p = .85$ ,  $B = .22$ ), baseline stress ( $t(343) = -.31$ ,  $p = .76$ ,  $B = -.009$ ), or baseline anxiety symptoms ( $t(318) = 1.14$ ,  $p = .26$ ,  $B = .04$ ). When time-variant stress was entered into the model, emotional awareness did not significantly predict depressive ( $t(511) = 1.63$ ,  $p = .10$ ,  $B = .15$ ) or anxiety symptoms ( $t(496) = 1.26$ ,  $p = .21$ ,  $B = 1.56$ ). The interaction between baseline emotional awareness and time-variant stress was not significant for predicting either depressive ( $t(642) = -1.42$ ,  $p = .16$ ,  $B = -.003$ ) or anxiety symptoms ( $t(654) = -.72$ ,  $p = .47$ ,  $B = -.02$ ). Since all interactions were nonsignificant, they were removed from the model.

To examine whether our inferences were impacted by attrition, I implemented a pattern-mixture model approach to the analyses (Hedeker & Gibbons, 1997). To do this, a binary factor was created (Gallop & Tasca, 2009), in which dropouts were coded as 0 and completers were coded as 1. An interaction between emotional awareness and the pattern factor were entered into the model to examine whether the effects of emotional awareness on symptoms was dependent on the missing data pattern. The interaction was nonsignificant in both the depression model ( $t(362) = -.23$ ,  $p = .82$ ,  $B = -.02$ ) and the anxiety model ( $t(389) = .58$ ,  $p = .56$ ,  $B = .80$ ), and it was therefore removed from both models.

### *Construct Validity*

Given the lack of consensus among researchers regarding the construct of emotional awareness, I conducted a factor analysis of the EESC measure. A Principal

Axis Factor (PAF) with a Promax (oblique) rotation of the 16 Likert scale questions that constitute the Emotional Awareness subscale of the EESC measure was conducted on data gathered from all 204 participants. Results indicate that the oblique rotation of the solution yielded a two-factor solution, with this two-factor solution explaining 49% of the variance. These results as well as visual examination of the scree plot suggest that the EESC measure is best considered as capturing a two-factor construct, consisting of both emotional awareness and emotional expression. When the analysis was conducted, the items loaded onto the two factors almost entirely as expected based on initial validation of the measure (Penza-Clyve & Zeman, 2002). The Emotional expression factor accounted for 36.6% of the scale variance, with the Emotional Awareness factor accounting for an additional 12.2% of the variance. Additionally, as expected, the Emotional Awareness subscale of the EESC was correlated with the Emotional Expression subscale ( $r = .67, p < .001$ ) suggesting that these two components of emotion regulation are related but not completely overlapping.

I also conducted a separate factor analysis of the 8 Likert scale questions that constitute the Emotional Awareness subscale of the EESC, in order to better examine this construct. Results indicate that the orthogonal rotation of the solution yielded a one-factor solution with a simple structure (factor loadings  $\geq .60$ ), with this single-factor structure explaining more than 50% of the variance. Together, these results suggest that emotional awareness as measured by the EESC subscale is best considered as one unitary construct, which is related to, but distinct from, the construct of Emotional Expression.

To further demonstrate that emotional awareness and emotional expression are not completely overlapping constructs, I examined the predictive power of emotional

awareness on depressive and anxiety symptoms after controlling for emotional expression. Results indicated that when both emotional awareness and emotional expression were entered into the hierarchical mixed effects model of depressive symptoms, emotional awareness significantly predicted depressive symptoms ( $t(557) = 3.05$ ,  $p = .002$ ,  $B = .30$ ), while emotional expression did not ( $t(321) = .02$ ,  $p = .98$ ,  $B = .002$ ). Similarly, when both emotional awareness and emotional expression were entered into the hierarchical mixed effects model of anxiety, emotional awareness significantly predicted anxiety symptoms ( $t(560) = 2.10$ ,  $p = .037$ ,  $B = 2.65$ ), while emotional expression did not ( $t(327) = .64$ ,  $p = .52$ ,  $B = .53$ ).

#### IV. Discussion

Emotional awareness is consistently conceptualized as the first step in the process of regulating emotions (e.g. Lane & Schwartz, 1987; Barrett & Gross, 2001; Saarni, 1999). However, few studies have examined the consequences of low emotional awareness during the development from childhood to adolescence. Research suggests that low emotional awareness may be associated with a range of child and adolescent disorders (Zeman, Shipman & Suveg, 2002, Southam-Gerow & Kendall, 2000, Sims & Zeman, 2005, Casey, 1996). Yet, most of this research has been cross-sectional, and it remains unclear whether low emotional awareness is a risk factor or corollary of youth psychopathology. In addition, most studies of emotional-awareness have been disorder-specific, and it remains unclear whether low emotional awareness represents a transdiagnostic risk factor for a range of poor mental health outcomes, or is specific to certain types of psychopathology. The current study used longitudinal data from children and adolescents to examine the predictive role of emotional awareness in the development of depressive and anxiety symptoms over the course of one year. Using mixed effects models, I found that low emotional awareness predicted both depressive and anxiety symptoms from baseline for up to one year follow-up. In contrast, emotional expression was not predictive of depressive or anxiety symptoms. These findings suggest that emotional awareness may constitute a transdiagnostic factor in the development and/or maintenance of symptoms of depression and anxiety, which has important implications for youth treatment and prevention programs.

Our finding of the significant role of emotional awareness is consistent with existing literature demonstrating cross-sectional associations between emotional

awareness and a broad range of youth symptomatology (e.g. Zeman, Shipman & Suveg, 2002; Southam-Gerow & Kendall, 2000). Our findings also support and extend McLaughlin and colleague's (2011) study, which provided the first longitudinal evidence that emotion regulation might function as a transdiagnostic factor in multiple forms of psychopathology. The McLaughlin et al. (2011) study examined the role of emotional awareness as part of a broader construct of emotion dysregulation (including emotional awareness, emotional expression, and rumination) and found that deficits in these areas predicted the subsequent development of anxiety, aggression, and eating pathology, but not depression. The current study extends these findings by replicating the predictive role of emotional awareness in subsequent symptoms of anxiety and demonstrating its role in subsequent depressive symptoms. Together, these studies support conceptualizations of emotion dysregulation, and emotional awareness more specifically, as a transdiagnostic factor in psychopathology (Kring & Sloan, 2010; Moses & Barlow, 2006).

However, despite a general consistency between these two studies, in regards to the role of emotional awareness in the development of depressive symptoms, our findings are discrepant from the McLaughlin et al. (2011) study, which found that emotional awareness (as measured by the same subscale of the EESC used in this study) was *not* predictive of depressive symptoms. One explanation for this discrepancy may be that the current study included youth from a greater age range (grades 3-9), potentially capturing different stages in the process through which emotional awareness influences symptomatology. Additionally, although emotional awareness provides an individual with information about their emotional states, this information may not always be used

adaptively. While some youth may respond to this information by activating adaptive coping responses, others may activate maladaptive strategies such as avoidance or rumination. Indeed while adaptive self-reflection (such as that involved in emotional awareness) is associated with lower levels of depression, it is also often associated with the related phenomenon of rumination which may cancel out its beneficial effects on depressive symptoms (Takano & Tanno, 2009). In this way, emotional awareness may only serve a beneficial function for youth who possess a repertoire of effective coping strategies to activate. Further research should examine the conditions under which emotional awareness is predictive of depressive symptoms. However, given these discrepant findings, future longitudinal studies should also continue to investigate the role of emotional awareness in the development and maintenance of depressive symptoms.

Future studies should also examine the mechanism for the effects of emotional awareness. While there is no research conclusively demonstrating such a mechanism, it is often suggested that emotional awareness is protective from the development of psychopathology by providing an individual with information about their emotional states, which in turn allows them to activate emotion regulation strategies and respond adaptively. Consistent with this theory, emotional awareness has been associated with increased use of regulatory strategies, with an individual's recognition of the presence of a discrete emotion enabling the activation of adaptive responses (Barrett & Gross, 2001; Shields et al., 2001; Southam-Gerow & Kendall, 2002). In contrast, children and adolescents with low awareness of their emotional experiences identify fewer constructive coping strategies and demonstrate a diminished ability to cope with negative emotions and interpersonal stress (Flynn & Rudolph, 2010; Shields et al., 2001; Sim &

Zeman, 2005, 2006). Perhaps as a result, youth with lower emotional awareness report increased experiences of negative affect (Ciarrochi, Heaven, & Supavadeeprasit, 2008). In this way, low emotional awareness may contribute to symptoms of depression and anxiety by preventing youth from accessing information that enables them to recognize and cope with negative affect and arousal.

Contrary to my expectations, low emotional awareness was positively associated with age at baseline, with older children demonstrating less awareness than younger children. Developmental research suggests that emotional awareness requires abstract and meta-cognitive abilities that develop during adolescence (Gottman et al., 1997), and one would therefore expect skills in this areas to increase, and not decrease, with age. However, as youth grow up they also experience increased stressors, such as academic and social demands, and it may become more challenging for older youth to recognize and understand their more complicated emotional reactions to these experiences. Older youth may also experience more subtle and nuanced emotions (e.g. a mix of excited and nervous before a school dance), which may be more difficult to differentiate. Future research is needed to examine whether there might be a period of time during which youths' emotional experiences increase in complexity before their cognitive abilities to comprehend them develop.

Also contrary to my expectations, the effect of emotional awareness was not moderated by stress, baseline symptomatology, age, or gender. We had expected that the benefits of emotional awareness would serve a more salient role in the presence of stress and/or higher levels of baseline symptomatology, during which times the demand for effective emotion regulation is greater. Indeed Barrett and Gross (2001) found that



emotion regulation, and emotional awareness more specifically, may be particularly important in the presence of intense emotions. This absence of any moderating effects in this study may reflect the fact that this was a community sample of youth, generally reporting subclinical levels of symptomatology and stress. As a result, the range of stress levels may have been restricted to some extent. It is possible that for youth experiencing more extreme levels of stress and/or clinical levels of symptomatology, emotional awareness may play a particularly important role. Alternatively, it may be that emotional awareness is equally important for all youth, regardless of whether they are experiencing stress or symptomatology. Interestingly, when stress was entered into the model as a time-variant variable, including stress levels at each assessment, emotional awareness was no longer significant. This finding suggests that proximal stress levels may be more significantly associated with psychopathology than distal levels of emotional awareness. However, given that emotional awareness was only measured at baseline, I was unable to compare the effects of time-variant stress and time-variant emotional awareness, and the time-variant nature of the stress variable accounted for significantly more variance in both depressive and anxiety symptoms.

Importantly, both models included baseline symptoms of depression and anxiety. While baseline anxiety predicted subsequent depressive symptoms over the one-year follow-up period, baseline depressive symptoms did not predict subsequent anxiety. These findings suggest that the measures of depression and anxiety included in this study were not capturing an overlapping construct of negative affect, but rather two distinct phenomena with distinct developmental trajectories.

It is also important to note that the construct of emotional awareness lacks a

consistent definition, with the term often used to describe different processes, and with different terms (e.g. emotional clarity, emotional understanding, emotion labeling) often used to describe overlapping processes. Emotional awareness as measured by the EESC and discussed in this paper refers to the extent to which a person is able to differentiate and label their emotions. It is important to clarify that in other measures of emotion regulation (e.g. the DERS, Gratz & Roemer, 2004) the term emotional awareness refers to a related but somewhat different construct, measuring a person's tendency to attend to and acknowledge their emotions. In contrast, the term emotional clarity on the DERS measure more accurately maps onto our definition of emotional awareness, measuring the extent to which individuals know (and are clear about) the emotions they are experiencing. In other models, this construct is further divided into different sub-skills. For example, the RULER model of emotional literacy (Maurer & Brackett, 2004) describes different skills including Recognizing (emotions in oneself and other), Understanding (the causes and consequences of emotions), Labeling (the full range of emotions using a rich vocabulary), Expressing (appropriately sharing one's emotions with others), and Regulating (possessing strategies to change emotional states). Emotional awareness as measured by the EESC includes elements of the first of these three skills, recognizing (e.g. "I often do not know how I am feeling"), understanding (e.g. "I often do not know why I am angry"), and labeling (e.g. "Sometimes I just don't have words to describe how I feel"). These inconsistencies limit our ability to generalize and compare findings from studies using different measures of emotional awareness. Research in this area would be advanced through further consensus about the terminology and definition of this important construct. However, despite this limitation, the EESC is a

widely used measure that captures an important first step of emotion regulation. Results from the factor analysis suggest that the EESC measures two distinct constructs, Emotional Awareness and Emotional Expression, with items loading onto the two factors almost entirely as expected based on initial validation of the measure (Penza-Clyve & Zeman, 2002). Furthermore, results indicated that the Emotional Awareness subscale is best considered as one unitary construct, which is related to, but distinct from, the construct of Emotional Expression.

Interestingly, when both subscales of the EESC were entered into the mixed effects models, emotional awareness scores predicted symptoms of anxiety and depression, while the emotional expression subscale, which measures an individual's motivation to express their emotions, did not. This finding suggests that awareness of one's emotions may serve a distinctly beneficial role, above and beyond allowing for their expression. The absence of a significant effect of emotional expression (after controlling for emotional awareness) is surprising in light of research demonstrating negative consequences of emotional suppression (e.g. Gross, 2002; Richards & Gross, 1999). However, this finding is also consistent with previous research demonstrating that the emotion awareness factor of the EESC measure had a stronger pattern of correlations with measures of internalizing symptoms than the emotional expression factor (Penza-Clyve & Zeman, 2002). These findings are also consistent with Saarni's (1999) conceptualization, in which willingness to express emotion plays a less essential role than emotional awareness in building emotional competence. These findings suggest that further work is needed to distinguish the roles of emotional awareness and expression on the development and maintenance of internalizing symptoms during childhood.

### *Implications*

Our findings have important implications for prevention and treatment interventions targeting youth anxiety and depression. As one of the first studies to demonstrate the role of low emotional awareness in predicting psychopathology, this study supports the integration of emotional awareness training in both treatment and prevention programs for youth depression and anxiety. Emotional awareness training might include a focus on teaching youth to recognize and interpret interoceptive signs of their emotions (e.g. heart racing), a rich vocabulary with which to label their emotions, and an understanding of the causes and consequences of their emotions. Such interventions might also encourage youth to monitor their daily emotions in order to increase their awareness.

Based on existing cross-sectional data, some treatments already integrate components designed to increase emotional awareness. For example, treatments for adolescent depression often include self-monitoring techniques to help build emotional awareness by asking adolescents to complete daily mood and thought diaries (e.g., Adolescent Coping with Depression Course; Lewinsohn et al, 1984). Treatments for adolescent anxiety, such as the Coping Cat (Kendall & Hedtke, 2006), often begin by teaching adolescents to identify and recognize their anxious feelings. A newly developed treatment for adults, Emotion Regulation Therapy (Mennin, 2004; 2006), specifically targets emotional awareness and understanding through out-of-session self-monitoring and writing exercises, and may be promising if modified for children. Similarly, the Unified Protocol, a treatment designed to be applicable to the full range of emotional disorders, includes an Emotional Awareness Training component, designed to help

people identify and stop using avoidance strategies and fully engage with their emotions (Allen, McHugh & Barlow, 2008). These interventions provide a model for the potential integration of emotional awareness training into cognitive behavioral treatments for a range of disorders. The current study provides longitudinal data suggesting that other treatments may benefit from a similar integration.

Findings from this study also support the integration of emotional awareness training into transdiagnostic treatment and prevention programs. Our findings suggest that emotional awareness may constitute a transdiagnostic factor that is relevant in both depression and anxiety disorders. In light of growing recognition that the co-occurrence of anxiety and depressive symptoms in youth may be a result of shared etiological factors (Barlow, Allen, & Choate, 2004), the importance and potential benefit of transdiagnostic interventions for youth has become increasingly salient. By targeting cross-cutting mechanisms of psychopathology such as emotional awareness, transdiagnostic interventions may treat and prevent multiple forms of psychopathology, reducing the clinical burden associated with comorbid conditions (Harvey et al., 2004). Rather than implementing separate protocols to treat a client's depression and comorbid anxiety, overtaxed clinicians could implement one single transdiagnostic intervention (e.g. UP-Y, Ehrenreich et al. 2008) that more efficiently addresses the common mechanisms maintaining both these disorders. Similarly, while many youth prevention programs target one specific form of psychopathology, this approach is limited by the reality that most schools and communities do not have the resources to implement a separate intervention for each disorder. Instead, transdiagnostic prevention programs for youth (e.g. The Emotion Detectives Prevention Program (EDPP), Ehrenreich-May and Bilek

2009) offer a more efficient model of prevention, by targeting factors that contribute to the development and maintenance of a wide range of disorders. Results from this study suggest that emotional awareness may be an important target for such transdiagnostic interventions.

In addition, as the field moves towards the development of innovative methods of dissemination, electronic and cost-effective methods may be employed to target emotional awareness. Increasingly, electronic devices such as smartphone apps are being used as therapeutic tools and many have already been designed to increase self-monitoring (Luxton, McCann, Bush, Mishkind & Reger, 2011). While further research is needed, self-monitoring is thought to increase emotional awareness by prompting users to self-reflect about their emotions more frequently, and providing them with information about their emotional patterns. Given the rapid growth of smartphone use (Rocha, 2009), digital self-monitoring technology may allow for wide-scale dissemination of brief self-monitoring interventions that may increase emotional awareness. Along these lines, promising new research has recently demonstrated the feasibility and efficacy of electronic diaries in potentially reducing anxiety symptoms among girls with low emotional awareness (Thomassin, Morelen, & Suveg, 2012). While the use of electronic self-monitoring tools warrants further evaluation, it constitutes a promising model of service delivery, which may increase emotional awareness among users in a way that is scalable, efficient, and cost-effective.

#### *Limitations and future directions*

Despite the promising results from this study, our findings should be considered in light of several limitations. First, depression and anxiety were measured using self-

report measures, and further research is needed to replicate these findings using multi-informant assessments and semi-structured interviews. However, the self-report measures used in this study have been well established and validated (Timbremont, Braet, & Dreessen, 2004; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002). Similarly, emotional awareness was also measured using a self-report measure, which is limited by the fact that youth with low emotional awareness may also have low self-awareness more generally, limiting their ability to accurately report on their internal experiences.

However, the EESC is a widely used and validated measure that has been consistently associated with other measures of emotion regulation and internalizing symptoms (Penza-Clyve & Zeman, 2002). While it may be more effective to measure emotional awareness in real time throughout electronic devices that signal participants to label their current emotions, this methodology is costly and time-intensive and not feasible for a large longitudinal study with a community sample.

Second, this study assessed symptoms in youth from a community sample in which overall levels of depression and anxiety were somewhat low, as is often the case in research involving community samples. While this study suggests the importance of emotional awareness in subclinical levels of symptomatology, replication with a clinical sample is necessary. Third, the majority of our sample was Caucasian, which limits the generalizability of our findings to other racial and ethnic groups. These findings should therefore be replicated with a more diverse sample. Finally, because we only measured emotional awareness at baseline, we were unable to examine whether symptoms of depression and anxiety predicted subsequent impairments in emotional awareness. While our findings suggest that emotional awareness predicts subsequent symptomatology, it is

possible that there is a reciprocal relationship in which the presence of symptomatology also further impairs emotional awareness. However, in the McLaughlin et al. (2011) study, emotional regulation (including a measure of emotional awareness) predicted subsequent psychopathology but psychopathology did not predict subsequent emotional awareness. While the McLaughlin et al. (2011) study suggests that emotion regulation deficits are not caused by psychopathology, further longitudinal research is needed to examine this possibility.

Future research should continue to examine the mechanisms through which emotional awareness is associated with psychopathology. While many suggest that low emotional awareness may lead to psychopathology by preventing the activation of adaptive responses (e.g. Barrett & Gross, 2001), this causal link not been demonstrated empirically. It is also possible that knowing and labeling one's emotions may enable cognitive defusion (Hayes, Strosahl & Wilson, 1999), allowing a person to observe their emotions from some distance rather than feeling consumed by them. More information is needed to better understand the adaptive benefits of emotional awareness and the link between deficits in this area and the development of psychopathology. In addition, this study only examined the role of emotional awareness in depression and anxiety, and future studies should examine its role in a wider range of both internalizing and externalizing disorders.

### *Conclusion*

Despite these limitations, this study provides longitudinal evidence demonstrating the role of emotional awareness as a transdiagnostic factor in depression and anxiety



among children and adolescents. This study extends findings from cross-sectional studies of emotional awareness, demonstrating its predictive association with subsequent symptoms of depression and anxiety. With the development of transdiagnostic treatment and prevention programs there is an increasing importance in identifying transdiagnostic factors that contribute to or maintain symptoms across a range of disorders. Our findings highlight the potential benefits of integrating emotional awareness training into both transdiagnostic and disorder-specific interventions.

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Table 1

Baseline means, standard deviations and bivariate correlations

	1	2	3	4	5	6
1. EESC Low EA	-					
2. CDI	.42**	-				
3. MASC	.30**	.25**	-			
4. Child Age	.18**	.18**	-.10**	-		
5. ALEQ	.42**	.55**	.20**	.26**	-	
6. Gender	.13	.04	.11	-.01	.07	-
Mean	16.56	7.64	42.69	11.65	66.70	-
(SD)	(6.75)	(6.20)	(15.72)	(2.41)	(19.28)	

Note: CDI -Children's Depression Inventory; MASC -Multidimensional Anxiety Scale for Children; EESC-Emotion Expression Scale for Children; ALEQ- Acute Life Events Questionnaire,  $p < 0.05$ , \*\* $p < 0.01$ .

Table 2

## Longitudinal Hierarchical Mixed Effects Models

	Depression			Anxiety		
	B	SE	<i>t</i>	B	SE	<i>t</i>
Low EA	.23	.09	2.57*	3.13	1.20	2.61**
Time	-.21	.02	-10.28***	-1.20	.27	-4.36***
Age	.054	.01	3.60***	-.29	.20	-1.49
Gender	.04	.07	.63	-1.49	.91	-1.64
Baseline Stress	.007	.002	3.09**	.03	.03	.80
Baseline Depression	.10	.007	13.94***	-.12	.10	-1.30
Baseline Anxiety	.008	.002	3.48**	.64	.03	22.28***
Time*EA Interaction	-.04	.03	-1.40	-.49	.35	-1.42

*Note* Low EA= Low Emotional Awareness; \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Figure 1

Emotional awareness by age at baseline

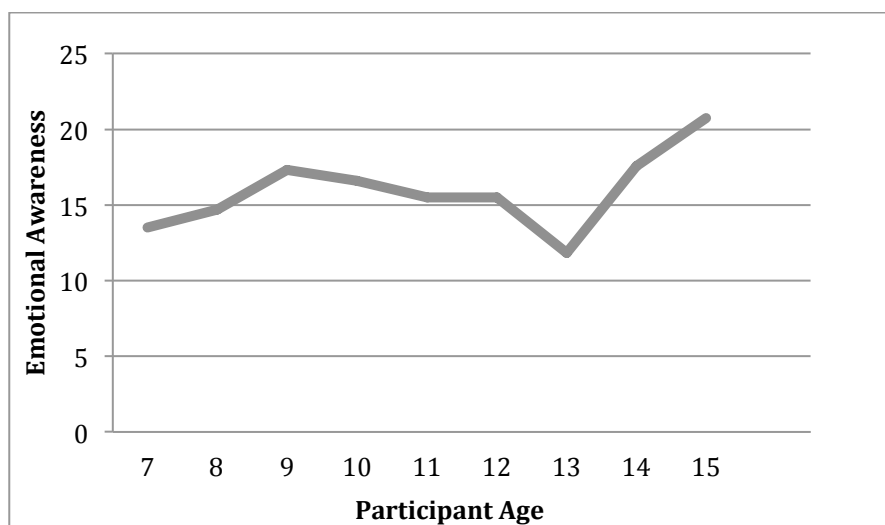
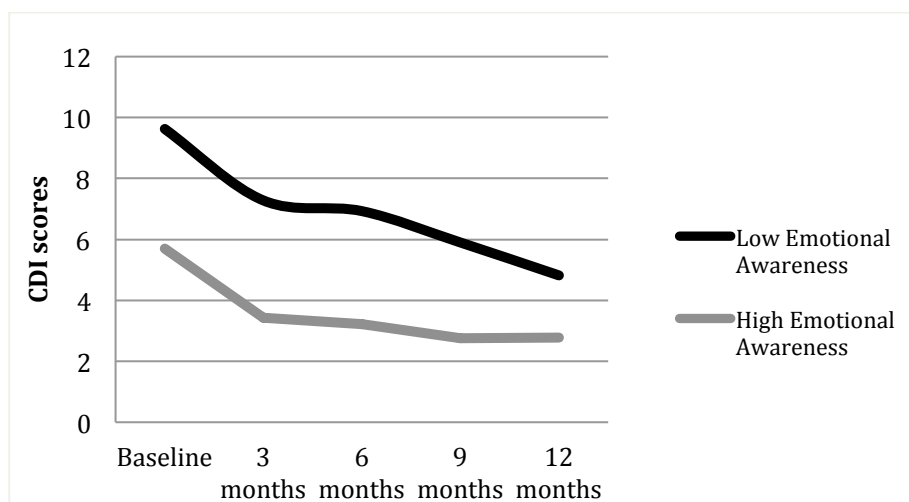


Figure 2

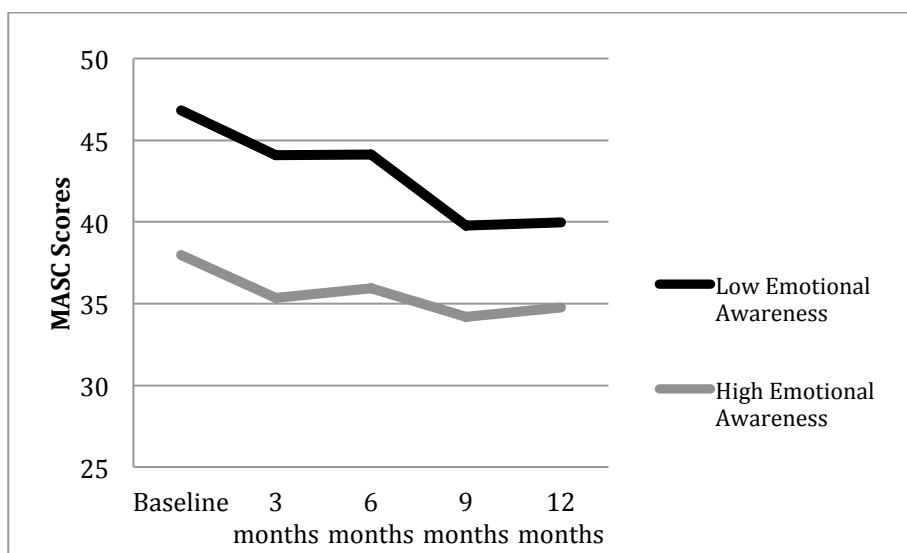
## Average Depressive Symptoms by Assessment



*Note:* A mean split was conducted to create high and low EA groups

Figure 3

## Average Anxiety Symptoms by Assessment



*Note:* A mean split was conducted to create high and low EA groups