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Assessing Behavioral and Emotional Avoidance in Adolescents: A Psychometric Validation Study

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ASSESSING BEHAVIORAL AND EMOTIONAL AVOIDANCE IN ADOLESCENTS: A PSYCHOMETRIC VALIDATION STUDY

By

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Avoidance, which may be either behavioral or emotional and is widely thought to be a maladaptive strategy for regulating emotions, is central to diagnostic conceptualizations of anxiety and depressive disorders. Both behavioral and emotional avoidance confer risk for and maintain symptoms of anxiety and depression, and change in avoidance is thought to be an important treatment mechanism. However, few existing measures of avoidance are appropriate for adolescents. The current study utilized exploratory factor analyses of two measures of avoidance in adolescents, employing an exploratory structural equation modeling framework: the *Checklist of Avoidance Strategy Engagement for Adolescents* (CEASE-A; adapted from Kamphuis & Telch, 1998), a measure of behavioral avoidance, and the *Emotional Avoidance Strategy Inventory for Adolescents* (EASI-A; Fairholme, Ellard, Boisseau, Farchione, & Barlow, 2008), a measure of emotional avoidance. Participants were recruited from one middle and one high school in the Southeastern United States. Analyses yielded a five-factor structure for the CEASE-A and a three-factor structure for the EASI-A. Small correlations were observed between the CEASE-A and a measure of anxiety-related behavioral avoidance, and moderate correlations were observed between the EASI-A and a measure of thought suppression. Both measures were moderately to strongly predictive of anxiety and depression symptoms. The CEASE-A and EASI-A are two new, psychometrically sound

measures of avoidance that will aid in the assessment of avoidance as a vulnerability factor for psychopathology and as an outcome and mechanism for treatments of emotional disorders in adolescents.

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Chapter 1: Introduction

Anxiety and depressive disorders are prevalent during childhood and adolescence, with epidemiological studies suggesting that approximately 10-20% of youth experience clinically significant anxiety (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003) and approximately 4-7% of youth experience a depressive disorder (Costello et al., 2003). Prevalence rates of anxiety and depressive disorders increase during adolescence (Costello, Copeland, & Angold, 2011), and as many as 75% of young adults with a mental health disorder report experiencing symptom onset between ages 11 and 18 (Kim-Cohen et al., 2003). Furthermore, co-occurrence of depression and anxiety in youth has been estimated to be as high as 75% (Angold, Costello, & Erkanli, 1999). The high prevalence and comorbidity of anxiety and depressive disorders in youth has motivated the development of transdiagnostic models of psychopathology that identify shared processes underlying multiple disorders (e.g., Barlow, Allen, & Choate, 2004).

Avoidance—which involves the use of strategies to prevent, reduce the intensity of, or escape from an emotionally distressing experience or situation---may be one such transdiagnostic risk and maintenance factor. Avoidance may be behavioral, involving use of concrete behavioral strategies to escape from or reduce the intensity of an emotional situation, or it may be emotional, encompassing attempts to control or escape from distressing thoughts, sensations, or emotional experiences (Werner & Gross, 2010). The important role played by avoidance in emotional disorders is undisputable: emotion science, behavioral frameworks, cognitive-behavioral theory, emotion regulation frameworks, and cognitive neuroscience have all in some way recognized avoidance behavior as part and parcel of emotional experiences (e.g., Foa & Kozak, 1986; Frijda,

2007; Gross & Thompson, 2007; Lang, 1995, Mowrer, 1960). Avoidance and withdrawal are also recognized diagnostically as key symptoms of many anxiety and depressive disorders (*Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* [DSM-5]; American Psychiatric Association, 2013). Despite its diagnostic centrality, examinations of avoidance as a vulnerability factor, treatment outcome variable, or treatment mechanism are rare, in part due to the lack of youth-appropriate measures of either behavioral or emotional avoidance. The current study addressed this measurement gap by examining the psychometric properties of measures of behavioral and emotional avoidance in a normative adolescent sample, as well as associations with symptoms of anxiety and depression.

Behavioral Avoidance

Theoretical considerations. Despite current measurement limitations, avoidance has been an important component of behavioral theories of anxiety disorders since the inception of Mowrer's (1960) two-factory theory. Mowrer extended the framework of classical fear conditioning by introducing the idea that escape behaviors are maintained through avoidance conditioning, in which avoidance behaviors are negatively reinforced when a feared outcome is circumvented and fear decreases. Foa and Kozak's (1986) model of emotional processing expanded upon Mowrer's behavioral theory by introducing the idea that avoidance maintains fear structures (i.e., associations between a stimulus, response, and meaning representation) by preventing habituation and disconfirmation of cognitive distortions about feared stimuli. In other words, not only does avoidance maintain anxiety by temporarily reducing fear and reinforcing future avoidant behaviors, but it also prevents individuals from remaining in a feared situations

long enough to access and modify distorted fear representations. Emotion regulation frameworks, such as Gross's (1998) "process model," have drawn attention to the employment of behavioral avoidance as a more deliberate strategy for regulating emotions. According to this framework, emotion regulation refers to those processes that decrease, maintain, or increase an emotion by impacting the physiological, experiential, and/or behavioral aspects of the emotion (Werner & Gross, 2010). Antecedent-focused processes (e.g., situation selection, situation modification, attentional deployment, cognitive change) are those processes employed before the full onset of the emotion, including behavioral avoidance, while response-focused processes (e.g., response modulation) are employed after the onset of emotion in order to modify its course or intensity. Each of these theories is consistent with cognitive-behavioral therapy, the most strongly supported evidence-based treatment for anxiety disorders (Chorpita et al., 2011), which typically targets avoidance directly through exposure to feared or aversive stimuli.

Behavioral avoidance has played a less obvious role in theoretical models of depression, which have often assumed depression to be characterized by a deficiency in approach behaviors rather than by increased avoidance. Ferster (1973) first noted that depressed individuals frequently engage in a range of avoidant behaviors (e.g., complaints, requests for help, escape) that maintain depression by limiting access to positive reinforcements and further constricting an individual's sphere of functioning (Ferster 1973). More recent models have emphasized the role of cognitive processes such as rumination in maintaining avoidance (e.g., Kingston, Watkins, & Nolen-Hoeksema, 2014), and structural models have suggested that depression may be characterized by *both* low approach and increased avoidance motivation (Spielberg, Heller, Silton,

Stewart, & Miller, 2011). Behavioral activation (BA), one of the most efficacious and parsimonious treatments for depression, addresses behavioral avoidance through helping depressed individuals to engage in behaviors that increase their response-contingent rewards (Dimidjian, Barrera, Martell, Muñoz, & Lewinsohn, 2011; Martell, Addis, & Jacobson, 2001). Adult studies comparing behavioral activation treatment to other types of therapy have found that BA outperforms cognitive therapy and performs just as well as combined cognitive-behavioral therapy and pharmacological therapy across trials (see Dimidjian et al., 2011 for review). Despite the role that avoidance plays in the theory and treatment of depression, there is relatively little empirical research on the relationship between behavioral avoidance and symptoms of or vulnerability for depression. Some researchers have examined the extent to which depressed individuals use avoidant strategies (e.g., denial, minimization) to manage specific stressors (e.g., Cronkite & Moos, 1995; Grant et al., 2013), while others have conceptualized and measured avoidance as a problem-solving style and as a personality dimension (for a review see Ottenbreit & Dobson, 2004). However, there is currently limited ability to measure and understand the employment of behavioral avoidance as a strategy for regulating emotions in depressed individuals, particularly adolescents.

Associations with anxiety and depression. Existing research suggests that the use of behavioral avoidance to manage emotions may have cascading consequences, including a short-term rebound of negative emotions and increased vulnerability to develop anxiety and depressive disorders. Cross sectional designs have supported a relationship between use of behavioral avoidance and increased negative emotion. In adults, social and nonsocial forms of behavioral avoidance have been positively

correlated with depressive symptoms, and individuals with clinical depression have been found to demonstrate higher levels of avoidance compared to non-clinically depressed individuals (Ottenbreit, Dobson, & Quigley, 2014). In adolescents, strong positive correlations have been observed between anxiety and the use of avoidance and subtle safety-seeking behaviors (Thomas, Daruwala, Goepel, & De Los Reyes, 2012). Experimental paradigms have also shown that training youth to avoid novel stimuli results in increased fear and avoidance of the trained stimuli (Huijding et al., 2009), supporting the idea that increased avoidance may temporally precede and contribute to increased fear. However, only a few studies to date have examined the longitudinal relationship between behavioral avoidance and emotional disorder symptoms. In adults, emerging evidence has suggested a reciprocal relationship between behavioral avoidance coping and depression measured eight weeks apart (Grant et al., 2013), while a longitudinal study showed that avoidance partially mediated the relationship between mild to moderate depressive symptoms in early adolescence and negative outcomes in early adulthood, including loneliness and depression (Allen, Chango, Szwedo, & Schad, 2014). There is also some evidence that behavioral avoidance associated with anxiety may place individuals at risk for the development of later depression. Jacobson and Newman (2014), for example, found that behavioral avoidance partially mediated the relationship between anxiety in adolescence and depression in adulthood.

Emotional Avoidance

Theoretical considerations. Emotional avoidance is an emotion regulation strategy that encompasses attempts to escape or avoid any part of an emotional experience, including thoughts, sensations, and emotional expressions (Boulanger,

Hayes, & Pistorello, 2010; Kelly & Forsyth, 2009). Emotional avoidance is closely related to experiential avoidance, a construct that has been made popular by third-wave cognitive-behavioral therapies such as Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999), which emphasizes emotional acceptance through non-judgmental awareness and mindfulness. The construct of emotional avoidance, in contrast, in not linked to any particular theoretical orientation and thus refers to the more general tendency to avoid internal emotional experiences. In the framework of Gross's (1998) process model of emotion regulation, emotional avoidance is a response-focused strategy because it involves attempts to control or modify some part of an emotional experience after it has already begun. As a construct, emotional avoidance has the potential to encompass a number of theoretically and empirically related constructs that have been implicated as transdiagnostic risk and maintenance factors for psychopathology, including rumination, worry, and suppression (Boulanger, Hayes, & Pistorello, 2010). Emotional avoidance has received particular attention in the context of generalized anxiety disorder (GAD), where worry is thought to be a means of decreasing autonomic arousal through avoiding contact with anxiety-provoking imagery (e.g., Borkovec, Alcaine, & Behar, 2004; McLaughlin, Mennin, & Farach, 2007). The construct of emotional avoidance also has the potential to resolve confusion related to the meaning of suppression, which has been used in the emotion regulation literature to refer to suppression of emotional expression, suppression of the subjective experience of emotion, and suppression of emotion-eliciting thoughts (Webb, Miles, & Sheeran, 2012). In theory, emotional avoidance encompasses all of these processes.

Associations with anxiety and depression. The use of emotionally-avoidant strategies has been associated with symptoms of anxiety and depression in both adults and youth. Moderate to strong correlations (r = .5 or higher) have been observed between experiential avoidance and anxiety, depression, and psychological distress in adults (Baer, 2007), and adolescents with a high level of worry have been found to use more emotionally avoidant strategies than adolescents with moderate worry levels (Gosselin, Langlois, Freeston, Ladoceur, Laberge, & Lemay, 2007). Likewise, the suppression of emotional expression has been positively associated with depression and anxiety symptoms in both children and adolescents (Gullone & Taffe, 2012; Aldao, Nolen-Hoeksema, & Schweizer, 2010). In addition, depression severity in adults has been associated with suppression of positive emotion in addition to suppression of negative emotion (Werner-Seidler, Banks, Dunn, & Moulds, 2013).

Not only are emotionally avoidant strategies associated with symptoms of anxiety and depression, but studies have also found that the use of these strategies increases both short-term subjective experience of negative emotion as well as future risk for anxiety and depressive disorders. In adults with social anxiety, for example, greater use of experiential avoidance in daily social interactions and during experimental paradigms increased the experience of social anxiety (Kashdan et al., 2014). In non-clinical adult samples, expressive suppression use has been associated with short-term increased sympathetic activation while viewing negative stimuli (Gross, 1998) and performing a social anxiety task (Hofmann, Heering, Sawyer, & Asnaani, 2009), as well as with greater experience of negative emotion and less experience of positive emotion (Gross & Oliver, 2003). Longitudinal studies have suggested that the use of emotionally avoidant

strategies may be a transdiagnostic risk factor for emotional disorders and an important pathway from anxiety to depressive disorders. For example, Blalock and Joiner (2000) found the use of cognitive avoidance coping to predict symptoms of depression and anxiety in women, and cognitive avoidance moderated the relationship between stressful life events and depressive symptoms. In a recent longitudinal study, Spinhoven, Drost, de Rooij, van Hemert, & Penninx (2014) found that the use of emotionally avoidant strategies in adults was stable over time, predicted later onset and persistence of anxiety and depressive disorders, and mediated the longitudinal relationship between fear disorders and distress disorders. Together, such studies are beginning to provide compelling research that emotional avoidance may confer vulnerability for, rather than be a consequence of, anxiety and depressive disorders.

Development and Measurement of Avoidance in Adolescence

Adolescence is an important developmental period for examining avoidance because many psychological disorders either emerge or worsen in severity during this time. Data from the National Comorbidity Survey Replication suggest that the peak age of onset for psychological disorders is 14 years old (Kessler et al., 2005), and as many as one in five adolescents has a clinical psychiatric disorder at any given time (Costello, Copeland, & Angold, 2011). Poor emotion regulation, in particular increased use of avoidant strategies, is one factor that may contribute to psychopathology during adolescence. Adolescents become both more adept at self-regulation and increasingly dependent on peers for regulating emotion (Morris, Silk, Steinberg, Myers, & Robinson, 2007), and emotion regulation strategies become more varied and sophisticated as adolescents learn to regulate their emotions to achieve goals in new interpersonal and

academic contexts (Zeman, Cassano, Perry-Parrish, & Stegal, 2006). At the same time, increased amygdala activity and gradual maturation of the prefrontal cortex may both heighten negative emotions and compromise adolescents' ability to implement adaptive emotion regulation strategies. Thus, adolescents have been found to experience greater negative affect and less intense positive emotions as compared to children (Gilbert, 2012), and their difficulty regulating negative affect has been associated with greater symptoms of depression and anxiety (Silk, Steinberg, & Morris, 2003). Avoidance may also play a role in explaining increased rates of emotional disorders in adolescents, as several studies have found significant increases in avoidance behavior during adolescence. For example, Sumter, Bokhorst, & Westenberg (2009) found that avoidance of and distress associated with formal speaking and interaction situations increases in adolescence, while Miers, Blote, Heyne, & Westernberg (2014) found that behavioral avoidance increases during adolescence for individuals with elevated symptoms of social anxiety disorder.

Adolescence is clearly a significant developmental period in terms of changes in emotional experience and regulation, but the development of new measures and methods of assessing emotion regulation has progressed more quickly for both adults and young children than it has for middle childhood and adolescent populations (Adrian, Zeman, & Veits, 2011; MacDermott, Gullone, Allen, King, & Tonge, 2010; Gullone & Taffe, 2012). Regarding behavioral avoidance, the few existing measures are disorder- or domain-specific. For example, the *Subtle Avoidance Frequency Examination* (SAFE; Cuming et al., 2009) and the *Social Anxiety and Avoidance Scale for Adolescents* (SAASA, Cunha, Gouveia, & Salvador, 2008) are self-report measures assessing

frequency of engagement in safety behaviors and the intensity and frequency of avoidant social responses, respectively, but both apply only to social anxiety. Behavioral avoidance in youth has often been assessed via general self-report measures of anxiety, but, as Whiteside, Gryczkowski, Ale, Brown-Jacobsen, and McCarthy (2013) point out, such measures typically contain many items assessing emotional and somatic aspects of anxiety and relatively few items assessing behavioral aspects. An avoidance measure has recently been developed for youth (e.g., *Child Avoidance Measurement Scale* [CAMS]; Whiteside et al., 2013), but it assesses avoidance only in the context of anxiety and not other emotional disorders.

Behavioral and computer-based tasks may be useful adjuncts or alternatives to self-report measures of behavioral avoidance, but such tasks are accompanied by their own set of challenges. Behavioral Avoidance Tasks (BATs; Lang & Lazovik, 1963), which measure distance from or steps taken toward approaching a feared stimulus, are an alternative to self-report measures that have long been used as in vivo analogues of avoidance. BATs have been used too assess specific phobias in youth (e.g., Ollendick, Lewis, Cowart, & Davis, 2012; Ollendick et al., 2009) and avoidance behavior in response to novel stimuli (e.g., Huijding et al., 2009; Lester, Field, & Muris, 2011). Although BATs have good ecological validity, they too are disorder-specific and often difficult, time-consuming, and costly to reproduce in clinical settings. Computer-based measures of implicit avoidance, such as the Approach Avoidance Task (AAT; Rinck & Becker, 2007), have also been used to assess automatic avoidance tendencies in response to various feared stimuli. Participants are presented with stimuli on a computer screen and asked to pull a joystick toward them (i.e., approach behavior) or push it away (i.e.,

avoidance behavior) depending, typically, upon a neutral feature of the stimuli. The AAT is based upon the idea that perceptions of stimuli automatically trigger an approach/avoidance orientation depending upon the valence of the stimulus (Taylor & Amir, 2012). In addition to challenges related to selecting appropriate transdiagnostic stimuli for such tasks, the extent to which the AAT converges with in vivo situational avoidance is unclear.

While there are no known broad measures of emotional avoidance for adolescents, several measures assessing aspects of experiential avoidance do exist. For example, the *White Bear Suppression Inventory* (WBSI; Wegner & Zanakos, 1994) is a 15-item measure of thought suppression that has been used to assess experiential avoidance, but the measure does not assess key dimensions of the construct such as avoidance of emotional experience or expression. Finally, the *Avoidance and Fusion Questionnaire for Youth* (AFQ-Y; Greco, Lambert, & Baer, 2008) assesses psychological inflexibility in children and adolescents. However, items on this measure, like items on many of the abovementioned measures, assess the use of avoidance as an abstract and general, rather than as a contextually driven, strategy.

Current Study

As noted, the current investigation sought to validate two transdiagnostic measures of avoidance in a normative sample of adolescents: The Checklist of Avoidance Strategy Engagement for Adolescents (CEASE-A; adapted from Kamphuis & Telch, 1998), a measure of behavioral avoidance, and the Emotional Avoidance Strategy Inventory for Adolescents (EASI-A; Fairholme, Ellard, Boisseau, Farchione, & Barlow,

2008), a measure of emotional avoidance. Specific aims and hypothesis for this investigation are as follows:

Specific aim 1: To establish the factor structure of the CEASE-A and EASI-A through exploratory factor analysis (EFA) and exploratory structural equation modeling (ESEM).

Specific aim 1, hypothesis 1: Based on existing scales and prior research, factor analysis of the CEASE-A is expected to yield at least the following three factors: use of safety behaviors, use of distraction, and situational avoidance.

Specific aim 1, hypothesis 2: Based on existing scales and prior research, factor analysis of the EASI-A is expected to yield at least the following three factors: avoidance of emotional expression, avoidance of emotional sensations, and avoidance of emotional cognitions.

Specific aim 2: To examine convergent validity between CEASE-A and EASI-A scores and alternative measures of behavioral and emotional avoidance, respectively.

Specific aim 2, hypothesis 1: Significant moderate, positive correlations will be found between scores on the CEASE-A and scores on the Child Avoidance Measure-Self Report (CAMS; Whiteside et al., 2013), a measure of behavioral avoidance in the context of anxiety.

Specific aim 2, hypothesis 2: Significant moderate, positive correlations will be found between scores on the EASI-A and scores on the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994), a measure of thought suppression that has been validated in children and adolescents.

Specific aim 3: To examine validity of reported use of behavioral and emotional avoidance strategies in predicting symptoms of psychopathology, particularly symptoms of anxiety and depression.

Specific aim 3, hypothesis 1: Behavioral avoidance is expected to significantly predict increased anxiety and depressive symptoms on the Total Anxiety and Major Depressive Disorder subscales of the Revised Child Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000).

***Specific aim 3, hypothesis 2*:** Emotional avoidance is expected to significantly predict increased anxiety and depressive symptoms on the Total Anxiety and Major Depressive Disorder subscales of the Revised Child Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000).

Specific aim 3, hypothesis 3: Gender will moderate the relationship between behavioral and emotional avoidance and symptoms of psychopathology, such that use of avoidant strategies will be a more robust predictor of psychopathology in girls than in boys. Age will also be examined as a moderator of the relationship between behavioral and emotional avoidance, although no *a priori* hypotheses are proposed due to the current lack of research on the relationship between avoidance and psychopathology over development.

Chapter 2: Method

Participants

Participants were 261 adolescents in grades 6-12 recruited from a public middle and high school in an ethnically diverse urban area in the Southeastern United States. This number of subjects was selected in order that the ratio of number of subjects (*N*) to number of items (*p*) would be at least 5 for all measures, as a number of authors have suggested an optimal ratio between three and 10 (e.g., Cattell, 1978; Nunnaly, 1978). The mean age of the sample was 14.73 years (SD = 2.22; range = 11.39–19.62), and the sample consisted of 100 boys (38.3%) and 161 girls (61.7%). Participants were primarily Caucasian (*n* = 233; 89.3%) and ethnically diverse, with 86.7% of Caucasian participants identifying as Hispanic (*n* = 202). Other racial groups represented included Black/African American (*n* = 13, 5.0%), Asian (*n* = 7; 2.7%), Biracial (*n* = 3; 1.1%) and Other (*n* = 5; 1.1%).

Measures

***Checklist of Avoidance Strategy Engagement for Adolescents* (CEASE-A; adapted from Kamphuis & Telch, 1998).** The CEASE-A is a 45-item checklist assessing frequency of engagement in avoidance behaviors. Respondents are asked to indicate the frequency with which they use certain behaviors to manage or avoid feelings of anxiety, anger, fear, or sadness on a 5-point Likert-type scale (0 = Never do to deal with feelings; 1 = Rarely do to deal with feelings; 2 = Sometimes do to deal with feelings; 3 = Usually do to deal with feelings; 4 = Always do to deal with feelings). The CEASE-A is adapted from the Texas Safety Maneuver Scale (TSMS; Kamphuis & Telch, 1998), a 50-item measure assessing use of a wide variety of safety maneuvers,

particularly in the context of panic disorder. The TSMS includes six subscales (Agoraphobic Avoidance, Relaxation Techniques, Stress Avoidance, Somatic Avoidance, Distraction Techniques, Escape). The original TSMS demonstrated excellent internal consistency (Cronbach's $\alpha = .93$) and was significantly and positively associated with overall levels of anxiety, agoraphobia, and depression. The original measure was adapted by Christopher Fairholme and colleagues at Boston University for clinical use in the initial development of the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (Barlow et al., 2010) and further adapted by Jill Ehrenreich-May for research use with adolescents.

***Emotional Avoidance Strategy Inventory for Adolescents* (EASI-A; Fairholme, Ellard, Boisseau, Farchione, & Barlow, 2008).** The EASI-A is a 33-item measure assessing the use of emotional avoidance strategies in adolescents to regulate emotions. Respondents are instructed to use a 5-point Likert-type scale to indicate the degree to which each statement is true of them (0 = Not at all true of me; 1 = A little true of me; 2 = Somewhat true of me; 3 = Very true of me; 4 = Extremely true of me). The EASI-A was adapted from an adult measure of emotional avoidance (EASI; Fairholme, Ellard, Boiusseau, Farchione, & Barlow, 2008) by Jill Ehrenreich-May to be developmentaly appropriate for use with adolescents.

***Revised Child Anxiety and Depression Scales* (RCADS; Chorpita et al., 2000).** The RCADS is a 47-item self-report measure of symptoms of anxiety and depression adapted from the Spence Children's Anxiety Scale (SCAS; Spence, 1997; Spence, 1998). The RCADS contains six subscales assessing separate DSM-IV diagnostic categories: separation anxiety disorder (SAD); social phobia (SP); generalized anxiety disorder

(GAD); panic disorder (PD); obsessive compulsive disorder (OCD); and major depressive disorder (MDD). Respondents indicate how often each item is true of them on a 4-point Likert-type scale (0 = never; 1 = sometimes; 2 = often; 3 = always). Each subscale has demonstrated good internal consistency, with average Cronbach's $\alpha = .77$ across subscales. The RCADS was also found to demonstrate good convergent validity with other measures of the six diagnostic subscales in normative (Chorpita et al., 2000) and clinical samples (Chorpita, Moffitt, & Gray, 2005), and each subscale significantly discriminated between youth diagnosed with the subscale target disorder and youth not diagnosed with the target subscale disorder (Chorpita et al., 2005). In the current sample, each of the seven subscales demonstrated adequate to good internal consistency (α range = .74-.88). The Total Anxiety scale (the sum of all six anxiety subscales) demonstrated excellent internal consistency ($\alpha = .95$), while the MDD subscale demonstrated good internal consistency ($\alpha = .88$).

Child Avoidance Measure-Self **(CAMS; Whiteside, Gryczkowski, Ale, Brown-Jacobsen, & McCarthy, 2013).** The CAMS is an 8-item child-report measure of behavioral avoidance in the context of anxiety. Respondents are asked to indicate how often they engage in a number of behaviors when afraid using a 4-point Likert-type scale (0 = almost never; 1 = sometimes; 2 = often; 3 = almost always). The CAMS was found to have good internal consistency ($\alpha = .89$) and adequate test-retest reliability (.56) in community samples, as well as medium-large correlations with symptoms of anxiety (Whiteside et al., 2013). The CAMS was significantly higher in clinical than in community samples and was sensitive to treatment change (Whiteside et al., 2013). In the current study, the CAMS demonstrated adequate internal consistency ($\alpha = .79$).

***White Bear Suppression Inventory* (WBSI; Wegner & Zanakos, 1994).** The WBSI is a 15-item measure of the tendency to suppress unwanted, negative thoughts. Respondents are asked to indicate their level of agreement with a number of statements on a 5-point scale (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral or Don't Know; 4 = Agree; 5 = Strongly Agree). Total scores range from 15 to 75, with higher scores indicating greater suppression. The WBSI has good internal consistency, with alphas ranging from .87 to .89, and a one-week test-retest correlation of .92 (Wegner & Zanakos, 1994). Its single-factor structure has been confirmed and a sample of children and adolescents (Vincken, Manon, Meesters, Engelhard, & Schouten, 2012), and reliability has been found to be satisfactory (Vincken et al., 2012). In the current study, the WBSI also demonstrated excellent internal consistency ($\alpha = .91$).

Demographic Information Questionnaire. All particiapnts were asked to provide basic demographic data, including information about their age, gender, grade level, race/ethnicity, and primary language(s) to ensure reading ability in English.

Procedure

Before beginning, approval for this investigation was obtained from the University's Institutional Review Board (IRB) and from the Research Review Committee of the public school district where the sample was recruited. Following approval, one middle school and one high school were recruited from among the public schools in the district. Middle school students were recruited from both regular and accelerated Social Studies classes, while high school students were recruited from regular and accelerated Social Studies, English, and Science classes. All participants provided their written assent, as well as written parental consent, prior to participation in the study. All students

who returned parent consent forms were provide with a small, non-contingent remuneration (a $2 bill), regardless of whether they actually chose to complete the survey.

In total, 497 parent consent forms were distributed across both schools, 273 signed parent consent forms were returned, and 238 students whose parents signed consent were present on the day of administration and completed the survey (48% participation rate). Additionally, 29 students who were 18 or older provided their informed consent, and 23 of those were present on the day of administration and completed the survey (79% participation rate). Survey administration occurred in students' regular classrooms on a designated day, and the order of presentation of the questionnaires was randomly varied. Students completed each measure independently, but trained graduate students and research assistants were available to answer questions or provide assistance. Participants were informed that their answers were confidential, and that the measures were not a test and did not have right or wrong answers. In the case of adolescents scoring above clinical cutoffs for the Total RCADS score as defined by Chorpita and colleagues (2005), parents were contacted to provide feedback and referral recommendations as needed.

Statistical Analysis Plan

Preliminary Analysis and Handling of Missing Data. Items on the CEASE-A and EASI-A were evaluated for distributional properties, skewness, and relations with other items. Means of the original 45 items on the CEASE-A ranged from .46 ("Avoiding being in a car that goes on the highway") to 2.76 ("Talking with others"), and all items used the full range of the scale. Items were examined for normality using criteria

developed by West, Finch, and Curran (1995). According to these criteria, an absolute skew value >2 indicates a substantial departure from normality, while an absolute kurtosis value >7 indicates substantial non-normality (West et al., 1995). Based on these guidelines, three items exhibited substantial positive skew ("Avoiding exciting films"; "Avoiding being in a car that goes on a highway"; "Listening to stress/anxiety reduction tapes") and were deleted from the item pool. The majority of the remaining items were slightly positively skewed. No items demonstrated substantial kurtosis. Means of the original items on the EASI-A ranged from .67 ("When I am upset I try to make myself feel better by eating, or by taking medications") to 2.80 ("If I begin to feel upset, I try to do something else to take my mind off of it"), and all items used the full range of the scale. Skewness and kurtosis for all items were acceptable, with most items being slightly positively skewed.

Rates of missing data were low (between 0% to 2.7% on each variable). Factor analyses, concurrent validity analyses, and predictive validity analyses were conducted in Mplus Version 7.3, which utilizes full information maximum likelihood (FIML) estimation to handle missing data (Muthén & Muthén, 1998-2012). Moderated multiple regression analyses were performed in SPSS, Version 19.0 using multiple imputation to handle missing data. Missing values were imputed using all variables in the dataset as sources of infromation, and transformations (e.g., centered variables) and interaction terms were created before imputation to reduce bias in pooled parameter estimates (Enders, 2010; von Hippel, 2009).

Planned Analyses. Factor analyses were carried out separately for the CEASE-A and the EASI-A in Mplus Version 7.3 (Muthén & Muthén, 1998-2012), using a two-step

process. In the first step, exploratory factor analysis (EFA) was conducted in order to identify the number of factors for extraction and examine loading patterns. EFA was performed using maximum likelihood (ML) estimation and an oblique geomin rotation due to the expectation of correlated factors. Parallel analysis (PA; Horn, 1965), in addition to theoretical considerations, were the primary methods used to determine the number of factors for appropriate for retention. PA uses a monte-carlo simulation technique to obtain "expected" eigenvalues by simulating random samples that approximate the sample size and number of variables for the observed data set (Ledesma & Valero-Mora, 2007). The number of factors to retain is determined by comparing the eigenvalues extracted from the actual data to the corresponding 95^{th} percentile random data eigenvalue; eigenvalues extracted from the data that are larger than the 95% percentile random data eigenvalue should be retained (Ledesma & Valero-Mora, 2007). PA is currently recommended over Cattell's scree test, which is subjective and often difficult to interpret, as well as over Kaiser's eigenvalue-greater-than-one rule, which tends to overestimate the number of factors, may lead to arbitrary decisions, and is not always appropriate for EFA (Fabrigan et al., 1999).

EFA model fit was evaluated using the χ^2 goodness of model fit test, the Tucker-Lewis index (TLI; Tucker & Lewis, 1973), the comparative fit index (CFI; Bentler, 1990), and the root mean square error of approximation (RMSEA; Steiger, 1990). For the TLI and CFI, values between .90 and .95 are considered acceptable, and >.95 as good. For the RMSEA, good models have values <.05. Items were retained if they had primary factor loadings greater than or equal to .40 (Worthington & Whittaker, 2006).

Additionally, items that demonstrated conceptually inconsistent factor loadings were removed from the pool.

In step two, the reduced models determined through EFA were subjected to exploratory structural equation modeling (ESEM), which combines features of exploratory and confirmatory factor analysis. ESEM has advantages over EFA because it permits features of CFA models such as correlated error residuals among factor indicators (Asparouhov & Muthén, 2009). However, unlike with CFA models, ESEM allows indicators to cross load onto separate factors, rather than requiring that cross loadings be constrained to zero (Asparouhov & Muthén, 2009). Figure 1 displays an illustration of the difference between EFA, CFA, and ESEM models. An examination of residuals was conducted using ESEM to determine whether any residuals should be correlated due to similarly worded questions, and correlated residuals were added to the final models. In addition, Cronbach's alpha was examined to determine the internal consistency of each subscale obtained through EFA and ESEM.

The concurrent validity of the CEASE-A and the EASI-A was examined through correlations with measures of anxiety-related behavioral avoidance (CAMS) and thought suppression (WBSI), respectively. The predictive validity of the CEASE-A and EASI-A were examined through regression analyses using behavioral and emotional avoidance to predict symptoms of anxiety and depression on the RCADS. Each of the individual subscales on the CEASE-A and EASI-A were first examined separately as predictors of anxiety and depression using simple linear regression. Predictors were then tested simultaneously using multiple linear regression. Effect sizes were evaluated using

conventional guidelines, such that R^2 values of .01, .09, and .25 indicated small, medium, and large effects, respectively (Cohen, 1988).

Finally, several moderated multiple linear regression analyses were performed in SPSS to determine whether the relationship between behavioral and emotional avoidance and symptoms of anxiety and depression varied with participant gender and age. For gender, a categorical moderator, the predictors (CEASE-A, EASI-A) were centered, and interaction terms were created by calculating the product of centered avoidance and a dummy-coded gender variable (0 = male, 1 = female). Simple slopes were examined for both groups. For age, a continuous moderator, centered interaction terms were created determining the product of centered avoidance and age. Simple slopes were examined for all significant interactions at 1 SD above and 1 SD below the mean.

Chapter 3: Results

Exploratory Factor Analysis for the CEASE-A. After deleting three items with substantial positive skew, the remaining 42 items on the CEASE-A were subjected to an initial EFA. Eleven factors were extracted using the criterion of eigenvalues greater than 1.0 (9.90, 3.46, 2.61, 1.97, 1.71, 1.43, 1.30, 1.24, 1.16, 1.07), but a comparison of eigenvalues for the sample correlation matrix and 95th percentile eigenvalues from parallel analysis supported a five-factor solution. The five-factor solution was retained due to its interpretability, theoretical consistency, and parsimony. The initial EFA model fit the data poorly, $\chi^2(661) = 1324.31$, $p<.01$; RMSEA = .062; CFI = .83; TLI = .78. An examination of factor loadings suggested that twelve items be deleted from the original pool due to their failure to load onto any factor at .40 or above ("Carrying food around with you or asking a parent to do so"; Carrying important telephone numbers with you"; "Having to sit close to an exit door"; "Reading"; "Using mental distraction such as thoughts or images"; "Using relaxation, yoga, meditation, or breathing strategies"; "Avoiding hot showers or hot places"; "Avoiding drinks containing caffeine"; "Avoiding exercise"; "Avoiding tight fitting clothes"; "Avoiding long lines"; "Avoiding staying home alone or being alone in parts of my house"). In addition to these twelve items, one item was deleted due to substantial cross-loading onto more than one factor ("Carrying water around with you or asking parent to do so"). An additional EFA was performed on the remaining 29 items, resulting in a good RMSEA value (.054) and an acceptable CFI value (.91). The TLI (.87) and the χ^2 statistic ($\chi^2[346] = 606.12$, $p<.01$) still indicated inadequate model fit, although the change in χ^2 was significant ($\Delta\chi^2[315]= 718.19$, $p<.001$).

In step two, ESEM was performed on the reduced, 29-item inventory, and modification indices were examined to determine whether residual variances should be correlated for similarly worded items. A five-factor model was specified based on initial EFA analyses, and all items were allowed to load onto all five factors. Fit indices were identical to the second EFA model, as no constraints were included in the initial ESEM model. Modification indices suggested the addition of eight correlated residuals, only four of which were deemed to reflect shared method variance and were included in the model ("checking where the bathrooms are" correlated with "checking my pulse, breathing, or blood pressure"; "checking where nearby hospitals or clinics are" correlated with "checking my pulse, breathing, or blood pressure"; "avoiding crowded stores" correlated with "avoiding parties or other social activities"; "avoiding buses, trains, planes, etc." correlated with "avoiding parties or other social activities"). These correlated residuals were included in the final ESEM model. Fit statistics, with the exception of χ^2, indicated adequate to good model fit (CFI = .95; TLI = .92; RMSEA = .04). However, change in χ^2 was significant ($\Delta\chi^2$ [79]= 209.67, p<.001). Factor loadings for the ESEM model are presented in Table 1. Correlations among the five factors ranged from .14 to .36 and can be found in Table 2.

Exploratory Factor Analysis for the EASI-A. The EASI-A was subjected to an initial EFA. Nine factors were extracted using the criterion of eigenvalues greater than 1.0 (8.45, 2.32, 1.78, 1.62, 1.45, 1.32, 1.16, 1.04, 1.03), but a comparison of eigenvalues for the sample correlation matrix and 95th percentile eigenvalues from parallel analysis supported a four-factor solution. After a comparison between the four-factor and three-factor solution, the three-factor solution was retained due to its interpretability,

theoretical consistency, and parsimony. The initial EFA model fit the data poorly, $\chi^2(432) = 859.71$, $p<.01$; RMSEA = .062; CFI = .83; TLI = .79. An examination of factor loadings suggested that fourteen items be deleted from the original pool due to their failure to load onto any factor at .40 or above ("I avoid watching 'heavy' or 'intense' movies or TV shows"; "When I am upset I try to make myself feel better in hard or stressful situations"; "When I am upset I try to make myself feel better by eating, or taking medications"; "When I feel upset, I watch TV or play on the internet to take my mind off it"; "When I feel upset, I got to sleep to feel better"; "When something bad happens, I continue with my day and pretend nothing happened"; "I try to put upsetting things our of my mind, so that I won't keep thinking about them"; "I'd rather keep my opinion to myself than get into an argument or fight"; I often put off tasks that are important to me;" "I avoid heavy or intense conversations"; I work or concentrate in school so I won't have to focus so much on my problems"; "When I am feeling stressed, I need to do something to make myself feel better;" I avoid talking about stressful or tough situations"; "When I have a problem, "I try to think about it as if it were happening to someone else"). Two additional reverse-scored items were deleted due to substantial cross-loadings between factors ("I try to face my problems head on;" The best way for me to deal with my feelings is to feel or experience them fully"). An additional EFA was performed on the remaining 17 items, resulting in good RMSEA (.043), CFI (.97), and TLI (.95) values. The χ^2 statistic ($\chi^2[88] = 129.52$, $p<.01$) still indicated inadequate model fit, although the change in χ^2 was significant ($\Delta\chi^2[344] = 730.19$, $p<.001$).

In step two, ESEM was performed on the reduced, 17-item inventory, and modification indices were examined to determine whether residual variances should be

correlated for similarly worded items. A three-factor model was specified based on initial EFA analyses, and all items were allowed to load onto all three factors. Fit indices were identical to the second EFA model, as no constraints were included in the ESEM model. Modification indices suggested the addition of three correlated residuals, two of which were deemed to reflect shared method variance and were included in the model ("When things do not go as well as I hoped, I try not to show that I am upset or sad about it" correlated with "I try not to seem sad even when I feel that way"; "I have a hard time telling others how much they mean to me" correlated with "I have a hard time showing my true feelings"). These correlated residuals were included in the final ESEM model. All fit statistics for this model indicated excellent model fit (RMSEA = .026; CFI = .99; TLI = .98; $\chi^2[86] = 100.76$, p = .13), and the change in χ^2 was significant ($\Delta\chi^2$ [2]= 28.76, p<.001). Factor loadings for the ESEM model are presented in Table 3. Correlations among the three factors ranged from .34 to .49 and can be found in Table 4.

Consistency of the Revised Scales. Alpha coefficients were calculated using the reduced scales. For the CEASE-A, alpha coefficients for the five subscales were: Use of Distraction, .82; Use of Safety Individuals, .79; Use of Safety Behaviors, .85; Avoidance of Situations that Promote Strong Sensations .81; Avoidance of Emotional Situations, .74. The overall alpha coefficient for the CEASE-A was .89. For the EASI-A, alpha coefficients for the five subscales were: Avoidance of Emotion Expression, .78; Avoidance of Thoughts and Feelings, .83; Active Avoidance Coping, .75. The overall alpha coefficient for the EASI-A was .86. Means, ranges, and standard deviations for the CEASE-A and EASI-A subscales and total score are presented in Table 5.

Concurrent Validity. The concurrent validity of the CEASE-A was assessed through its correlation with a measure of anxiety-related behavioral avoidance (CAMS; Whiteside et al., 2013), while the concurrent validity of the EASI-A was assessed through its correlation with a measure of thought suppression (WBSI; Wegner & Zanakos, 1994). A small, significant correlation was observed between the CAMS and Total CEASE-A scores, $r = .25$, p< 01. Correlations between the each of the five subscales of the CEASE-A and the CAMS ranged from .09 to .37 (see Table 6). A large, significant correlation was observed between the WBSI and Total EASI-A scores, $r = .52$, p<.01. Correlations between each of the three subscales of the EASI-A and the WBSI ranged from .30 to .45 (see Table 7).

Predictive Validity. Total score on the CEASE-A, as well as all CEASE-A subscale scores, were examined as predictors of symptoms of anxiety and depression, as measured by the RCADS Total Anxiety and MDD scales (see Table 8). Consistent with hypotheses, more behavioral avoidance on the CEASE-A was associated with increased symptoms of anxiety ($R^2 = .30$, large effect) and depression ($R^2 = .20$, medium effect). An examination of individual CEASE-A subscales revealed that greater Use of Distraction significantly predicted increased symptoms of anxiety ($R^2 = .09$, medium effect) and depression ($R^2 = .05$, small effect); greater Use of Safety Individuals significantly predicted increased symptoms of anxiety ($R^2 = .15$, medium effect) and depression ($R^2 = .08$, small effect); greater Use of Safety Behaviors significantly predicted increased symptoms of anxiety ($R^2 = .06$, small effect) and depression ($R^2 = .04$, small effect); greater Avoidance of Situations that Promote Strong Sensations significantly predicted increased symptoms of anxiety ($R^2 = .28$, large effect) and

depression (R^2 = .21, medium effect); and greater Avoidance of Emotional Situations significantly predicted increased symptoms of anxiety (R^2 = .12, medium effect) and depression (R^2 =.04, small effect). When all five CEASE-A subscales were examined simultaneously as predictors of anxiety, only increased Use of Safety Individuals, Avoidance of Situations that Promote Strong Sensations, and Avoidance of Emotional Situations remained significant predictors of anxiety. The collective predictors explained 39% of the variance in anxiety (a large effect). When all five CEASE-A subscales were examined simultaneously as predictors of depression, only increased Use of Safety Individuals and Avoidance of Situations that Promote Strong Sensations remained significant predictors of depression. The collective predictors explained 26% of the variance in depression (a large effect).

Next, total scores on the EASI-A, as well as all EASI-A subscale scores, were examined as predictors of symptoms of anxiety and depression, as measured by the RCADS Total Anxiety and MDD scales (see Table 9). Consistent with hypotheses, more emotional avoidance on the EASI-A was associated with increased symptoms of anxiety (R^2 = .27, large effect) and depression (R^2 = .08, small effect). An examination of individual EASI-A subscales revealed that greater Avoidance of Emotion Expression significantly predicted increased symptoms of anxiety (R^2 = .21, medium effect) and depression (R^2 = .17, medium effect), and greater Avoidance of Thoughts and Feelings significantly predicted increased symptoms of anxiety (R^2 = .20, medium effect) and depression (R^2 = .03, small effect). Contrary to hypotheses, greater use of Active Avoidance Coping significantly predicted increased symptoms of anxiety (R^2 = .07, small effect) but not depression (R^2 = .00). When all three EASI-A subscales were examined

simultaneously as predictors of anxiety, only increased Avoidance of Emotion Expression and Avoidance of Thoughts and Feelings remained significant predictors of anxiety. The collective predictors explained 31% of the variance in anxiety (a large effect). When all three EASI-A subscales were examined simultaneously as predictors of depression, increased Avoidance of Emotion Expression and *decreased* use of Active Avoidance Coping were found to be predictors of depression symptoms. The collective predictors explained 21% of the variance in depression (a medium effect).

Moderation effects of gender. Four separate moderated multiple regression models were tested to investigate whether the association between behavioral and emotional avoidance (CEASE-A Total, EASI-A Total) and anxiety and depression (RCADS Total Anxiety, RCADS MDD) is dependent upon gender. Results indicated that gender did not moderate the relationship between behavioral avoidance and depression symptoms (B = .034, t = .79, p = .43), between emotional avoidance and anxiety symptoms (B = .047, t = .249, p = .80), or between emotional avoidance and depression symptoms (B = -.078, t = -.21, p = .23). However, the interaction between behavioral avoidance and anxiety symptoms was significant (B = .24, t = 1.97, p = .05), indicating that the effect of behavioral avoidance on anxiety symptoms is significantly different for boys vs. girls. To examine the strength of the relationship between behavioral avoidance and anxiety in both boys and girls, simple slopes were calculated by estimating individual regression equations for each gender (Aiken & West, 1991). The effect of behavioral avoidance on anxiety symptoms was significant for both boys (B = .38, t = 3.93, p<.01) and girls (B = .61, t = 8.17, p<.01), although behavioral avoidance predicted increased anxiety symptoms more strongly in girls.

Moderation effects of age. Four separate moderated multiple regression models were tested to investigate whether the association between behavioral and emotional avoidance (CEASE-A Total, EASI-A Total) and anxiety and depression (RCADS Total Anxiety, RCADS MDD) is dependent upon age. Results indicated that age did not moderate the relationship between behavioral avoidance and depression symptoms (B = -.01, t = -.98, p = .33), between emotional avoidance and anxiety symptoms, (B = -.013, t = -.36, p = .72), or between emotional avoidance and depression symptoms (B = .005, t = .39, p = .69). However, the interaction between behavioral avoidance and anxiety symptoms was significant (B = -.06, t = -2.18, p <.05). Simple slopes for the association between behavioral avoidance and anxiety symptoms were tested at low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) age levels. Each of the simple slope tests revealed a significant positive association between behavioral avoidance and anxiety symptoms, but behavioral avoidance was more strongly associated with anxiety symptoms at younger ages (B = .69, t = 8.48, p<.01) than at the mean (B = .57, t = 10.08, p<.01). Similarly, behavioral avoidance was more strongly associated with anxiety symptoms at the mean than at older ages (B = .34, t = 2.81, p<.01). Regression lines for the simple slopes are presented in Figure 3.

Chapter 4: Discussion

The purpose of the current study was to investigate the psychometric properties of the CEASE-A and the EASI-A, two new measures of adolescent behavioral and emotional avoidance, respectively. Results supported a five-factor solution for CEASE-A and a three-factor solution for the EASI-A, and fit indices suggested good model fit. These factor solutions indicate that both behavioral and emotional avoidance are multidimensional constructs, a finding that is consistent with our current theoretical understanding of avoidance. Specifically, results of factor analyses suggest that behavioral avoidance may involve avoidance of situations that promote strong physical sensations, avoidance of situations that provoke strong emotions, distraction, the use of individuals as safety signals, and safety behaviors. Regarding the EASI-A, results suggested that emotional avoidance encompasses avoidance of expressing emotion, avoidance of emotional thoughts and feelings, and the use of active coping strategies to avoid emotional experiences. Primarily moderate correlations were observed among estimated latent variable factors on both the CEASE-A and the EASI-A, supporting the distinctiveness of each subscale. These are the first known questionnaires to measure emotional and behavioral avoidance in adolescence as multidimensional, transdiagnostic constructs that are applicable to both anxiety and depressive disorders.

Results of the current study supported the relationship of the CEASE-A and EASI-A with other measures of avoidance, as well as with symptoms of anxiety and depression. Primarily small, positive correlations were observed between the various CEASE-A subscales and an anxiety-specific measure of behavioral avoidance (CAMS), as well as between Total CEASE-A scores and CAMS scores. However, a moderate,

positive relationship was observed between the CEASE-A subscale measuring "Avoidance of Emotional Situations" and the CAMS. Because the CAMS measures situational behavioral avoidance only, these results are consistent with the notion that the CEASE-A assesses additional dimensions of the construct of behavioral avoidance that are not adequately assessed by other adolescent-appropriate measures. In the case of the EASI-A, moderate, positive correlations were observed between the various EASI-A subscales and a measure of thought suppression (with the "Avoidance of Thoughts and Feelings subscale" and the WBSI being most strongly correlated at $r = .45$), while a large, positive relationship was observed between Total EASI-A scores and WBSI scores. This suggests convergence of the EASI-A with measures of cognitive avoidance, but it also suggests that the EASI-A assesses dimensions of emotional avoidance not captured by other measures.

Behavioral avoidance accounted for 39% of the variance in anxiety symptoms and 26% of the variance in depression symptoms. The higher proportion of variance explained in anxiety vs. depression is consistent with current theoretical models of emotional disorders, which particularly emphasize the role of behavioral avoidance in maintaining and exacerbating anxiety symptoms, but these results also suggest that behavioral avoidance plays a larger role in depression than previously recognized. All five subscales of the CEASE-A were significant univariate predictors of anxiety and depression symptoms, but two subscales (Distraction and Use of Safety Behaviors) did not remain significant predictors of either anxiety or depression in the multivariate model. With respect to Distraction, this finding is consistent with previous mixed findings regarding the association between distraction use and psychopathology. Some

studies have found that use of distraction is unrelated to concurrent and prospective depressive symptoms (e.g., Abela, Brozina, & Haigh, 2002), while other literature has suggested that greater use of distraction is actually associated with *lower* risk for concurrent depression symptoms (Li, DiGiuseppe, & Froh, 2006), prospective depression symptoms (Hilt, McLaughlin, & Nolen-Hoeksema, 2010), and prospective depression and anxiety symptoms (Roelofs et al., 2009). Despite being an avoidant strategy, it is thus possible that distraction may ameliorate negative mood in the case of depression, though its impact on fear is somewhat less clear in the case of anxiety. It is also possible that the adaptiveness of distraction as an emotion regulation strategy may differ in clinical populations, who experience more persistent and intense negative affect and fear.

The results of this study also supported the idea that the extent to which behavioral avoidance is maladaptive may vary with gender and development. Specifically, we found that the relationship between increased use of behavioral avoidance and greater anxiety symptoms was stronger in girls than in boys, although the relationship was statistically significant in both genders. Previous research has supported the idea that girls experience greater anxiety and negative affect during adolescence than boys (Costello et al., 2003; Zahn-Waxler, Shirtcliff, & Marceau, 2008), and it follows that use of avoidant strategies may predict symptoms of anxiety more strongly in girls because it is an inefficient means of regulating these more intense emotions. Age also moderated the relationship between behavioral avoidance and anxiety, with greater use of behavioral avoidance predicting increased anxiety most strongly during early adolescence and least strongly in later adolescence. This finding is consistent with literature suggesting that younger adolescents may be more emotionally reactive to negative

stimuli than older adolescents (e.g., Carthy, Horesh, Apter, Edoe, & Gross, 2010), while at the same time less effective at using cognitive strategies to down-regulate negative emotions. Cross sectional (McRae et al., 2012) and longitudinal studies (Vijayakumar et al., 2014) have found that use of cognitive emotion regulation strategies (e.g., cognitive reappraisal) increases over the course of adolescence, and adolescents' superior cognitive emotion regulation abilities may be related to thinning of lateral prefrontal cortical areas during development (Vijayakumar et al., 2014). The relationship between behavioral avoidance and anxiety may thus decrease over the course of development as adolescents develop a more sophisticated emotion regulation repertoire and become less reliant on more concrete, behavioral strategies.

Emotional avoidance accounted for 31% of the variance in anxiety symptoms and 21% of the variance in depression symptoms. While still accounting for a substantial proportion of the variance in symptoms, emotional avoidance was less strongly predictive of anxiety and depression than behavioral avoidance, but this may be partially due to larger overlap between items assessing behavioral avoidance and items assessing symptoms of anxiety and depression. All three subscales significantly predicted anxiety in the univariate model, while two of the three subscales ("Avoidance of Emotion Expression"; "Avoidance of Thoughts and Feelings") predicted depression in the univariate model. Interestingly, in the multivariate model, "Active Avoidance Coping" was *negatively* related to symptoms of depression (i.e., more active avoidance coping predicted less depressive symptoms), in contrast to hypotheses. This may be due to the fact that *actively* engaging in behaviors to avoid the experience of negative emotions may actually help ameliorate depressed mood and may be consistent with objectives of

evidence-based treatments for depression such as behavioral activation. Indeed, many of the items on the "Active Avoidance Coping" subscale (e.g., "I prefer to keep conversations happy or light"; "Staying busy helps me avoid upsetting thoughts or ideas"; "I try hard to calm myself down when I get angry") may help to decrease negative mood and discourage engagement in cognitive processes such as rumination that might otherwise perpetuate depressed mood.

Heretofore, the measurement of behavioral avoidance in youth with emotional disorders has been cumbersome, relying either upon disorder-specific self-report assessments or behavioral approach tasks (BATs) that are prohibitive to administer due to cost and time constraints. Additionally, it is unclear how well BATs, as well as more implicit measures of avoidance tendencies such as automatic avoidance tasks (AATs), capture the daily experience of cross-situational avoidance behaviors, placing their ecological validity into question. Only recently have broad measures of anxiety-related behavioral avoidance begun to emerge, but these measures do not assess more subtle forms of avoidance behavior (e.g., safety behaviors) and are inappropriate for the transdiagnostic assessment of behavioral avoidance across anxiety and depressive disorders. Existing measures of emotional avoidance for youth present related concerns. Many existing measures assess single dimensions of the construct of emotional avoidance (e.g., thought suppression, expressive suppression) rather than assessing the full range of emotionally avoidant strategies employed by adolescents. Furthermore, many existing measures are downward extensions of measures of experiential avoidance for adults, and their developmental appropriateness for adolescent populations is questionable. Given these considerable limitations of existing measures, the current study marks a significant

advancement in our ability to accurately and reliably measure avoidance in adolescents by introducing two new, psychometrically sound measures of behavioral and emotional avoidance that assess the full range of each construct.

The introduction of these new measures has important implications for research on the development and treatment of emotional disorders in youth. Theoretical models suggest that increased avoidance may contribute to the onset, maintenance, and/or worsening of emotional disorders, and avoidance-related impairment resulting from one disorder may confer risk for other disorders. However, longitudinal studies examining trajectories of avoidance and emotional disorders during childhood and adolescence have often used single-item measures of avoidance or items taken from broader symptoms measures (e.g., Jacobson & Newman, 2014), limiting the ability of such studies to find a significant effect or accurately estimate effect size. Intervention research has also been stymied by the lack of youth-specific measures of avoidance. Existing disorder-specific treatments for anxiety and depressive disorders aim to reduce avoidance through exposure and behavioral activation, respectively, and transdiagnostic treatments incorporate these and other techniques to target behavioral and emotional avoidance across disorders (e.g., GBAT, Chu, Hoffman, Johns, Reyes-Portillo, & Hansford, 2014; UP-A, Ehrenreich et al., 2008; BBT; Weersing, Rozenman, Maher-Bridge, & Campo, 2012). Research in adults with anxiety has suggested that change in avoidance may be an important treatment mechanism that leads to reductions in fear (e.g., Aderka et al., 2013; McManus et al., 2013), but the lack of appropriate, transdiagnostic measures of behavioral or emotional avoidance for youth has hampered the ability to examine change in avoidance as a treatment mechanism or outcome. The introduction of the CEASE-A

and EASI-A, by allowing researchers to more precisely and thoroughly measure avoidance during earlier developmental periods, has the potential to clarify the longitudinal relationship between avoidance and emotional disorders in youth, as well as the importance of avoidance as a treatment target.

Notwithstanding its strengths, the current study has several limitations that should be noted. First, despite the fact that the sample size for this investigation adheres to at least the minimum recommended ratio of number of subjects to number of items (e.g., Cattell, 1978; Nunnaly, 1978), sample size is still relatively small for exploratory factor analysis. Additionally, the current study evaluated the factor structure in a normative sample of adolescents, but it is unknown whether this factor structure would be replicated in a clinical sample of adolescents with emotional disorders. Future studies should conduct confirmatory factor analyses of the CEASE-A and EASI-A, potentially in an ESEM framework, with both larger samples and clinical samples of anxious and depressed adolescents. Further, due to the fact that the current study design was cross-sectional, it was not possible to examine test-retest reliability of the CEASE-A or EASI-A or the ability of these measures to predict future increases in symptoms of anxiety or depression. It should also be noted that the current sample was predominantly Hispanic (86.7%), a number disproportionately higher than the 16% of individuals who identified as Hispanic or Latino according to 2010 census data (U.S. Census Bureau, 2010). The predominance of Hispanic/Latino subjects in our sample may be understood as a boon given the historic underrepresentation of Hispanic and Latino individuals in psychological research, but it is possible that the factor structure of the CEASE-A and the

EASI-A may differ in Hispanic/Latino youth as compared to youth from other ethnic groups.

Despite these limitations, this initial study suggested that the CEASE-A and EASI-A are psychometrically sound, reliable measures of behavioral and emotional avoidance, respectively, and provided preliminary support for their validity. Both measures have potential clinical and research utility. Existing behavioral avoidance measures typically assess the general tendency to avoid feared stimuli and situations and thus are unlikely to assist clinicians in identifying specific behavioral avoidance targets. The CEASE-A, in contrast, assesses behavioral avoidance as a concrete, situation-dependent strategy and provides clinicians with additional information about specific avoidance behaviors to target in treatment. The CEASE-A also provides information about more subtle avoidance behaviors (e.g., safety behaviors, checking behaviors) not typically assessed via other measures. Likewise, the EASI-A has potential clinical utility because it provides a parsimonious way of assessing multiple aspects of emotional avoidance, heretofore measures as distinct constructs, via a single assessment tool. When employed in research settings, both the EASI-A and CEASE-A have the potential to offer insight into the development of avoidance over time, the directionality of the relationship between avoidance and emotional disorders, and the mechanisms of treatment for emotional disorders in adolescents.

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Figures

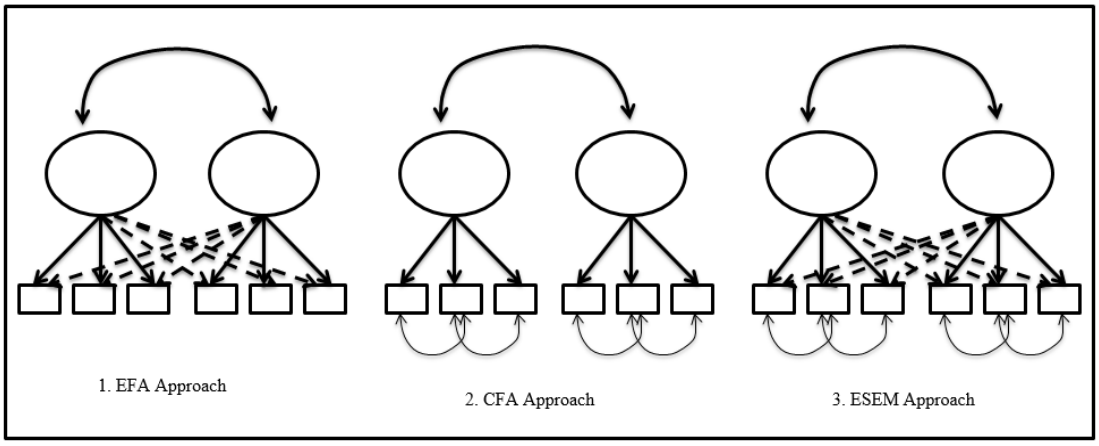

Figure 1. Comparison of an EFA, CFA, and ESEM approach to factor analysis. This figure illustrated the relevant differences of the three approaches for the current study (e.g., differences in cross loadings and correlated error residuals).

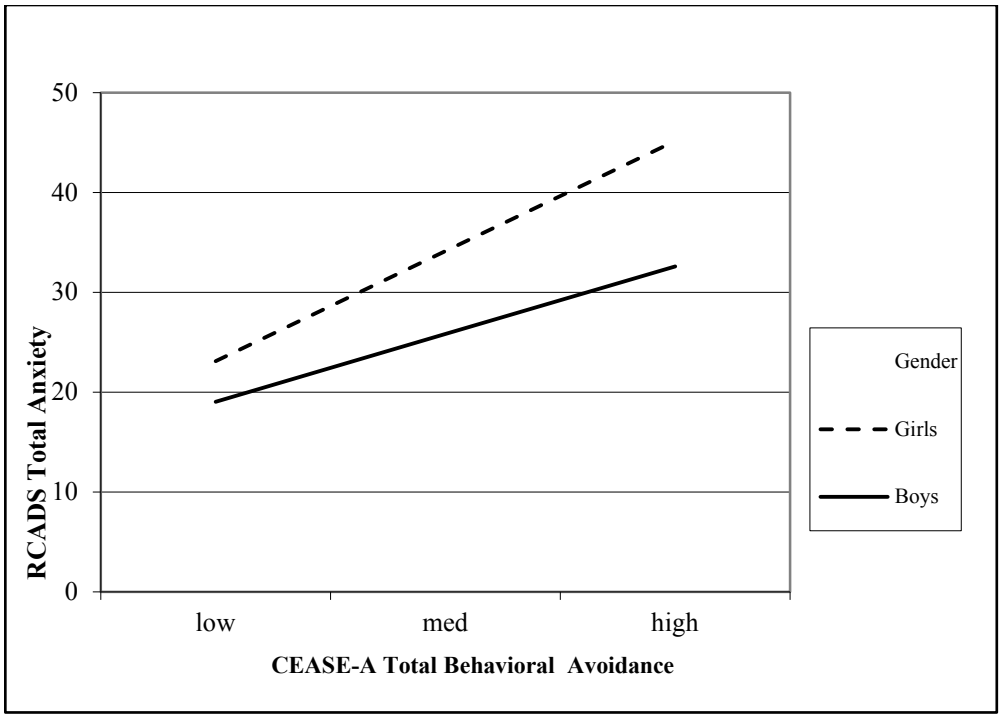

Figure 2. Gender as a moderator of the relationship between behavioral avoidance and anxiety symptoms.

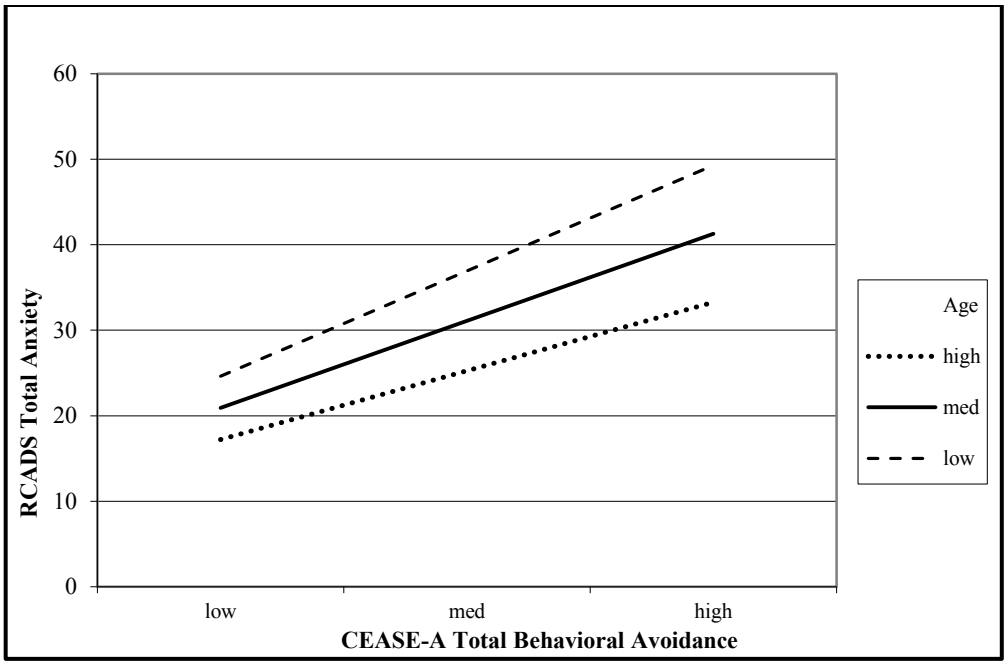

Figure 3. Simple slopes of the relationship between behavioral avoidance and anxiety symptoms at three different ages (-1 SD below the mean, mean, +1 SD above the mean).

Tables

Table 1
Factor Loadings and P-Values for the CEASE-A Using an ESEM Framework

#	Item	F1	F2	F3	F4	F5
1	Carrying medications around with you or asking a parent to do so	.093	.011	**.401****	.074	.094
2	Having a phone with you	**.669****	-.109	.028	-.017	.097
3	Asking a parent or friend to travel with you, when not necessary	.019	**.596****	.033	-.074	.122
4	Relying on a friend or parent to go to school when not necessary	.015	**.664****	.008	.148	-.057
5	Relying on a friend or parent to go to social gatherings when not necessary	-.012	**.807****	-.027	-.001	.058
6	Relying on a friend or parent to eat in public with you when not necessary	.027	**.616****	.047	.100	.019
7	Listening to music	**.699****	-.020	-.140	.091	.035
8	Watching television	**.648****	.054	.037	-.006	-.132
9	Staying busy	**.523****	-.059	-.045	.018	.137
10	Talking with others	**.700****	.031	.037	-.156	.114
11	Playing on the internet	**.545****	.062	.065	.157*	-.181*
12	Using IM or chatting via text messages	**.734****	.041	-.023	-.009	-.026
13	Checking where the phones are in a room	.147*	.148	**.640****	-.093	-.067
14	Checking where the bathrooms are	.027	-.027	**.873****	-.009	-.076
15	Checking where the exits are	.0005	-.026	**.815****	.001	.030
16	Checking where nearby hospitals or clinics are	-.047	-.005	**.674****	.105	.114
17	Checking my pulse, breathing, or blood pressure	-.045	.056	**.468****	.219**	.198
18	Avoiding stressful situations	.026	.036	.032	.071	**.704****
19	Avoiding situations that would make me angry	.028	.080	-.019	-.076	**.726****
20	Avoiding exciting events (e.g., concerts, sporting events)	-.009	-.032	-.079	**.703****	-.038
21	Avoiding stress at school or at home	.044	-.016	.054	.113	**.560****
22	Avoiding specific foods or getting too full	.056	.041	.090	**.486****	.121
23	Avoiding amusement park rides that might make you dizzy	.042	-.143	.121	**.496****	.000
24	Avoiding crowded stores	.070	-.037	.221**	**.488****	.110

25	Avoiding buses, planes, trains, etc.	-.046	-.012	.263**	**.411****	.020
26	Avoiding parties or other social activities	-.064	.068	.009	**.647****	-.063
27	Avoiding sit-down meals at restaurants or the school cafeteria	-.058	.096	-.005	**.582****	-.003
28	Avoiding being far from home	.068	.061	-.066	**.444****	.034
29	Thinking of excuses you can use to leave a social situation early	.059	.238**	-.018	**.427****	.028

Note. F1 = Use of Distraction; F2= Use of Individuals as Safety Signals; F3 = Use of Safety Behaviors; F4 = Avoidance of Situations that Promote Strong Sensations; F5 = Avoidance of Emotional Situations.

Table 2
Correlation Matrix Across CEASE-A Factors

Factors	Distraction	Safety Individuals	Safety Behaviors	Situations Strong Sensations
Distraction	1			
Safety Individuals	.36**	1		
Safety Behaviors	.23**	.36**	1	
Situations Strong Sensations	.26**	.14*	.30**	1
Avoid Emotional Situations	.26**	.42**	.27**	.25**

Table 3
Factor Loadings and P-Values for the EASI-A Using an ESEM Framework

#	Item	F1	F2	F3
1	I try to avoid situations that might make me have unpleasant thoughts and feelings	**.670****	.016	-.020
2	I do whatever I can to avoid feeling sad or worried or afraid.	**.682****	.017	-.088
3	I'll "lose it" if I don't distract myself from my feelings	.193	**.444****	-.127
4	If I begin to feel upset, I try to do something else to take my mind off it	.282**	.001	**.512****
5	I try to avoid uncomfortable situations	**.765****	-.043	.011
6	When I have thoughts and feelings I don't like, I try not to think about them	**.823****	-.181*	.004
7	Even if people ask me what's bothering me, I pretend nothing's wrong	.061	**.654****	-.007
8	I try hard to forget about the things that make me worried or upset	**.463****	.231*	.192*
9	To avoid having to make hard decisions, I stay away from hard or stressful situations	**.368****	.235**	.133
10	I try not to seem sad even when I feel that way	.044	**.593****	.083
11	When things do not go as well as I hoped, I try not to show that I am upset or sad about it	.109	**.543****	.023
12	I have a hard time showing my true feelings	-.041	**.643****	-.092
13	I try hard to calm myself down when I start to get angry	**.**101	.154	**.400****
14	Staying busy helps me avoid upsetting thoughts or ideas	-.005	.120	**.581****
15	I prefer to keep conversations happy or light	.056	-.015	**.769****
16	No matter how nervous or upset I am, I try to stay calm	-.200	**.474****	.296**
17	I have a hard time telling others how much they mean to me	.007	**.505****	-.088

Note. F1 = Avoidance of Thoughts and Feelings; F2 = Avoidance of Emotion Expression; F3 = Active Avoidance Coping.

Table 4
Correlation Matrix Across EASI-A Factors

Factors	Avoidance Emotion Expression	Avoidance Thoughts & Feelings
Avoidance Emotion Expression	1	
Avoidance Thoughts & Feelings	.44**	1
Active Avoidance Coping	.49**	.34**

Table 5
Ranges, Means, and Standard Deviations for the CEASE-A and EASI-A Subscales and Total Scores

Scale	*N*	Mean	S.D.	Minimum	Maximum
CEASE-A Total	213	40.00	17.89	0.00	103.00
Distraction	246	15.03	5.93	0.00	24.00
Safety Individuals	245	5.75	4.24	0.00	16.00
Safety Behaviors	253	4.62	5.29	0.00	24.00
Situations Strong Sensations	248	8.13	6.85	0.00	31.00
Avoid Emotional Situations	253	6.80	3.24	0.00	12.00
EASI-A Total	243	37.08	12.49	0.00	66.00
Avoidance Emotion Expression	255	13.74	6.22	0.00	28.00
Avoidance Thoughts Feelings	251	13.73	5.70	0.00	24.00
Active Avoidance Coping	255	9.62	3.84	0.00	16.00

Table 6
Correlations Between Transdiagnostic Behavioral Avoidance (CEASE-A) and Anxiety-Related Behavioral Avoidance (CAMS)

	CAMS
CEASE-A Total	.25**
Distraction	.15**
Safety Individuals	.21**
Safety Behaviors	.09
Situations Strong Sensations	.14*
Avoidance of Emotional Situations	.37**

Table 7
Correlations Between Transdiagnostic Emotional Avoidance (EASI-A) and Thought Suppression (WBSI)

	WBSI
EASI-A Total	.52**
Avoidance of Emotion Expression	.44**
Avoidance of Thoughts and Feelings	.45**
Active Avoidance Coping	.30**

Table 8
CEASE-A as a Predictor of Anxiety and Depression Symptoms

	RCADS Total Anxiety			RCADS MDD		
	Simple Regression		Multiple Regression (R^2 = .39)	Simple Regression		Multiple Regression (R^2 = .26)
Predictor Variable	β	R^2	β	β	R^2	β
CEASE-Total	.58**	.30	-----	.45**	.20	-----
Distraction	.30**	.09	.09	.23**	.05	.04
Safety Individuals	.39**	.15	.19**	.29**	.08	.14*
Safety Behaviors	.25**	.06	-.10	.21**	.04	.01
Situations Strong Sensations	.53**	.28	.47**	.46**	.21	.41**
Avoid Emotional Situations	.35**	.12	.13*	.21**	.04	.03

Table 9
EASI-A as a Predictor of Anxiety and Depression Symptoms

	RCADS Total Anxiety			RCADS MDD		
	Simple Regression		Multiple Regression (R^2 = .31)	Simple Regression		Multiple Regression (R^2 = .21)
Predictor Variable	β	R^2	β	β	R^2	β
EASI-A Total	.52**	.27	-----	.29**	.08	-----
Avoidance Emotion Expression	.46**	.21	.39**	.42**	.17	.46**
Avoidance Thoughts Feelings	.45**	.20	.32**	.18**	.03	.08
Active Avoidance Coping	.26**	.07	-.08	.03	.00	-.21**