I, Kristen M Kraemer, hereby submit this original work as part of the requirements for the degree of Master of Arts in Psychology.

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Behavioral Assessment of Emotional Distress Tolerance: Validation of the Distress Tolerance Speech Task

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Behavioral Assessment of Emotional Distress Tolerance: Validation of the Distress Tolerance Speech Task

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Abstract

The present study aimed to validate a behavioral measure of emotional distress tolerance. The new behavioral measure was hypothesized to elicit negative affect (distress) in participants by having them describe, in detail, a recent negative life event. It was hypothesized that the new behavioral measure of emotional distress tolerance would: (1) produce feelings of negative affect in the participant; (2) be associated with other measures of emotional distress tolerance; (3) not be associated with measures of physical distress tolerance; and (4) be predictive of symptoms of anxiety and depression. Participants included 100 adults recruited from the community \( (n = 52 \text{ male}; \ M_{\text{age}} = 30.82, \ SD = 11.13) \). Results suggest that the behavioral measure was successful in increasing negative affect for participants \( t(96) = -11.10, \ p < .01 \). Contrary to prediction, the behavioral measure was not associated with other measures of emotional distress tolerance and did not predict symptoms of depression or anxiety. However, secondary results from the study replicate past work suggesting that the behavioral and self-report measures of distress tolerance may be capturing distinct constructs. The present findings reinforce that there is considerable heterogeneity in the measurement and conceptualization of distress tolerance. It will be important for future work to continue to explore the validity of current behavioral indices of distress tolerance as well as develop new behavioral assessments for both physical and emotional distress tolerance.
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Anxiety and mood disorders are the most commonly diagnosed psychiatric disorders in the United States with lifetime prevalence rates of 29% and 21%, respectively (Kessler, Berglund, Demler, Jin, & Walters, 2005). Aside from a high prevalence rate, these disorders generally maintain a chronic, fluctuating course (Pine, Cohen, Gurley, Brook, & Ma, 1998) resulting in substantial impairment across the lifespan (Ferdinand & Verhulst, 1995). In addition, anxiety and mood disorders place a large burden on the financial and social resources of society. It is estimated that anxiety and mood disorders result in an estimated $86 billion in direct and indirect costs in the U.S. each year (Greenberg et al., 1999; Hall & Wise, 1995). These alarmingly high prevalence rates and costs have resulted in substantial research efforts focused on understanding and treating these disorders.

Thus far, the primary scientific approach to studying mood and anxiety disorders has been to identify and understand etiological and maintenance factors for each individual disorder (Brown & Barlow, 2009; Harvey, Watkins, Mansell, & Shafran, 2004). This disorder-specific approach has been further reinforced by the categorical classification system used in the Diagnostic and Statistical Manual of Mental Disorders. As a result, much of the extant research on anxiety and mood disorders has focused on identifying factors that differentiate depression and anxiety rather than identifying those that are common to both (see Clark, Watson & Mineka, 1994, for a review). For example, Clark and Watson (1991) have developed the tripartite model of mood and anxiety disorders in which negative affectivity serves as a general distress factor, lack of positive affect is specific to depression, and autonomic arousal is specific to anxiety.

Transdiagnostic Approach to Psychopathology

Due to extremely high comorbidity rates between mood and anxiety disorders in both clinical and community samples (Brown, Campbell, Lehman, Grisham, & Mancill, 2001), recent empirical focus has turned to a more transdiagnostic approach to understanding and treating
psychopathology. This approach focuses on identifying underlying vulnerability factors that are common to multiple disorders and may result in the development of more effective treatments that can address these comorbidity issues (Harvey et al., 2004). Indeed, Ellard, Fairholme, Boisseau, Farchione, and Barlow (2010) recently developed the Unified Protocol, a transdiagnostic, emotion-focused treatment for anxiety and mood disorders that targets negative affective factors and maladaptive emotion regulation strategies common to these disorders. The initial success of the Unified Protocol points to the utility of the transdiagnostic approach as well as the importance of identifying and understanding vulnerability factors that cut across disorders (Ellard et al., 2010).

In line with the transdiagnostic approach, researchers have identified several cognitive vulnerability factors common across the mood and anxiety disorders. We will briefly discuss some of the more prominent transdiagnostic cognitive risk factors (i.e., anxiety sensitivity, experiential avoidance, and rumination) before discussing the focus of the current study, distress tolerance, in greater detail. By far, the most extensively studied cognitive factor implicated in the anxiety disorders is anxiety sensitivity. Anxiety sensitivity (AS), defined as the fear of arousal-related physical and psychological sensations (McNally, 2002; Reiss & McNally, 1985), reflects a relatively stable, albeit malleable, cognitive predisposition that is theoretically and empirically distinct from both trait anxiety (Rapee & Medoro, 1994) as well as the tendency to experience negative emotional states (McNally, 2002). AS encompasses three lower-order factors (physical, cognitive, and social concerns) that load onto a single higher-order factor (Deacon & Valentiner, 2001; Taylor, 1999; Zinbarg, Barlow, & Brown, 1997).

When anxious, individuals high in AS become acutely fearful due to beliefs that these anxiety-related interoceptive sensations have harmful physical, psychological, or social consequences (Taylor et al., 2007). In line with this theory, AS is concurrently and prospectively associated with an increased risk of anxiety symptoms and with the onset of certain anxiety disorders (e.g., panic attacks, panic disorder, PTSD; (Feldner, Zvolensky, Schmidt, & Smith,
There is some evidence that AS also plays a role in mood disorders. Specifically, the cognitive concerns facet of AS (e.g., fear of going crazy) is associated with symptoms of depression (Cox, Enns, Freeman, & Walker, 2001; Cox, Taylor, & Enns, 1999; Schmidt, Lerew, & Joiner, 1998; Taylor, Koch, Woody, & McLean, 1996; Viana & Rabian, 2009) and elevated levels of the global AS factor are associated with bipolar disorder as well as symptoms of mania and hypomania (Simon et al., 2005; Simon et al., 2003).

The most extensively studied cognitive risk factor for depression is rumination, a type of repetitive negative thinking. Rumination describes the process of continuously thinking of the causes and consequences of negative and upsetting symptoms (Ehring & Watkins, 2008; McLaughlin & Nolen-Hoeksema, 2011), typically resulting in the inability to appropriately solve the problem that is causing the distress (Nolen-Hoeksema & Morrow, 1991). Rumination has been shown to be concurrently and prospectively associated with increased depression and anxiety symptoms (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Harrington & Blankenship, 2002; Nolen-Hoeksema, 2000). Indeed, recent work by McLaughlin and Nolen-Hoeksema (2011) indicates that rumination fully mediates the relationship between symptoms of anxiety and depression in adolescents and partially mediates this relationship in adults. These results suggest that rumination may partially account for the co-occurrence of depression and anxiety.

Another transdiagnostic process that has received increasing empirical attention in recent years is experiential avoidance, defined as an individual’s unwillingness to experience aversive events (e.g., emotions, thoughts, bodily sensations; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Typically, individuals high in experiential avoidance take steps to alter the form or frequency of these events through the use of maladaptive coping strategies, such as behavioral avoidance or emotional suppression. Experiential avoidance has been linked to a wide range of health problems (e.g., substance use, chronic pain; Hayes, Luoma, Bond,
Distress Tolerance

The focus of the current study is on the transdiagnostic cognitive vulnerability factor of distress tolerance. Distress tolerance is broadly defined as the ability to withstand negative emotional or physical states (Zvolensky, Bernstein & Vujanovic, 2011). Although distress tolerance has been the focus of clinical and research attention for over a century, it has garnered increasing attention over the past two decades (Zvolensky et al., 2011). This surge of interest in distress tolerance began with Linehan’s seminal work on borderline personality disorder. Specifically, Linehan (1993) proposed that a defining characteristic of borderline personality disorder is an inability to regulate emotions coupled with an inability or unwillingness to tolerate negative emotions.

Building on this foundation, recent work has focused on distress tolerance as a transdiagnostic cognitive vulnerability factor contributing to the etiology and maintenance of numerous forms of psychopathology. For example, distress tolerance has emerged as an important risk factor for substance use and cessation/abstinence outcomes (Abrantes et al., 2008; Brown, Lejuez, Kahler, & Strong, 2002; Brown, Lejuez, Kahler, Strong, & Zvolensky, 2005; Brown et al., 2009; Buckner, Keough, & Schmidt, 2007; Daughters et al., 2005; Daughters et al., 2006; Daughters, Lejuez, Kahler, Strong, & Brown, 2005; Howell, Leyro, Hogan, Buckner, & Zvolensky, 2010; Richards, Daughters, Bornovalova, Brown, & Lejuez, 2010). Indeed, Brown and colleagues (2009) found that smokers who are able to tolerate greater physical distress (i.e., greater breath-holding duration, inhalation of carbon dioxide-enriched air task persistence) are at a lower risk for a smoking lapse following a quit attempt. Similarly, low levels of distress tolerance are associated with shorter past abstinence durations among illicit drug users and a greater likelihood of treatment dropout (Daughters et al., 2005).
Distress tolerance plays a similarly important role in anxiety psychopathology. Schmidt, Mitchell, Keough and Riccardi (2010) posit that distress tolerance may affect one’s appraisals of anxiety symptoms, such that individuals low in distress tolerance may be more likely to perceive these symptoms as aversive. As a result, these individuals may experience greater levels of anxiety, further reinforcing their belief that these symptoms are aversive and resulting in a vicious cycle of increasing levels of anxiety. Extant research supports this line of thinking and indicates that individuals who are unable to tolerate emotional distress (i.e., low distress tolerance) are more likely to experience symptoms of panic disorder, social anxiety disorder, obsessive-compulsive disorder, hoarding, and posttraumatic stress disorder. (Keough, Riccardi, Timpano, Mitchell, & Schmidt, 2010; Marshall-Berenz, Vujanovic, Bonn-Miller, Bernstein, & Zvolensky, 2010; Marshall-Berenz, Vujanovic, & Zvolensky, 2011; Timpano, Buckner, Richey, Murphy, & Schmidt, 2009; Vujanovic, Bonn-Miller, Potter, Marshall, & Zvolensky, 2011; Vujanovic, Bernstein, & Litz, 2011).

In terms of associations between distress tolerance and depression, Clen, Mennin and Fresco (2011) posit that individuals low in distress tolerance have a rigid, inflexible view of negative emotions, such that negative emotions are always perceived as harmful, impossible to manage or cope with, and intolerable, resulting in increased symptoms of depression. Although the research in this area is limited, distress tolerance has been shown to be associated with depressive symptoms (Keough et al., 2010; Mennin et al., 2007) as well as mediate the relationship between negative affect intensity and use of emotion suppression as an emotion regulation strategy among individuals with major depressive disorder (Campbell-Sills et al., 2006).

**Theoretical Conceptualizations of Distress Tolerance**

Despite promising work in this area, there has been considerable heterogeneity in the theoretical conceptualization and definition of distress tolerance across studies (see Leyro, Zvolensky, & Bernstein, 2010, for an expanded discussion of this issue). Specifically,
researchers have differed on the definition of both “distress” and “tolerance”. In terms of “distress”, researchers have examined either distress related to physical sensations or distress related to emotional states. For “tolerance”, the primary difference in conceptualization is whether tolerance indexes actual or perceived ability to tolerate negative or aversive states. As a result, parallel lines of research have developed. The first line defines distress tolerance as the behavioral act of tolerating aversive somatic sensations (Brown et al., 2005; Schmidt, Richey & Fitzpatrick, 2006). The second focuses on one’s perceived ability to tolerate negative emotional states (Simons & Gaher, 2005).

Researchers focusing on physical distress tolerance theorize that the inability to tolerate or withstand aversive physical sensations may lead to maladaptive perceptions and interpretations of somatic sensations (Schmidt, Richey, Cromer, & Buckner, 2007). Therefore, an individual low in physical distress tolerance may be more susceptible to attend to, and negatively interpret, uncomfortable physical sensations. Simons and Gaher (2005), on the other hand, define distress tolerance as the ability to tolerate negative emotional states. This inability to tolerate negative emotional states is said to affect one’s appraisal of and emotion regulation strategies used in response to negative affective states. For example, Simons and Gaher (2005) posit that an individual with low levels of distress tolerance will be more likely to negatively evaluate and appraise a situation due to the belief that they are unable to tolerate negative distress, which, in turn, will lead to maladaptive emotion regulation strategies (e.g., avoidance).

**Assessment of Distress Tolerance – Self-Report Measures**

These conceptualizations have led to the development of several different self-report and behavioral assessment tools. Among the most commonly used self-report measures are the Distress Tolerance Scale (Simons & Gaher, 2005) and the Discomfort Intolerance Scale (Schmidt et al., 2006). Additionally, there is the Frustration Discomfort Scale (Harrington, 2005) and the newly developed Tolerance of Negative Affect States Scale (Bernstein & Brantz, 2010).
**Distress Tolerance Scale.** The Distress Tolerance Scale (DTS) is a 15-item self-report measure that assesses an individual’s perceived ability to tolerate negative emotional states (Simons & Gaher, 2005). Items on the DTS are rated on a 5-point Likert scale with lower scores reflecting lower levels of distress tolerance. The DTS possesses good psychometric properties, including convergence with other self-report measures of emotional distress (Simons & Gaher, 2005) as well as adequate 6-month test-retest reliability and good internal consistency ($\alpha = .89$; Simons & Gaher, 2005). Confirmatory factor analysis of the DTS indicates a higher-order general distress tolerance factor and four lower-order factors: (1) Tolerance (e.g., “*Feeling distressed and upset in unbearable to me*”); (2) Appraisal (e.g., “*My feelings of distress or upset are not acceptable*”); (3) Absorption (e.g., “*When I feel distressed or upset, all I can think about is how bad I feel*”); and (4) Regulation (e.g., “*I’ll do anything to avoid feeling distressed or upset*”) (Simons & Gaher, 2005). This factor structure was recently replicated in a confirmatory factor analysis of the DTS in a sample of daily smokers (Leyro, Bernstein, Vujanovic, McLeish, & Zvolensky, 2011).

**Discomfort Intolerance Scale.** The Discomfort Intolerance Scale (DIS) is a 5-item self-report measure that assesses an individual’s perceived ability to tolerate or withstand aversive physical sensations (Schmidt, Richey, Cromer & Buckner, 2007; Schmidt et al., 2006). Items are rated on a 7-point Likert scale with higher scores indicating higher levels of discomfort intolerance. The DIS consists of a higher-order discomfort intolerance factor and two lower-order factors: Intolerance of Pain (e.g., “*I can tolerate a great deal of physical discomfort*”) and Avoidance of Physical Discomfort (e.g., “*I take extreme measures to avoid feeling physically uncomfortable*”; Schmidt et al., 2006). The DIS has demonstrated high convergent and discriminant properties. The DIS also showed good internal consistency for the Intolerance of Pain subscale ($\alpha = .91$), the Avoidance subscale ($\alpha = .72$) and the Total score ($\alpha = .70$; Schmidt et al., 2006).
**Frustration Discomfort Scale.** The Frustration Discomfort Scale (FDS) is a 28-item self-report measure that assesses an individual’s perceived intolerance of frustration (Harrington, 2005). Items are rated on a 5-point Likert scale such that higher scores reflect higher levels of frustration intolerance. The FDS consists of four subscales, each consisting of seven items: Emotional Intolerance (e.g. “I can’t bear disturbing feelings”); Entitlement (e.g. “I can’t tolerate being taken for granted”); Discomfort Intolerance (e.g. “I can’t stand having to persist at unpleasant tasks”); and Achievement Frustration (e.g. “I can’t bear to move on from work I’m not fully satisfied with”). Each subscale of the FDS has demonstrated good internal consistency ($\alpha = .84$ to .88; Harrington, 2005).

**Tolerance of Negative Affect States Scale.** The Tolerance of Negative Affective States Scale (TNASS; Bernstein & Brantz, 2010) is a newly developed self-report measure that consists of 25 items designed to assess the extent to which individuals are tolerant of specific negatively-valenced affective states (e.g., anger, sadness, fear). The measure provides participants with a working definition of tolerance and intolerance of emotion ("Tolerance is the ability to withstand or endure an emotion. For example, a person who is tolerant of an emotion is able to feel that emotion without trying to avoid, stop, or replace it."). For each of 8 affective states, the TNASS includes 3 synonyms per affective state (i.e., sad, feeling down, depressed) for a total 24 items and one additional item of the broad non-specific state of “distressed”. Participants rate each emotion item using a 5-point Likert-type scale with higher scores reflecting higher levels of affective tolerance. Consistent with theory (Bernstein & Brantz, 2010; Leyro, Zvolensky, & Bernstein, 2010), initial validation of the TNASS indicated that it possesses a hierarchical and multi-dimensional factor structure. The six lower-order factors are: (1) Tolerance of Fear-Distress (fearful, anxious, distressed, afraid); (2) Tolerance of Sadness-Depression (sad, depressed, regret, feeling down); (3) Tolerance of Anger (angry, mad, furious); (4) Tolerance of Disgust (disgusted, grossed out, repulsed); (5) Tolerance of Dysphoria-Anxiety (nervous, socially awkward, tense, feeling down); and (6) Tolerance of Negative Social
Emotions (guilty, ashamed, embarrassed, feeling at fault, regret, feeling disgraced). These six factors load onto a higher-order Tolerance of Negative Emotion factor.

**Assessment of Distress Tolerance – Behavioral Measures of Psychological Distress**

Behaviorally, distress tolerance has been measured in terms of task persistence, or the latency to terminate a distressing physical or psychological task. The psychologically distressing tasks that are typically used as indices of distress tolerance are the computerized Paced Auditory Serial Addition Task (PASAT-C; Lejuez, Kahler, & Brown, 2003) and the computerized Mirror-Tracing Persistence Task (MTPT-C; Strong, Lejuez, Daughters, Marinello, Kahler & Brown, 2003).

**Computerized Paced Auditory Serial Addition Task.** Originally created to assess information processing and cognitive functioning (Gronwall & Sampson, 1974), the PASAT-C was adapted for use as a psychological stressor in laboratory experiments due to its tendency to produce stress and negative affect in the participant (Holdwick & Wingenfeld, 1999; Lejuez et al., 2003). The PASAT-C involves flashing a sequential presentation of numbers on the computer screen. Participants are asked to sum consecutive numbers in sets of two (i.e., adding only 2 numbers at a time). The numbers 1-20 are displayed at the bottom of the screen and participants are asked to click on the correct answer. After summing these two numbers, the participant must forget the sum in order to sum the next set of two numbers. For example, if the number 4 flashed on the screen followed by the number 8, the participant would click on 12. If the next number that flashed on the screen were 2, the individual would click on 10 (8 + 2). If the next number that flashed on the screen were 4, the individual would click on 6 (2 + 4), and so on. A buzzer sound is played for each incorrect answer or failure to answer in the appropriate time interval.

The PASAT-C consists of three levels with decreasing latencies between number presentations and increasing difficulty and duration as the participant moves through the task. The first level (low difficulty) has a 3 second latency between number presentations and lasts 3
Distress Tolerance

The Distress Tolerance Speech Task lasts for 14 minutes. The second level (medium difficulty) has a 1.5 second latency between number presentations and lasts 5 minutes. Before completing level 3, participants are told that they will have the option to terminate the task. The third level (high difficulty) has a 1 second latency between number presentations and lasts until the individual terminates the task (10 minute maximum duration). Thus, distress tolerance is objectively defined as the amount of time spent on the task before termination (Lejuez et al., 2003). Greater levels of distress tolerance are associated with a longer duration to termination (i.e., greater task persistence). A manipulation check is used prior to level 3 to determine the effectiveness of the task in eliciting dysphoria in the participant (Lejuez et al., 2003).

**Computerized Mirror-Tracing Persistence Task.** In the MTPT-C (Daughters et al., 2005; Strong et al., 2003; Quinn, Brandon, & Copeland, 1996) participants are instructed to use the mouse to trace figures on the computer screen as if viewing them through a mirror. That is, the movement of the mouse is opposite to that of the cursor on the screen. A loud buzzer is sounded every time the participant makes a mistake (i.e., moves the mouse outside the lines). The figures on the screen become more complex and difficult to trace as the participant moves through the task. As the figures become more complex, the participant is given the option to terminate the trial for that figure. Distress tolerance is then measured by averaging the amount of time spent on each figure before termination (Daughters et al., 2005). As with the PASAT-C, greater task persistence is an index of higher distress tolerance.

**Assessment of Distress Tolerance – Behavioral Measures of Physical Distress**

Physical distress tolerance has also been measured using a variety of behavioral tasks, such as the carbon dioxide enriched air challenge (CO₂ challenge; Brown et al., 2002; Zvolensky & Eifert, 2001), breath-holding (Hajek, Belcher, & Stapleton, 1987) hyperventilation (Barlow, 2002; Zvolensky & Eifert, 2001) and the cold pressor task (Lovallo, 1975). These tasks are intended to elicit physical distress and subsequently measure the latency to termination of the task (i.e., task persistence) as an index of distress tolerance.
**CO₂ Challenge.** The CO₂ challenge uses carbon dioxide-enriched air to produce hypercapnia and respiratory acidosis in participants. This change in CO₂ level elicits physiological arousal (e.g., increased heart rate; Levitsky, 1995). Thus the CO₂ challenge is typically used to study fear responses in “real time” and is used to simulate panic symptoms in the laboratory (Rapee, Brown, Antony & Barlow, 1992; Zvolensky & Eifert, 2001). Researchers have used a variety of CO₂ concentrations, ranging from 4% to 65%. Duration of the task typically increases as CO₂ concentration decreases. For example, 5% CO₂ is typically administered steadily for 15 minutes while 35% CO₂ is typically administered in a single vital capacity breath. Low concentrations of CO₂ produce gradual, increasing arousal while higher concentrations (≥ 10%) produce a more abrupt increase in arousal (Forsyth & Eifert, 1998). The CO₂ task, adapted to measure distress tolerance, gives participants three presentations of 20% CO₂ spaced at 5 minute intervals (Brown et al., 2002). The first two presentations last 25 seconds each. For the third presentation, participants are given the option to terminate the task at any time, though the task is automatically terminated after 30 seconds. Thus, the amount of time before termination of the third presentation is used as an index of distress tolerance.

**Breath-holding.** The breath-holding task, similar to the CO₂ challenge, is intended to elicit somatic distress in participants (Hajek, Belcher & Stapleton, 1987). Participants are instructed to hold their breath for as long as possible. Physical distress tolerance is measured by the amount of time one is able to hold their breath before termination. Higher levels of physical distress tolerance are associated with longer duration of breath-holding. For example, extant work has demonstrated that shorter breath-holding duration is associated with faster cigarette smoking lapse and relapse during a quit attempt (Brown et al., 2002; Brown et al., 2009).

**Hyperventilation.** The hyperventilation task is intended to elicit somatic and interoceptive distress in the participant (Barlow, 2002; Zvolensky & Eifert, 2001). The task involves rapid breathing (i.e., breathing at a rate in excess of metabolic demand) that puts the
body state of hypocapnia and alkalosis (Levitsky, 1995) resulting in physical changes (e.g., vasoconstriction) that elicit anxiety symptoms. The task involves two hyperventilation periods separated by a 10-minute recovery period. The first hyperventilation period last 3 minutes. For the second hyperventilation period, participants are instructed to continue to hyperventilate for as long as possible. Unbeknownst to the participant, the task is automatically terminated after 5 minutes. The latency to termination of the second hyperventilation task is used as an index of distress tolerance.

**Cold pressor.** The cold pressor task is a measure commonly used to assess pain tolerance. Participants are instructed to place their non-dominant hand in a pool of cold water (1°C) and keep it submerged for as long as possible (Lovallo, 1975). Thus, distress tolerance is indexed by the amount of time participants are able to keep their hand submerged before termination.

**Discrepancies in Measurement and Conceptualization**

While both self-report and behavioral measures of distress tolerance have been linked to various forms of psychopathology, it is unclear whether both types of assessments tap into the same distress tolerance construct. As previously noted, behavioral measures of distress tolerance tend to focus on an individual’s actual capacity to persist at a physically distressing (e.g., breath-holding, hyperventilation, CO$_2$ challenge) or psychologically frustrating (e.g., PASAT-C, MTPT-C) task. Thus, these indices of distress tolerance encompass an individual’s tolerance for frustration and tolerance of pain or uncomfortable physical sensations. Self-report measures of distress tolerance, on the other hand, focus on an individual’s perceived ability to tolerate negative emotional (DTS; Simons & Gaher, 2005) or physical (DIS; Schmidt et al., 2006) states. Recent work comparing behavioral and self-report indices of distress tolerance suggests that they, in fact, do not appear to be assessing the same construct. For example, McHugh and colleagues (2010) sought to explore the associations between several commonly used behavioral and self-report measures of distress tolerance. Results revealed no significant
associations between any of the self-report and behavioral measures (McHugh et al., 2010). Similarly, Marshall-Berenz, Vujanovic, Bonn-Miller, Bernstein and Zvolensky (2010) explored the relations among behavioral and self-report measures of distress tolerance as well as their associations with PTSD symptom severity. Results demonstrated that the self-report measures of distress tolerance were not significantly associated with any behavioral measures of distress tolerance. Moreover, the only significant predictor of PTSD symptom severity was the DTS.

These discrepancies may be due, in part, to the fact that behavioral and self-report measures are inherently and methodologically different in nature. The current behavioral measures of distress tolerance reflect the capacity to withstand uncomfortable physical sensations or tolerate frustration, whereas the self-report measures tend to reflect the perceived ability to tolerate negative emotional or physical states. Indeed, the actual behavioral act of tolerating physically or psychologically distressing stimuli may not reflect an individual’s perceived ability to withstand negative emotional or physical states (Zvolensky et al., 2011). In support of this line of thinking, a factor analysis of the DTS, DIS, and Anxiety Sensitivity Index indicated that physical distress tolerance (i.e., DIS) did not fit into a hierarchical model of affect sensitivity and tolerance (Bernstein, Zvolensky, Vujanovic, & Moos, 2009). These results suggest that tolerance of affective states may be distinct and unrelated to tolerance of aversive physical states (Bernstein et al., 2009; Schmidt et al., 2007).

Taken together, extant research indicates that both physical and emotional distress tolerance play an important role in the development and maintenance of psychopathology. However, the current empirical literature in this area is limited due to the lack of a behavioral measure of emotional distress tolerance. For example, current behavioral indices of distress tolerance that illicit negative affective states (e.g. mirror tracing, PASAT-C) may be tapping into a frustration tolerance construct, rather than emotional distress tolerance. This lack of a behavioral emotional tolerance measure is unfortunate given the importance of understanding and distinguishing between perceived and actual ability to tolerate emotional distress (Bernstein
et al., 2010). Furthermore, the lack of a behavioral index of emotional distress tolerance hinders the progress towards a more comprehensive theoretical conceptualization of distress tolerance.

**Current Study**

The primary aim of the current study was to validate a new behavioral assessment of emotional distress tolerance. The new behavioral measure was hypothesized to elicit negative affect (distress) in participants by having them describe, in detail, a recent negative life event. The amount of time spent talking about this negative life event, after taking into account an individual’s overall level of talkativeness, was used as an index of distress tolerance. It was hypothesized that the new behavioral measure of emotional distress tolerance would: (1) produce feelings of negative affect in the participant; (2) be associated with other measures of emotional distress tolerance; (3) not be associated with measures of physical distress tolerance; and (4) be predictive of symptoms of anxiety and depression.

**Method**

**Participants**

Participants were 100 adults ($n = 52$ male; $M_{\text{age}} = 30.82$, $SD = 11.13$) recruited from the local community via flyers posted in the community and ads posted in online forums (e.g., Craigslist). The racial composition of the sample was 44% Caucasian, 39% African American, 13% Asian, 2% American Indian or Alaskan Native, and 2% other.

**Behavioral Measures**

**Neutral Speech Task.** For this task, participants described, in as much detail as possible, a recent neutral experience (i.e., an event, experience or daily routine that does not bring up any emotions). Specifically, they were provided with the following instructions:

*For this next task, I will ask you to tell me, in as much detail as possible, about a recent neutral experience- so an event, experience or daily routine that does not bring up any happy, sad, frustrating or angry emotions for you. If you were to think of a scale from 0-10 of distress, the event or experience should be between 0-2. Some examples include, describing your morning routine, describing how to make a meal you commonly prepare, or describing your commute to work or school. These are just examples, so you are free to describe any neutral event. Remember, you will describe this event or experience in*
AS MUCH detail as possible. I will give you about a minute to think of the experience or event that you want to describe. Do you have any questions?

Participants were instructed that there is no length requirement or correct answer and encouraged to provide as much detail as possible when telling their story. The researcher remained quiet, with a neutral facial expression, and provided no verbal prompts during the story. The researcher engaged in head nodding as appropriate to maintain rapport with the participant. The amount of time spent telling the story was used as an index of the participant’s baseline level of talkativeness.

Distress Tolerance Speech Task. For this task, participants described, in as much detail as possible, a recent upsetting experience. Specifically, they were provided with the following instructions:

For this next task, I will ask you to tell me, in as much detail as possible, about a recent event that has caused you a great deal of distress- so an event or experience that was very distressing when it happened and brings back those emotions, like feeling scared or upset, when you think about it now. If you were to think of a scale from 0-10 of distress, the event or experience should be at least a 7 or 8. However, your event or experience should not be as high as a 9 or 10. Some examples of what you could describe are a recent break-up, being in a car accident, losing a job, death of a pet, being robbed, or the death of a distance relative or friend. Remember, you will describe this event or experience in AS MUCH detail as possible. I will give you about a minute to think of the experience or event that you want to describe. Do you have any questions?

The researcher remained quiet, with a neutral facial expression, and provided no verbal prompts during the story. The researcher engaged in head nodding as appropriate to maintain rapport with the participant. Distress tolerance, as assessed by the Distress Tolerance Speech Task, was calculated by subtracting the amount of time spent talking during the Neutral Speech Task from the amount of time spent talking about the distressing event.

Breath-holding. Participants were asked to hold their breath for as long as possible. They then completed two breath-holding trials with a one-minute rest period in between trials. Breath-holding duration in seconds was then averaged across the two trials and used as a measure of physical distress tolerance (Hajek, Belcher, & Stapleton, 1987).
**Computerized Mirror-Tracing Persistence Task (MTPT-C).** As described above, the MTPT-C (Daughters et al., 2005; Strong et al., 2003; Quinn, Brandon & Copeland, 1996) asks participants to use a computer mouse to trace figures on the computer screen as if viewing them through a mirror. A loud buzzer is sounded every time the participant makes a mistake (i.e., moves the mouse outside the lines). The figures on the screen become more complex and difficult to trace as the participant moves through the task. As the figures become more complex, the participant is given the option to terminate the task. The participant is given three different figures to trace (i.e., a straight line, two perpendicular lines, and a star). The participant must complete the first two figures within thirty seconds. The last figure is more challenging, and the participant is instructed that they have the option to terminate the task at any time. The task automatically terminates if the participant has not ended the task within 10 minutes. The amount of time spent on the last figure before termination was used as an index of frustration tolerance (Daughters et al., 2005).

**Self-Report Measures**

**Distress Tolerance Scale (DTS).** The DTS (Simons & Gaher, 2005) is a 15-item self-report measure that assesses one’s perceived ability to withstand negative emotional states. As described above, the DTS has demonstrated good psychometric properties (Simons & Gaher, 2005). In the current study, the global distress tolerance factor (i.e., DTS total score) was used to index emotional distress tolerance. Internal consistency for DTS in the current sample was good (α = .87).

**Discomfort Intolerance Scale (DIS).** The DIS (Schmidt et al., 2006) is a 5-item self-report measure that assesses an individual’s perceived ability to tolerate aversive physical sensations. The DIS has shown good internal consistency as well as good convergent and discriminant validity (Schmidt et al., 2007). The global DIS factor (i.e., DIS total score) was used as an index of physical distress tolerance. Internal consistency for the DIS in the current sample was adequate (α = .61).
**Frustration Discomfort Scale (FDS).** The FDS (Harrington, 2005) is a 28-item self-report measure that assesses an individual’s perceived intolerance of frustration (Harrington, 2005). The FDS has demonstrated good psychometric properties (Harrington, 2005). In the current study, the Emotional Intolerance subscale was used as a measure of emotional distress tolerance. Due to a clerical error, 47 participants did not provide an answer to question 27, which is included in the Emotional Intolerance subscale. Therefore, these missing values were estimated using multiple imputation procedures (Rubin, 1987). Internal consistency for the FDS-Emotional Intolerance subscale for the current sample was good ($\alpha = .87$).

**Tolerance of Negative Affect States Scale (TNASS).** As described above, the TNASS (Bernstein & Brantz, 2010) is a 24-item self-report measure that assesses an individual’s perceived tolerance of specific negative affective states. The global tolerance of negative emotional states factor (i.e., TNASS total score) was used to assess emotional distress tolerance. The TNASS also consists of six subscales that assess an individual’s perceived tolerance of specific emotional states (i.e., fear, depression, anger, disgust, anxiety, social concerns). These subscales were examined in terms of their associations with other measures of distress tolerance. Internal consistency for the TNASS for the current sample was excellent (TNASS total score: $\alpha = .97$; TNASS subscales: $\alpha$ range = .79 - .91).

**Positive Affect Negative Affect Schedule (PANAS).** The PANAS is a mood measure commonly used in psychopathology research (Watson, Clark, & Tellegen, 1988). It assesses two global dimensions of affect: negative and positive. Only the negative affectivity scale (PANAS-NA) was used in the current study. A large body of literature supports validity of the PANAS (Watson, 2000). For example, the PANAS-NA possesses good internal consistency and reliability (Watson et al., 1988). In the present investigation, the PANAS-NA subscale was employed as a covariate. Internal consistency for the PANAS-NA was excellent ($\alpha = .92$).

**Subjective Units of Distress Scale (SUDS).** The SUDS is a self-report scale used to index intensity of distress (Wolpe, 1985). Participants are asked to indicate on a scale from 0
(no distress) to 10 (extreme distress) their current level of distress. Participants provided SUDS ratings before and after each behavioral task.

**Inventory of Depression and Anxiety Symptoms (IDAS).** The IDAS (Watson et al., 2007) is a 64-item self-report measure that assesses specific symptoms of depression and anxiety. Participants rate the extent to which each statement applies to them on a 5-point Likert-type scale (1 = not at all to 5 = extremely). The IDAS contains 10 symptom scales (Suicidality, Lassitude, Insomnia, Appetite Loss, Appetite Gain, Ill Temper, Well-Being, Panic, Social Anxiety, and Traumatic Intrusions) and two broader scales (General Depression and Dysphoria). The IDAS shows strong convergent, discriminant, criterion, and incremental validity (Watson et al., 2008). The General Depression subscale was used in the current study as a criterion variable in the regression analyses assessing the unique predictive ability of the distress tolerance measures. Internal consistency for the General Depression subscale of the IDAS for the current study was excellent (α = .92).

**State-Trait Anxiety Inventory (STAI).** The STAI is a measure of both stable (trait) and situational (state) anxiety (Spielberger, 1983). It consists of two 20-item scales where participants rate the degree to which they agree with each statement on a 4-point Likert scale (1 = not at all to 4 = very much so). Sample items include “I feel nervous and restless” and “I feel inadequate.” The STAI has demonstrated good psychometric properties (Spielberger, 1989). The trait version of the STAI was used in the current study as a criterion variable in the regression analyses assessing the unique predictive ability of the distress tolerance measures. Internal consistency for the STAI trait version in the current sample was excellent (α = .94).

**Procedure**

Upon arrival to the study session, participants were seated in a private office to ensure confidentiality. After providing informed, written consent, participants completed a battery of self-report measures (i.e., DTS, DIS, FDS, TNASS, PANAS). Next, participants completed a series of four behavioral tasks. Participants first completed the neutral speech task followed by the
three distress tolerance behavioral tasks (Distress Tolerance Speech Task, Breath-Holding, MTPT-C). The order of presentation of these three tasks was randomized to account for any potential order effects. Participants provided SUDS ratings before and after each task. There was a 2-minute rest period following each behavioral task to allow participants’ level of distress to return to baseline. Upon completion of the study, participants were compensated $20 for their time and effort. The Institutional Review Board approved all study procedures and materials prior to data collection.

**Data Analytic Plan**

First, to determine whether the behavioral tasks, including the new emotional distress tolerance task, produced distress in the participants, paired-samples $t$-tests were conducted to examine differences in SUDS ratings before and after the tasks. Next, to assess convergent and discriminant validity of the Distress Tolerance Speech Task, zero-order correlations were computed between the Distress Tolerance Speech Task and (1) self-report measures of emotional distress tolerance (i.e., DTS, FDS-Emotional Intolerance, TNASS); and (2) self-report and behavioral measures of physical distress tolerance (i.e., DIS). Hierarchical multiple regression was then used to examine the incremental predictive validity of the Distress Tolerance Speech Task in relation to anxiety and depression symptoms. Separate models were constructed for predicting depression and anxiety symptoms. Gender and negative affectivity were included as covariates at step one of the model to ensure any observed effects are not due to these theoretically relevant variables. The score on the Distress Tolerance Speech task, calculated as the difference in speaking time between the distress tolerance and neutral tasks, was then entered at step two. Hierarchical multiple regression was again used to examine the unique contributions of all of the emotional distress tolerance measures in predicting anxiety and depression symptoms. As with the first set of analyses, separate models were constructed for predicting depression and anxiety symptoms. Gender and negative affectivity were included as covariates at step one of the model and the scores on all of the emotional distress tolerance
measures (Distress Tolerance Speech Task, DTS, FDS-Emotional Intolerance, TNASS-Total) were simultaneously entered at step two of the model.

**Results**

*Manipulation Check*

Participants reported significant increase in SUDS ratings after completing the Distress Tolerance Speech Task \([t(96) = -11.10, p < .01; M_{pre-task} = 2.59, M_{post-task} = 5.48]\), Breath-Holding \([t(95) = -2.62, p < .05; M_{pre-task} = 3.02, M_{post-task} = 3.49]\), and the Mirror-Tracing task \([t(98) = -11.43, p < .01; M_{pre-task} = 2.89, M_{post-task} = 4.93]\). Participants reported a significant decrease in SUDS ratings after completing the neutral task \([t(98) = 2.04, p < .05; M_{pre-task} = 5.98, M_{post-task} = 4.54]\).

*Zero-Order Correlations*

Descriptive data for all study variables are presented in Table 1. The associations among covariates, predictor, and criterion variables are presented in Table 2. None of the behavioral measures of distress tolerance were significantly correlated with each other, the self-report measures of distress tolerance, or measures of negative affect, depression, and anxiety. The Distress Tolerance Speech Task was significantly correlated with TNASS-Anxiety \((r = .26, p < .05)\).

In terms of self-report measures for emotional distress tolerance, the DTS was significantly correlated with other self-report measures of both emotional and physical distress tolerance except TNASS-Disgust and TNASS-Social \((r = .26 to .54)\). The DTS was also significantly correlated with negative affect \((r = -.48, p < .01)\), depression \((r = -.55, p < .01)\), and anxiety \((r = -.57, p < .01)\). The FDS-Emotional Intolerance subscale was significantly correlated with negative affect \((r = .58, p < .01)\), general depression \((r = .55, p < .01)\) trait anxiety \((r = .60, p < .01)\), the DTS \((r = -.54, p < .01)\), and the DIS \((r = .32, p < .01)\), but not the TNASS total or subscale scores. Self-report of physical distress tolerance (DIS) was significantly correlated with negative affect \((r = .25, p < .05)\) and general depression \((r = .28, p < .01)\), but not trait anxiety or the TNASS total and subscale scores.
Regression Analyses

See Table 3 for results of the regression analyses for the Distress Tolerance Speech Task predicting depression and anxiety symptoms. In terms of depression symptoms, the first step accounted for 61.7% of variance, and negative affectivity was the only significant predictor ($\beta = .78, p < .01$). The Distress Tolerance Speech Task did not account for any additional variance in the second step ($\beta = -.01, p = .19$). For anxiety, step one of the model accounted for 55% of variance, and negative affectivity was the only significant predictor ($\beta = .74, p < .01$). The Distress Tolerance Speech Task did not account for any additional variance in the second step of the model ($\beta = -.06, p = .42$).

See Table 4 for results of the regression analyses for all of the emotional distress tolerance measures predicting depression and anxiety symptoms. In terms of depression symptoms, step one of the model accounted for 54.9% of variance, and negative affectivity was the only significant predictor ($\beta = .75, p < .01$). The second step accounted for a non-significant 4.8% of unique variance ($p = .08$). The DTS was the only predictor to approach significance ($\beta = -.18, p = .07$). In terms of anxiety symptoms, the first step accounted for 55.9% of the variance, and negative affectivity was the only significant predictor ($\beta = .74, p < .01$). Step two of the model accounted for 9.8% of unique variance, with TNASS-Total ($\beta = -.17, p < .05$) and FDS-Emotional Intolerance ($\beta = .25 p < .05$) as the only significant predictors.

Discussion

Extant work on the construct of distress tolerance has failed to find associations between self-report and behavioral measures of the construct (McHugh et al., 2010). Possible explanations for these unexpected findings include conceptual differences between physical and emotional distress tolerance and the tendency to assess physical distress tolerance using behavioral measures and emotional distress tolerance via self-report measures. Researchers have yet to develop a behavioral assessment tapping emotional distress tolerance, limiting the
ability to fully understand various facets of the distress tolerance construct and how they relate to psychopathology. Thus, the aim of the current study was to validate a new behavioral measure of emotional distress tolerance. Consistent with prediction, the Distress Tolerance Speech Task successfully produced emotional distress in participants. However, contrary to prediction, the Distress Tolerance Speech Task was not significantly associated with any other measures of emotional distress tolerance and was not predictive of symptoms of depression or anxiety.

These findings suggest the Distress Tolerance Speech Task may not have been accurately capturing the construct of emotional distress tolerance. It was hypothesized that spending less time talking about a distressing event would be indicative of an inability to tolerate the negative affect produced by recalling such an event, or low emotional distress tolerance. However, despite participants reporting an increase in levels of distress after discussing a distressing event, the amount of time spent talking about this event did not appear to be related to an ability to tolerate this distress. It may be that individuals who are low in emotional distress tolerance failed to choose a truly distressing event to talk about, instead opting to talk about a less distressing event, that would elicit lower, more tolerable levels of distress. Alternatively, individuals low in distress tolerance may have been successful in suppressing their negative emotions during the task, allowing them to persist in talking about their distressing event for a longer period of time. While these participants did not suppress their negative emotions completely, as reflected in their reports of an increase in subjective distress, they may have used suppression to avoid fully experiencing their negative emotions during the task.

It may also be the case that the amount of time spent talking about a distressing event was not an appropriate index for distress tolerance. There may have been other subtleties in the speech task that were not assessed that could have more accurately captured emotional distress tolerance. For example, objective physiological indices of distress (e.g., heart rate, skin conductance), body language, researcher ratings of participant affect, and rate and tone of
speech were not assessed. Moreover, the content of the participant’s distressing event was not taken into account. The content of the distressing event that was chosen by each participant may have elicited different types of negative emotions (e.g., anger, sadness, anxiety), which, in turn, may have affected the length of time spent talking. Indeed, recent work suggests that the ability to tolerate one type of negative emotion may not necessarily reflect the ability to tolerate a different negative emotion (Bernstein et al., 2010). Furthermore, the task may not have accurately captured emotional distress tolerance due to participant motivation. Participants may have lacked the incentive or motivation needed to describe their distressing event in great detail.

The directions for the Distress Tolerance Speech Task could have included an incentive for the participants by making the amount of money they received contingent upon the level of detail provided in describing the distressing event.

In addition to these limitations, there are other refinements to the Distress Tolerance Speech Task that might improve its psychometric properties. For example, more frequent SUDS ratings throughout the description of the event (similar to what is done in exposure therapy) could be obtained in order to determine when participants reached a peak level of distress. Distress tolerance could have then been indexed by the amount of time the participant persisted past this peak level of distress. Additionally, some researchers suggest that distress tolerance is not merely the ability to tolerate distressing emotions as they are happening, but also the ability to engage in goal-directed behavior despite the presence of these negative emotions (Daughters et al., 2005). Unfortunately, the Distress Tolerance Speech Task was not designed to capture this second facet of distress tolerance. Further refinement of the task could involve having participants engage in a goal-directed activity after eliciting negative emotions, and rather than time spent discussing the event, tasks persistence would be the index of distress tolerance. It would be necessary, however, to ensure that such a change would not instead capture a persistence or motivation-related construct as opposed to distress tolerance.
Despite the inability of the Distress Tolerance Speech Task to accurately capture emotional distress tolerance, secondary analyses from this study were consistent with previous work in this area. Similar to result of the Marshall-Berenz et al. (2010) and McHugh et al. (2010) studies, the self-report measures of distress tolerance (i.e., DTS, FDS-Emotional Intolerance, TNASS) were not significantly associated with any of the behavioral measures of distress tolerance (Breath-holding, Mirror-Tracing). Moreover, consistent with previous work suggesting the behavioral ability to tolerate physical distress (i.e., breath-holding) may be distinct from the ability to tolerate more affect-related distress (i.e., mirror-tracing; McHugh et al., 2010), the behavioral measures of breath-holding and mirror-tracing in the current study were not associated with one another. Lastly, the DIS was only moderately associated with self-report measures of emotional distress tolerance, which is consistent with recent factor analytic work indicating physical and emotional distress tolerance are distinct, lower-order constructs that load onto a higher order tolerance construct (Bernstein et al., 2009; Mitchell, Riccardi, Keough, Timpano & Schmidt, 2013). The current findings in conjunction with extant research support the argument that (1) emotional and physical distress tolerance are separate constructs; (2) self-report and behavioral measures of distress tolerance are assessing separate constructs; and (3) even within each type of measure (i.e., self-report, behavioral) different constructs are being assessed. Thus, there remains a critical need for further research attention in this area to further understand and be able to assess these distinctions.

Limitations and Future Directions

There are a number of limitations to the current study that warrant consideration. First, the overall goal of the current study, to validate a new behavioral measure of emotional distress tolerance, was not successful. As discussed above, there are a number of limitations to the Distress Tolerance Speech Task and avenues for improvement that should be addressed in future work. Second, the present study was cross-sectional in nature, which prevents causal-oriented hypothesis testing. Longitudinal designs will be of particular importance for future work.
in the area of distress tolerance. For example, due to the dearth of longitudinal work in this area, it still remains unknown whether distress tolerance is a true risk factor for psychopathology or whether it serves only as a maintenance factor. Moreover, longitudinal designs may provide much-needed insight into understanding the distinction between the ability to tolerate emotional and physical distress.

Third, participants were not assessed for the presence of psychopathology. It may be the case that significant findings did not emerge partly due to the lack of a clinical sample. More specifically, emotional distress tolerance may be easier to detect among individuals with psychopathology. Therefore, future work may benefit from developing an emotional distress tolerance measure with a clinical sample, which could then be refined to assess distress tolerance in non-clinical samples. Fourth, there are inherent limitations to comparing behavioral and self-report measures due to method variance. Lastly, the current study only utilized two behavioral measures of distress tolerance (i.e., breath-holding and mirror-tracing). There are currently several behavioral assessments of distress tolerance available in the literature (e.g., cold-pressor, PASAT; Hayes et al., 2009; Lejuez et al., 2003). Further work is needed to examine the interrelations between all of these behavioral measures of distress tolerance and how they relate to existing self-report measures in order to establish a more comprehensive definition of distress tolerance. A structural equation modeling (SEM) approach may be particularly helpful in distinguishing the different constructs that each of the measures of distress tolerance appear to be assessing.

Despite these limitations and lack of significant findings in regards to the Distress Tolerance Speech Task, the current study was successful in replicating past work in this area (Marshall-Berenz et al., 2010; McHugh et al., 2010). These findings point to the critical need for future work to continue to explore and refine the distress tolerance construct. These findings also point to the need for further exploration of the validity of current behavioral indices of
distress tolerance as well as the development of new behavioral assessments for both physical and emotional distress tolerance.
References


Distress Tolerance Speech Task


Table 1: Descriptive Statistics for All Study Variables

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Note: PANAS-NA: Positive and Negative Affect Schedule (Watson et al., 1988); IDAS-General Depression: Inventory of Depression and Anxiety Symptoms-General Depression subscale (Watson et al., 2007); STAI: State-Trait Anxiety Inventory (Spielberger, 1989); DTS: Distress Tolerance Scale (Simons & Gaher); DIS: Discomfort Intolerance Scale (Schmidt et al., 2006); FDS-Emotional Intolerance: Frustration Discomfort Scale-Emotional Intolerance subscale (Harrington, 2006); TNASS-fear: Tolerance of Negative Affective States Scale-Anger subscale (Bernstein & Brantz, 2010); TNASS-Depress: Tolerance of Negative Affective States Scale-Depression subscale (Bernstein & Brantz, 2010); TNASS-Disgust: Tolerance of Negative Affective States Scale Disgust subscale (Bernstein & Brantz, 2010); TNASS-Anxiety: Tolerance of Negative Affective States Scale-Anxiety subscale (Bernstein & Brantz, 2010); TNASS-Social: Tolerance of Negative Affective States Scale-Social subscale (Bernstein & Brantz, 2010); TNASS-Total: Tolerance of Negative Affective States Scale-Total Score (Bernstein & Brantz, 2010); Distressing Task: Distress Tolerance Speech Task; Breath-holding: Breath-holding task; Mirror-tracing: Computerized Mirror-Tracing Persistence Task.
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**Note:** A single asterisk indicates correlation is significant at .05 level; Double asterisks indicate correlation significant at the .01 level; PANAS-NA: Positive and Negative Affect Schedule (Watson et al., 1988); IDAS-General Depression: Inventory of Depression and Anxiety Symptoms-General Depression subscale (Watson et al., 2007); STAI: State-Trait Anxiety Inventory (Spielberger, 1989); DTS: Distress Tolerance Scale (Simons & Gahe); DIS: Discomfort Intolerance Scale (Schmidt et al., 2006); FDS-Emotion: Frustration Discomfort Scale-Emotional Intolerance subscale (Harrington, 2006); TNASS-Fear: Tolerance of Negative Affective States Scale-Anger subscale (Bernstein & Brantz, 2010); TNASS-Depress: Tolerance of Negative Affective States Scale-Depression subscale (Bernstein & Brantz, 2010); TNASS-
Disgust: Tolerance of Negative Affective States Scale-Disgust subscale (Bernstein & Brantz, 2010); TNASS-Anxiety: Tolerance of Negative Affective States Scale-Anxiety subscale (Bernstein & Brantz, 2010); TNASS-Social: Tolerance of Negative Affective States Scale-Social subscale (Bernstein & Brantz, 2010); TNASS-Total: Tolerance of Negative Affective States Scale-Total Score (Bernstein & Brantz, 2010); Distressing Task: Distress Tolerance Speech Task; Breath-holding: Breath-holding task; Mirror-tracing: Computerized Mirror-tracing Persistence task.
Table 3: *Distress Tolerance Speech Task Predicting Depression and Anxiety Symptoms*

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<th>β</th>
<th>sr²</th>
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Note: β = standardized beta weight; sr² = squared semi-partial correlation; PANAS-NA: Positive and Negative Affect Schedule; Speech Task: Distress Tolerance Speech Task; Depression: Inventory of Depression and Anxiety Symptoms-General Depression Subscale; Trait Anxiety: State-Trait Anxiety Inventory-Trait Anxiety subscale.
Table 4: *Emotional Distress Tolerance Variables Predicting Depression and Anxiety Symptoms*

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Note: $\beta =$ standardized beta weight; $sr^2 =$ squared semi-partial correlation; PANAS-NA: Positive and Negative Affect Schedule; Speech Task: Distress Tolerance Speech Task; DTS: Distress Tolerance Scale; FDS: Frustration Discomfort Scale-Emotional Intolerance Subscale; Depression: Inventory of Depression and Anxiety Scale-General Depression Subscale; Trait Anxiety: State-Trait Anxiety Inventory-Trait Anxiety subscale.