Mindfulness in Individuals at Risk for Depression: The Role of Cognitive Emotion Regulation Strategies

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Abstract

A major aim of depression research is to study vulnerability factors for the onset and reoccurrence of the disorder. One area of research has investigated how mindfulness meditation can be used to prevent depression relapse in those with chronic recurrent depression; however, major gaps still exist in our understanding of how mindfulness may relate to depression risk and what role trait mindfulness may play in depression onset and reoccurrence. The goal of the current study was to explore whether cognitive emotion regulation strategies (rumination, cognitive reappraisal, and thought suppression) mediate associations between trait levels of mindfulness and positive and negative affect in at-risk populations, defined as having at least one previous episode of depression or having a parental history of depression. Participants were assessed using an online questionnaire format, and mediation models were tested using structural equation modeling. Both rumination and cognitive reappraisal mediated the relationship between trait mindfulness and positive and negative affect. The current study provides evidence for how mindfulness relates to depression risk through specific cognitive emotion regulation strategies and has implications for the role mindfulness plays in depression vulnerability and resilience.

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The identification of vulnerability factors for the development, maintenance, and reoccurrence of major depressive disorder is a major focus in the medical and psychological communities. Individuals in the United States have a 23% lifetime risk of developing the disorder by age 75 (Kessler et al., 2005), and the World Health Organization (WHO) has calculated that unipolar depression is the third leading cause of disability worldwide and will be the leading cause of burden of disease by the year 2030 (World Health Organization, 2004). Given this high prevalence and the personal and societal costs of depression, endeavors to identify vulnerability factors for the onset and reoccurrence of this disorder are particularly critical.

The present study seeks to investigate how depression vulnerability factors are related by examining whether cognitive emotion regulation strategies (rumination, cognitive reappraisal, and thought suppression) mediate associations between trait levels of mindfulness and positive and negative affect. These variables are being studied in a nonclinical, at-risk population, defined as having at least one previous episode of depression or having a parental history of depression. I first discuss emotions and emotion regulation, including how depression has been conceptualized as a disorder of emotional dysregulation. Particular attention is paid to the emotional functioning of at-risk individuals. In particular, the literature concerning specific cognitive emotion regulation strategies, their relation to affect, and how they function in those at risk for depression is presented. I next discuss mindfulness, including treatments that incorporate mindfulness and studies that examine mindfulness in individuals at-risk of depression. I then bring the emotion regulation and mindfulness literatures together and discuss how these two concepts may be

related. I then use a mediation model to test the effect of trait levels of mindfulness on positive and negative affect through cognitive emotion regulation strategies. Finally, I discuss the results, implications, and future directions.

Emotion and Emotion Regulation

Current research on emotions emphasizes their adaptive value; emotions provide valuable information to help us survive and thrive in changing environmental conditions (Frijda, 1986). Although researchers' definitions of emotions varies, most agree that the affective system enables us to quickly appraise and respond to internal and environmental situations and stimuli that are relevant to our short-term and long-term personal needs and goals (Cole, Martin, & Dennis, 2004). Our emotional system efficiently processes experiences, determines their personal significance, and activates relevant emotions to respond to the situation (Levenson, 1999). This multimodal emotional system entails a cascade of effects, including changes in physiology, subjective feelings, action tendencies, and cognitions (Gross & Thompson, 2007). When a physical threat is detected, for example, our emotional system causes physiological changes (e.g., activation of the hypothalamic-pituitary-adrenal axis), subjective feelings of fear, urges to escape, and thoughts related to these feelings and urges.

The activation created by an emotion may not always serve our best interest, however, and frequently we need to modify or change our emotions in some way. Two-level theories of emotion posit that we have a higher control system that continuously shapes, influences, and regulates our emotional responses (Levenson, 1999; Gross & Thompson, 2007). This process of *emotion regulation* is theorized to be intertwined with, but separate from, the emotional response system (Gross & Thompson, 2007). Gross's process model of emotion regulation encompasses intrinsic or extrinsic strategies that change the "emotion dynamics, or the latency, rise time,

magnitude, duration, and offset of responses in behavioral, experiential, or physiological domains" (Gross & Thompson, 2007, p. 8). The strategies used in emotion regulation can be conscious, effortful, and controlled or unconscious, effortless, and automatic (Masters, 1991). Individuals can attempt to influence their emotional responses at any time during the affective process, and may even attempt to prevent emotion arousal from occurring in the first place (Compas, Frankel, & Camras, 2004).

Emotion regulation is often focused on increasing one's experience of positive emotions (e.g., feeling enthusiastic, excited, attentive, alert) and decreasing one's experience of negative emotions (e.g., feeling nervous, ashamed, scared, upset) (Watson, Clark, & Tellegen, 1988); these concepts are not opposite ends of a unitary dimension, but rather they are distinct dimensions that typically demonstrate low correlations with one another (Cacioppo & Berntson, 1999; Watson & Clark, 1997; Watson, et al., 1988). A wide variety of strategies are used to regulate these emotions, including behavioral (e.g., situation selection and situation modification) as well as cognitive strategies (e.g., attentional deployment and cognitive reappraisal) (Gross & Thompson, 2007). Because cognitive processes play a central role in emotions, cognitive strategies can be especially vital in the emotion regulation process. In order for an emotional cue to give rise to an emotion, a person must first attend to the cue and interpret or appraise it; both of these cognitive processes influence what emotional response will be elicited (Lazarus, 1999). Cognitive strategies have been shown to be crucial for improving the emotional state through changes in attention, interpretation, and memory (Rothaum, Weisz, & Snyder, 1982). The close relationship between cognitive processing and emotions implies that there are numerous cognitive strategies that individuals can use to modify their emotional responses (Joormann & D'Avanzato, 2010).

Depression as a Disorder of Emotion Dysregulation

Although major depressive disorder consists of different classes of symptoms (behavioral, cognitive, somatic), it is primarily a disorder of sustained negative affect (American Psychiatric Association, 2013). Persistently depressed or sad mood is one of the major symptoms of depression, while anhedonia, or the loss of pleasure in everyday activities (and thus decreased ability to experience positive mood), is the other core symptom (American Psychiatric Association, 2013). There is abundant evidence to suggest that depressed individuals experience higher levels of negative affect, as well as lower levels of positive affect, than do nondepressed people (Bylsma, Taylor-Clift, & Rottenberg, 2011; Larson, Raffaelli, Richards, Ham, & Jewell, 1990; Myin-Germeys et al., 2003; Peeters, Nicolson, Berkhof, Delespaul, & deVries, 2003; Silk et al., 2011). Measured concurrently, higher levels of negative affect and lower levels of positive affect been shown to be associated with depression severity, clinical diagnoses, and poor long-term prognosis (Clark, Vittengl, Kraft, & Jarrett, 2003; Clark, Watson, & Mineka, 1994; Watson, Clark, & Carey, 1988). Prospective studies on the other hand have shown higher negative affect and lower positive affect to predict future depressive episodes and depression symptoms (O'Hara, Armeli, Boynton, & Tennen, 2014; Wichers, Peeters, Geschwind, Jacobs, Simons, Derom, Thiery, Delespaul, & van Os, 2010). In addition, higher levels of positive affect have been shown to buffer against the development of depression (Fredrickson, Tugade, Waugh, & Larkin, 2003; Riskind, Kleiman, & Schafer, 2013; Wichers, Jacobs, Derom, Thiery, & van Os, 2008).

It has been postulated that the excessive level of negative affect, as well as low levels of positive affect, seen in depression could result from individual differences in ability to effectively regulate mood (Campbell-Sills & Barlow, 2006; Cole & Kaslow, 1988; Gross &

Munoz, 1995; Kovacs, Joormann, & Gotlib, 2008; Kring & Werner, 2004; Teasdale, Segal, & Williams, 1995), as downregulating negative emotions, including sadness, is a primary focus of emotion regulation (Gross, Richards, & John, 2006). Affective theoriesof depression conceptualize major depressive disorder as resulting from maladaptive attempts to regulate unwanted negative emotions (Cole & Kaslow, 1988; Teasdale, Segal, & Williams, 1995). In this context, effective emotion regulation is defined as the flexible application of strategies that minimize subjective distress and maximize ability to pursue goals in response to emotional cues; maladaptive or ineffective regulation entails strategies that are unsuccessful in reducing unwanted affect and result in long-term costs (Campbell-Sills & Barlow, 2007). Affective theories postulate that when depressed individuals are in a negative mood they choose maladaptive emotion regulation strategies, which result in worsening their affect and symptoms; this pattern of ineffective emotion regulation results in the onset, maintenance, and reoccurrence of depression (Teasdale, Segal, & Williams, 1995).

Research supports the assertion that individuals with depression show poor emotional competence: they struggle to understand their emotions, to react adaptively to their emotions, and to repair negative affect (Campbell-Sills & Barlow, 2007). The more frequent use of maladaptive cognitive emotion regulation strategies, such as suppression and rumination, and the infrequent use of more effective strategies, such as cognitive reappraisal and mood-incongruent recall, are related to symptoms of depression and anxiety (Cambell-Sills, Barlow, Brown, & Hofman, 2006; Garnefski & Kraaij, 2007; Gross & John, 2003). When researchers have measured maladaptive emotion regulation strategies, such as rumination and thought suppression, and followed individuals longitudinally, these strategies are predictive of depression symptoms and depressive episodes months or even years later (Beevers & Meyer, 2004; Just &

Alloy, 1997; Nolen-Hoeksema, 2000; Rude, Wenzlaff, Gibbs, Vane, Whitney, 2002; Wenzlaff & Luxon, 2003). Depression also seems to affect the knowledge of effective strategies and motivation to implement these strategies (Campbell-Sills & Barlow, 2007; Kring & Werner, 2004). Depressed individuals often do not know what techniques will be effective in regulating their mood and they frequently lack the ability to use effective techniques. In addition, depressed individuals tend to endorse beliefs that maladaptive emotion regulation strategies are effective in helping to regulate their mood (Gross, 1998; Papageorgiou & Wells, 2001; Watkins & Baracaia, 2001).

Some clinical features of major depressive disorder can be conceptualized as maladaptive attempts to regulate emotions (Campbell-Sills & Barlow, 2007). For example, depression is characterized by social withdrawal and a decrease in activity, which some have theorized may come from adaptive functions, including conservation of resources following a loss (Beck, 1972) or as an attempt to provoke empathetic responses from others (Barnett, King, & Howard, 1979). In this way individuals with depression may be trying to select and modify situations in such a way that they expect will minimize unwanted emotions while giving rise to desirable emotions (Gross & Thompson, 2007). However, although individuals with depression may guess that social activity could worsen their sad feelings, in actuality social *withdrawal* decreases positive affect, worsens mood, and can worsen depression (Campbell-Sills & Barlow, 2007). Treatment research that uses behavioral activation has been shown effective in reducing depression symptoms (Hopko et al., 2003; Jacobson, Martell, & Dimidjian, 2001), supporting the idea that social withdrawal is a maladaptive method of affective regulation.

Similarly, rumination is a hallmark feature of depression which involves individuals negatively self-focusing on symptoms and causes of negative mood (Nolen-Hoeksema &

Morrow, 1993). Individuals with depression have reported the belief that engaging in rumination facilitates their problem-solving of personal issues and prevents problems in the future (Papageorgiou & Wells, 2001; Watkins & Baracaia, 2001). However, research has shown that ruminating ultimately leads to no resolution and results in worsening of mood and depression symptoms (Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Thomsen, 2006). Cognitive-behavioral and acceptance-based treatments have shown that reducing rumination levels is a major catalyst in preventing and treating depression (Jacobson et al., 1996; Teasdale, 1985; Teasdale, Segal, & Williams, 1995).

In sum, research supports the idea that depressed individuals often make counterproductive attempts at emotion regulation through the selection of maladaptive strategies and the infrequent use of effective strategies, which leads to the persistence and worsening of negative affect and depression symptoms. A key component of affective models is not only that poor emotion regulation is characteristic of depression, but also that emotion regulation is *causally-related* to depression onset and reoccurrence. Research is needed to determine how maladaptive emotion regulation strategies may confer vulnerability. If poor emotion regulation strategies act as a risk factor for depression, as suggested by affective models of depression, maladaptive strategies should be present during, following, and prior to episodes. If, however, poor emotion regulation in response to a negative mood is merely a symptom of depression, maladaptive emotion regulation should be apparent only during episodes, and should return to normal ranges once depression has remitted.

Emotion and regulating emotion in remitted depressed individuals. One group of individuals who have been defined as “at-risk” are those who have at least one prior episode of depression; research shows that over 50% of depressed patients relapse within 2 years of

recovery and over 80% of depressed patients experience more than one depressive episode (Eaton et al., 2008; Gotlib et al., 1997; Hollon & Shelton, 2001; Kessler, 2002). Clearly individuals who have experienced a depressive episode are vulnerable to the onset of another (Ingram, Atchley & Segal, 2011; Ingram et al., 1998). Remitted depressed individuals have greater levels of negative affect and lower levels of positive affect, especially in reaction to negative life events or a negative mood prime (O'Grady, Tennen, & Armeli, 2010; O'Hara et al., 2014; van Winkel et al., 2015), and the presence of this pattern of affect is predictive of depression symptoms in this population (Wichers et al., 2010). Research also supports the idea that individuals continue to struggle with emotion regulation after recovering from a depressive episode. Previously depressed individuals have reported experiencing more difficulties regulating their emotions, less of a sense of control over their emotions, and more frequent use of maladaptive emotion regulation strategies than never-depressed controls (Ehring, Fischer, Schnulle, Bosterling, & Tuschen-Caffier, 2008). Individuals with a past episode of depression also express more uncertainty regarding their emotion regulation abilities (Wenzlaff, Rude, & West, 2002), and longitudinal research shows that depressed individuals continue to use maladaptive emotion regulation strategies even after the depressive episode has remitted (D'Avanzato, Joormann, Siemer, & Gotlib, 2013).]

Emotion and regulating emotion in children of depressed parents. Individuals with a parental history of depression also are vulnerable to developing depression themselves. Research has shown that offspring of depressed parents are at heightened risk of psychopathology, including depression (Downey & Coyne, 1990; Gelfand & Teti, 1990; Goodman & Gotlib, 2002; Hammen, 2009; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997). Having a parental history of depression is associated with greater levels of negative affect and less positive

affect (Dietz et al. 2008; Silk et al. 2006; Tarullo et al. 1994), In addition, for those with this vulnerability, the presence of positive affect may act as a buffer against future depressive episodes (Jaser, Champion, Dharamsi, Riesing, & Compas, 2011).

Individuals who have at least one depressed parent have also been shown to differ in emotion regulation from individuals without this history, starting early in development. Fetuses and infants of depressed mothers show greater physiological reactivity to stress and more negative affect than children without this vulnerability (Field, 1992). Older children with a parental history also show greater emotional arousal to hypothetical stressful situations than controls (Zahn-Waxler, Kochanska, Krupnick, & McKnew, 1990). Having at least one parent, especially a mother, who has had at least one episode of depression is also predictive of poor emotional functioning and competence in offspring (Garber, Braafladt, & Zeman, 1991; Silk, Shaw, Skuben, Oland, & Kovacs, 2006), and depressed mothers are more likely to report that their children have emotional problems (Mazure & Keita, 2006). When children and their mothers are presented with hypothetical emotion-eliciting situations and asked to create strategies for how to handle them, children with depressed mothers tended to list fewer and less effective strategies (Garber et al., 1991). In addition, young children with depressed mothers are more likely than children of controls to engage in passive waiting and less likely to use distraction to regulate mood (Silk et al., 2006). When children with depressed parents engage in maladaptive cognitive emotion regulation strategies, such as rumination and thought suppression, this is predictive of higher depression levels (Langrock, Compas, Keller, Merchant, & Copeland, 2002). It is clear from the literature that having a depressed parent is associated with poor emotion regulation which in turn heightens vulnerability to depression.

The mechanisms by which having a parental history of depression confers risk are not clear. One possibility is that variants in genes are biological-predisposing vulnerability (Goodman & Tully, 2008); for example, there is preliminary evidence that a ruminative response style has a significant genetic loading (Chen & Li, 2013) and may partially arise from a variation on a single nucleotide polymorphism in the brain-derived neurotropic factor (BDNF) gene (Hilt, Sander, Nolen-Hoeksema, & Simen, 2007). Another theory is that parents impact the development of these strategies through socialization practices. Evidence shows that parents are highly influential in children's developing emotion regulation processes, such as through behavioral interventions and teaching cognitive strategies (for review, see Brenner & Salovey, 1997). A parent's reaction to a child's emotions also impacts their children's emotional coping. Considerable research has demonstrated that when parents respond supportively and empathetically to the emotional expressions of children, children are able to cope more adaptively with their emotions and show more positive emotion regulation outcomes (for review, see Eisenberg, Cumberland, & Spinrad, 1998).

In sum, this research shows that difficulties in emotion regulation may be characteristic of those at-risk for depression and could confer depression vulnerability (Joormann et al., 2009). Much still remains unknown about the mechanisms by which difficulties in emotion regulation confer depression vulnerability, but the area of cognitive functioning in regulating emotions shows promising results. Relevant cognitive strategies, and how they function for individuals at risk for depression, are discussed next.

Cognitive Emotion Regulation Strategies in Individuals at Risk for Depression

Cognitions are an integral part of emotions, and correspondingly cognitive strategies play a key role in maintenance and modulation of mood. There are numerous strategies by which

thinking can affect emotions, including thought suppression, cognitive reappraisal, rumination, attention control, positive memory recall, worrying, affect labeling, catastrophizing, and distraction. This study will focus on the first three strategies. There are three main reasons for choosing these particular strategies: 1) these strategies have been extensively examined in the fields of emotion regulation and depression vulnerability, 2) these strategies represent conscious and voluntary attempts to regulate mood, and 3) there is a relative clarity and distinctiveness in the field regarding the operational definitions of these strategies.

Rumination. Depressed individuals and those at risk for depression frequently fixate on emotionally salient cues (Gotlib & Joorman, 2010; Just & Alloy, 1997). *Rumination* involves repetitively directing attention towards "negative mood, the causes and consequences of negative mood, and self-evaluations related to the mood" (Rusting & Nolen-Hoeksema, 1998, p. 790). Nolen-Hoeksema (1991) has suggested that some individuals may chronically ruminate as a way to cope with negative affect, called a *ruminative response style*. The use of this response style, which is theorized to be stable and consistent over time (Just, & Alloy, 1997; Nolen-Hoeksema & Davis, 1999), may be partly explained by depressed and depression-prone individuals' beliefs regarding the efficacy of rumination; as discussed previously, individuals who engage in rumination, including individuals with depression, frequently report that they ruminate in order to increase self-awareness, problem-solve issues, and prevent future mistakes (Papageorgiou & Wells, 2001; Watkins & Baracaia, 2001). As noted however, rumination has been shown to have little adaptive value; individuals who ruminate while in a dysphoric mood find it difficult to come up with solutions to their problems and have trouble acting on any solutions (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Nolen-Hoeksema et al., 2008). Rumination seems to actually be a barrier to effective problems-solving by focusing

attention on negative thinking in a pessimistic and passive manner (Nolen-Hoeksema et al., 2008).

Rumination has been shown to be associated with numerous negative outcomes. In community and laboratory studies involving nonclinical population, ruminative response styles have been shown to increase negative affect and decrease positive affect (for reviews, see Mor & Winquist, 2002; Thomsen, 2006). In both prospective samples, which examined naturally-occurring rumination, and experimental studies, in which a ruminative response is induced, rumination is predictive of the level, duration, and severity of dysphoria, anger, and anxiety (Nolen-Hoeksema et al., 2008; Roberts, Gilboa, & Gotlib, 1998; Rusting & Nolen-Hoeksema, 1998; Sarin, Abela, & Auerbach, 2005). In addition, when ruminative responses are induced, individuals report more dysfunctional cognitive biases, such as increased recall of negative autobiographical memories (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1999), catastrophizing problems (Lyubomirsky et al., 1999), and showing a pessimistic outlook for the future (Lyubomirsky & Nolen-Hoeksema, 1995). Rumination is clearly a maladaptive and ineffective emotion regulation response to negative affect.

There is a preponderance of evidence to suggest that rumination plays a large role in the onset and maintenance of depression (for review, see Nolen-Hoeksema et al., 2008). Numerous studies have shown that rumination leads to an exacerbation of depression symptoms and is predictive of the level, severity, and duration of depressed mood and depression symptoms (Garnefski, & Kraaij, 2006; Just & Alloy, 1997; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema, & Morrow, 1991; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). When depressed individuals are induced to ruminate, they show more negative thinking about themselves and the future than a non-ruminating depressed sample

(Lavender & Watkins, 2004; Rimes & Watkins, 2005). A ruminative response style prior to undergoing depression treatment has been shown to be positively correlated to depression symptoms at the end of treatment (Schmaling, Dimidjian, Katon, & Sullivan, 2002). Longitudinal research has demonstrated that rumination predicts 1-2 year later the onset of depression episodes in nondepressed individuals (Just & Alloy, 1997; Nolen-Hoeksema, 2000), and a ruminative response style mediates the effect of other depression risk factors, such as self-criticism, neuroticism, neediness, hopelessness, and dysfunctional attitudes, in predicting future episodes (Ito & Agari, 2002; Nolan, Roberts, & Gotlib, 1998; Sarin et al., 2005; Spasojevic & Alloy, 2001). Clearly the use of rumination as a cognitive emotion regulation strategy is a major risk factor in the onset and maintenance of depressed mood and major depressive disorder.

Empirical data support the assertion that individuals who have had one episode of depression continue to use rumination as a cognitive emotion regulation strategy, and that the use of rumination is a risk factor for developing another depressive episode. In a longitudinal study that followed nondepressed individuals with and without a history of depression for 2.5 years, rumination was shown to mediate the predictive relationship between have a past depressive episode and having future depressive episodes (Spasojevic & Alloy, 2001). Similar results were found when nondepressed individuals who had been recently treated for depression were followed for a month (Kuehner & Weber, 1999). When induced to ruminate, remitted-depressed individuals show impairment in their problem-solving ability, making them resemble currently-depressed individuals more than the never-depressed individuals (Watkins & Baracaia, 2002). This lends evidence to the theory that a ruminative response style may be a key mechanism by which having a past episode of depression confers vulnerability.

There is some evidence that individuals with a parental history of depression appear to engage in a ruminative response style more so than individuals without this history. Alloy and colleagues (Alloy, Abramson, Gibb, Crossfield, Pieracci, Spasojevic, & Steinberg, 2004) reviewed findings from the Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project, a prospective longitudinal study, and found that the children of parents who had experienced depression were more likely to have a ruminative response style than children without this history. There is also some evidence that parents with a history of depression may engage in co-rumination with their children, which has been associated with adolescent depression and anxiety (Calmes & Roberts, 2008; Waller & Rose, 2009). Similarly, Grimbos and colleagues (Grimbos, Granic, & Pepler, 2013) found that maternal depression symptoms significantly predicted higher rates of co-rumination, which were correlated to child depression symptoms. It is unclear exactly how have a parent with depression may contribute to a ruminative response style, but there are several possibilities. Rumination has been shown to be associated with negative parental variables, including overcontrolling parenting and childhood maltreatment, and having a ruminative response style mediated the relationship between these risk factors and developing a depressive episode (Spasojevic & Alloy, 2002). As discussed previously, there is also some evidence that genes may play a role in rumination development (Chen & Li, 2013; Hilt et al., 2007). In sum, it is clear from the field that a ruminative response style to emotional stimuli is not only characteristic of those with depression, but also a major vulnerability factor for at-risk individuals.

Thought suppression. *Thought suppression* involves inhibiting one or more unwanted thoughts (Wegner, Schneider, Carter, & White, 1987). The goal of suppression is to reduce or inhibit unwanted emotions, such as sadness or anxiety, by blocking associated thoughts.

Contrary to this goal, suppression has been shown to have no impact on the experience of negative emotions and can actually lead to an increase in emotional arousal (Gross, 1998). Moreover, thought suppression has been shown to produce a paradoxical effect: the more one tries to suppress a thought, the more salient and accessible a thought becomes (Beevers, Wenzlaff, Hayes, & Scott, 1999; Trinder & Salkovskis, 1994; Wegner et al., 1987). For example, researchers have frequently studied this phenomenon by introducing a stimulus, instructing participants to not think of this stimulus, and then measuring their success at suppression. Research has consistently found that attempts to block thoughts leads to an increase in those thoughts (for reviews, see Abramowitz, Tolin, & Street, 2001; Wenzlaff & Wegner, 2000).

Thought suppression is associated with numerous negative mental health outcomes. In laboratory and community studies, this strategy results in healthy adults reporting an increase in intrusive thoughts and verbalizations of both the stimuli and associated negative thoughts (Trinder & Salkovskis, 1994; Wegner et al., 1987). In addition, when non-clinical individuals are given a negative mood induction and instructed to use thought suppression, they subsequently experienced an increase in availability of negative thoughts (Beevers & Meyer, 2008; Dalgleish, & Yiend, 2006; Wenzlaff & Luxton, 2003). The habitual use of thought suppression is correlated with overall lower levels of positive affect, overall higher levels of negative affect, and a poorer sense of well-being (Borton, Markowitz, & Dieterich, 2005; Gross & John, 2003). Therefore, thought suppression seems to be an ineffective and maladaptive emotion regulation strategy for reducing unwanted emotions.

The use of thought suppression is clearly linked to depression and depression symptoms. Individuals in a depressive episode often spend considerable time attempting to inhibit negative thinking (Wenzlaff & Bates, 1998; Wenzlaff & Wegner, 2000). However, because depressed

individuals often concurrently distract themselves with negatively-valenced thoughts, the individual may quickly experience a resurgence of the original negative material (Wenzlaff, Wegner, & Roper, 1988). This may lead to a vicious cycle of heightened negative thoughts and increasing attempts to suppress them. Because of this pattern of thinking, it has been suggested that the use of thought suppression may prolong or worsen depression symptoms (Wenzlaff & Wegner, 2000). This is supported by research that shows that thought suppression is predictive of future depression levels; in the first study to examine thought suppression prospectively, researchers found that the level of thought suppression at the beginning of the study predicted depression levels measured 4-6 weeks later, independent of current or past depression symptoms (Rude et al., 2002). In addition, when individuals are measured in thought suppression levels and followed longitudinally, those with higher life stress who engaged in more thought suppression had higher levels of depression symptoms and rumination 7-10 weeks later (Beevers & Meyer, 2004; Wenzlaff & Luxon, 2003). Thought suppression is clearly a characteristic of, and a predictive factor for, a major depressive episode.

Use of thought suppression as a cognitive emotion regulation strategy is also characteristic of those who have experienced a past depressive episode. Formerly depressed individuals have been shown to spontaneously engage in thought suppression when a sad mood has been induced, even if though suppression was ineffective for reducing their negative emotions (Ehring, Tuschen-Caffier, Schnulle, Fischer, & Gross, 2010). Similarly, Wenzlaff, Rude, and West (2002) used a self-report questionnaire to measure thought suppression and found that not only do formerly depressed individuals engaged in thought suppression at a higher level than never-depressed controls, but also that higher levels of thought suppression were associate with a more severe previous episode. Numerous studies that have examined this

population have used a cognitive load, such as a concurrent memory task, in order to interfere with the effortful mental control that goes in to active thought suppression and measure the underlying negative thinking (Wenzlaff & Wegner, 2000). Studies that have used this procedure have found that, not only do previously depressed individuals use thought suppression at higher rates that never-depressed controls, but individuals with a previous history of depression show a bias towards negative words and phrases when given a cognitive load, making them resemble currently-depressed individuals more than the never-depressed individuals (Watkins & Moulds, 2007; Wenzlaff & Bates, 1998; Wenzlaff, & Eisenberg, 2001; Wenzlaff, Rude, Taylor, Stultz, & Sweatt, 2001). In addition, level of thought suppression is positively correlated with level of negative thinking when a cognitive load procedure is used (Wenzlaff & Bates, 1998), which fits with research showing the rebound effect of thought suppression. These findings support the idea that formally-depressed individuals may be using thought suppression chronically in an effort to inhibit other maladaptive forms of thinking, such as rumination (Beevers et al., 1999).

To date, there has only been one study that examined the role of thought suppression as an emotion regulation strategy for individuals with a parental history of depression. Carew Milne, Tatham, MacQueen, and Hall (2013) assessed the neurocorrelates of thought suppression in a group of young women with a parental history of depression. When instructed to suppress negative thoughts and measured regarding how successful this effort was, the participants showed considerably more intrusive thoughts than never-depressed controls and showed neural activation similar to individuals who were currently depressed (Carew et al., 2013). It is unclear from this one study through what mechanisms parents may be conferring risk, but some have postulated that parents may indirectly develop thought suppression as an emotion regulation strategy through restrictiveness of negative emotions (Wenzlaff, & Eisenberg, 1998). In

summary, there is clear evidence that thought suppression is a maladaptive emotion regulation strategy that is used habitually by both depressed and at-risk groups, and, in a non-clinical population, chronic use of thought suppression is a predictive factor in future depressive episodes.

Cognitive reappraisal. The meaning we place on a situation has a substantial impact on our emotional response to it. How we interpret an internal or external emotional cue determines its significance and is ultimately what shapes our experience of an emotional event (Ellsworth & Scherer, 2003). Research shows that when individuals are all exposed to the same event, they report a range of emotional experiences based on their varying appraisals (Siemer, Mauss, & Gross, 2007). There are numerous appraisal dimensions that influence emotional reaction to events, including importance, expectedness, responsibility, and degree of controllability (Ortony, Core, & Collins, 1988). It stands to reason that by changing our appraisal of a situation we can modify our emotional response to it. *Cognitive reappraisal* involves changing the meaning of an emotional cue through reinterpretation, distancing, and modulating personal relevance in order to influence an emotion (Gross, 2002; Ochsner & Gross, 2008). Reappraisal consists of numerous cognitive processes that occur early in the affective process in order to impact the processing of further emotional stimuli (Gross, 1998). Children begin to use reappraisal of emotions at a young age to regulate their unwanted emotions (Cole, Bruschi, & Tamang, 2002). Although reappraisal can occur after the emotion event (response-focused), research shows that this use tends to be less successful at attenuating negative affect than when reappraisal is used in advance of emotion-provoking situations (antecedent-focused) (Gross, 1998; Sheppes & Gross, 2011).

Research has consistently shown cognitive reappraisal is an effective emotional regulation strategy for achieving emotional control (Gross, 1998; Gross & John, 2003).

Cognitively reappraising an emotional stimulus decreases its emotional impact, decreases emotional arousal, decreases subjective feelings of distress, and increases tolerance of negative affect (Augustine & Hemenover, 2009; Denson et al., 2012; Gross, 1998; Gross, 2002; Ochsner, Bunge, Gross, & Gabrieli, 2002). In addition, individuals who habitually use reappraisal as an emotion regulation strategy are higher in overall positive affect, lower in overall negative affect, and reported a greater sense of well-being than individuals who do not use this strategy (Gross & John, 2003). The use of cognitive reappraisal is also negatively correlated with rumination and thought suppression, two strategies that are maladaptive for regulating emotions (Ehring et al., 2010), and reappraisal has been shown to be less cognitively taxing than suppression (Egloff, Schmukle, Burns, & Schwerdtfeger, 2006; Richards & Gross, 2000). Cognitive reappraisal facilitates the retrieval of positive autobiographical memories, which is important for repairing negative affect and combating the effects of rumination (Wisco & Nolen-Hoeksema, 2010). Because of this research, reappraisal had been viewed as a relatively adaptive strategy that is useful in successfully reducing unwanted negative affect.

Research has demonstrated that individuals who have been diagnosed as depressed endorsed using cognitive reappraisal less frequently than non-depressed controls (Joormann & Gotlib, 2010; Nolen-Hoeksema et al, 2008). When questionnaires were used to assess the cognitive emotion regulation strategies used in a clinical population, depressed individuals reported less frequent use of reappraisal than never-depressed controls (D'Avanzato et al., 2013). Garnefski and Kraaij (2006) studied the relationship between depression symptoms and a variety of cognitive emotion regulation strategies, including cognitive reappraisal, in psychiatric and community samples across the lifespan and found that use of cognitive reappraisal was negatively correlated with depression symptoms. These same results were recently replicated

with a clinical Chinese population (Lei, Zhang, Cai, Wang, Bai, & Zhu, 2014). Individuals currently experiencing depression symptoms also spontaneously use reappraisal less than controls, but when instructed to use cognitive reappraisal, both groups were able to do so effectively (Quigley & Dobson, 2014). This suggests that depressed individuals are able to use cognitive reappraisal to regulate their mood, but they may lack the motivation or desire to do so.

There have only been a few studies that have examined reappraisal in at-risk populations, and the evidence is mixed regarding whether remitted-depressed individuals show a lack of use of cognitive reappraisal as an emotion regulation strategy. There is evidence that formerly depressed individuals spontaneously used cognitive reappraisal less than nondepressed controls during a sad mood induction (Ehring et al., 2010). However, not all studies have supported the link between lack of cognitive reappraisal and vulnerability for individuals with a past history of depression. Ehring and colleagues (2008) compared remitted-depressed individuals to never depressed controls and found that, although they did differ in regarding to rumination, there was no difference between the two groups on use of positive reappraisal. Similarly, D'Avanzato and colleagues (2013) found that previously-depressed individuals differed from never-depressed controls in level of rumination, but not in endorsement of reappraisal as an emotion regulation strategy.

Although there is a relative scarcity of studies that have examined cognitive reappraisal in children of depressed parents, the research so far is supportive of the hypothesis that a parental history of depression is negatively correlated with the use of cognitive reappraisal to regulate mood. One study reported a lack of positive reappraisal in never disordered daughters of depressed mothers following a negative mood induction (Dearing & Gotlib, 2009). Similarly, Dunbar and colleagues (Dunbar, Mckee, Rakow, Watson, Forehand, & Compas, 2013) examined

the effect of several styles of coping, including positive coping styles similar to cognitive reappraisal, on depression symptoms in children of depressed parents and found that efforts to change emotions were significantly negatively correlated with children's depression symptoms. It is clear from the current research that cognitive reappraisal is an effective and adaptive emotion regulation strategy that is used by never-depressed people more so than depressed individuals, and there is some evidence to suggest that depression-vulnerable individuals show a similar pattern.

To summarize the research, there is clear support for the idea that depressed individuals make counterproductive attempts at emotion regulation through the use of maladaptive cognitive strategies and the infrequent use of effective strategies. As such, this leads to the persistence and worsening of negative affect, low levels of positive affect, and depression symptoms. Similarly, depression-vulnerable individuals show dysfunctional emotion regulation, high levels of negative affect, and low levels of positive affect.

Mindfulness

Mindfulness is defined as purposeful, present-center awareness involving a nonjudgmental stance (Kabat-Zinn, 1990; Kabat-Zinn, 1994). The concept of mindfulness was adapted from a Buddhist philosophy in which attention is focused on present sensations, thoughts, emotions, and experiences; alternatively, *mindlessness* is the opposite of mindfulness during which thoughts purposelessly wander from the present or introducing judgment into thinking. A considerable amount of research has focused on measuring the associations between trait or dispositional mindfulness and psychological functioning; other research has examined how mindfulness may be increased through interventions (for review, see Keng, Smoski, &

Robins, 2011). Mindfulness training views mindfulness as a skill or habit that must be cultivated through a practice known as mindfulness meditation (Chambers, Gullone, & Allen, 2009).

Trait mindfulness, which is mindfulness that is temporally consistent, has been shown in numerous studies to be associated with psychologically health and positive outcomes (for reviews, see Brown & Ryan, 2003; Keng, Smoski, & Robins, 2011). In mostly community and college samples, mindfulness has been associated with high levels of self-esteem (Rasmussen & Pidgeon, 2011), empathy (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008), optimism (Brown & Ryan, 2003), self-compassion (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), emotional intelligence and competence (Baer et al., 2006; Brown & Ryan, 2003), positive affect (Brown & Ryan, 2003), and life satisfaction (Brown & Ryan, 2003). Mindfulness is also related to lower instances of automatic thoughts (Frewen, Evans, Maraj, Dozois, & Partridge, 2008) and increased ability to sustain attention (Schmertz, Anderson, & Robins, 2009).

Because of the benefits of mindfulness, researchers have developed numerous evidence-based psychotherapy treatments that incorporate mindfulness meditation as a learned skill. Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1982, 1990), Dialectical Behavior Therapy (DBT; Linehan, 1993), Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), all use exercises and practice to develop mindfulness skills (for reviews, see Baer, 2003; Keng et al, 2011). The most widely used mindfulness treatment, MBSR, was first developed as group-based treatment for stress in pain populations (Kabat-Zinn, 1982; Kabat-Zinn, 1990). MBSR uses mindfulness meditation exercises to build greater awareness and understanding of physiological and psychological experiences. MBSR has since been adapted for use with a wide-variety of populations, including community samples (Anderson, Lau, Segal, &

Bishop, 2007; Williams, Kolar, Reger, & Pearson, 2001), college students (Oman, Shapiro, Thoresen, Plante, & Flinders, 2008), medical students (Shapiro, Schwartz, & Bonner, 1998), individuals with generalized anxiety disorder (Koszycki, Benger, Shlik, & Bradwejn, 2007), fibromyalgia patients (Sephton et al., 2007), MS patients (Grossman et al., 2010), cancer patients (Branstrom, Kvillemo, Brandberg, Moskowitz, 2010; Speca, Carlson, Goodey, & Angen, 2000), and adolescent psychiatric outpatients (Biegel, Brown, Shapiro, & Schubert, 2009). Randomized controlled trials (RCTs) of MBSR have found it to be effective in increasing positive affect (Anderson et al., 2007; Branstrom et al., 2010; Nyklicek & Kuijpers, 2008), trait levels of mindfulness (Anderson et al., 2007; Shapiro et al., 2008; Nyklicek & Kuijpers, 2008), empathy (Shapiro et al., 1998), self-compassion (Shapiro et al., 2005), life satisfaction, and quality of life (Grossman et al., 2010; Koszycki et al., 2007; Nyklicek & Kuijpers,2008; Shapiro et al., 2005), while decreasing self-reported levels of anxiety (Anderson et al., 2007; Shapiro et al., 1998), perceived stress (Astin, 1997; Branstrom et al., 2010; Nyklicek & Kuipers, 2008; Oman et al., 2008; Shapiro et al., 2005; Speca et al., 2000; Williams et al., 2001), post-traumatic avoidance symptoms (Branstrom et al., 2010), and medical symptoms (Williams et al., 2001).

Mindfulness and Depression

Research has shown a clear negative association between dispositional levels of mindfulness and depression (Brown & Ryan, 2003; Cash & Whittingham, 2010). Trait mindfulness has also been shown to be negatively correlated with specific symptoms of depression, including rumination (Raes & Williams, 2010) and difficulty concentrating (Herndon, 2008), as well variables closely linked with depression such as neuroticism (Dekeyser et al., 2008; Giluk, 2009), cognitive reactivity (Raes, et al., 2009), social anxiety (Brown & Ryan, 2003; Rasmussen & Pidgeon, 2011), and experiential avoidance (Baer, Smith, & Allen,

2004). MBSR has been found to reduce self-report levels of depression (Anderson et al., 2007; Grossman et al., 2010; Koszycki et al., 2007; Sephton et al., 2007; Shapiro et al., 1998; Speca et al., 2000), anger (Anderson et al., 2007), rumination (Anderson et al., 2007; Jain et al., 2007), and cognitive disorganization (Speca et al., 2000). Similarly, a modified version of DBT has been used to successfully treat depressed older adults (Lynch, Morse, Mendelson, & Robins, 2003) and individuals with co-morbid depression and borderline personality disorder (Lynch, Trost, Salsman, & Linehan, 2007). ACT has also been used with depressed individuals and been shown to be superior to no intervention, and as effective as cognitive therapy (CT) in reducing levels of depression and poor mental health outcomes and increasing life satisfaction (Bond & Bunce, 2000; Forman et al., 2007; Lappalainen et al., 2007; Zettle & Hayes, 1986; Zettle & Rains, 1989).

Mindfulness in Individuals At-Risk for Depression

Mindfulness has been understudied in at-risk populations; there appears to be no study to date that has examined mindfulness in individuals with a parental history of depression, or trait mindfulness in individuals with a prior history of depression. The only studies that examine mindfulness and formerly-depressed individuals are studies examining the efficacy and effectiveness of MBCT to prevent depression relapse. MBCT is a group intervention program in which mindfulness meditation is incorporated into existing CT interventions for depression. The goal of the treatment is to prevent relapse in those who have experienced a previous depressive episode by disrupting automatic, negative thought processes (Barnhofer, Crane, & Didonna, 2009). The creators of the treatment program argue that automatic negative self-referent thoughts characterize the thinking of those who have experienced at least one episode of depression; these

automatic thoughts increase negative affect, and can, in the long-term, increase depressed mood and lead to another depressive episode (Teasdale, Segal, & Williams, 1995).

A meta-analysis of 11 RCTs of MBCT shows the program to be efficacious in preventing relapse in formerly-depressed adults (Galante et al., 2012). After one year of follow-up, formerly-depressed adults, defined as individuals with at least three previous episodes, showed a 40% reduction in relapse compared to TAU. In addition, formerly-depressed individuals report higher quality of life and life satisfaction following the treatment (Kuyken et al., 2008). A recent study also showed this treatment to be effective in reducing depression and rumination in adolescents who showed residual depression symptoms following CT (Ames, Richardson, Payne, Smith, & Leigh, 2014). MBCT has also recently been adapted into a web-based program, although the effectiveness of this form of treatment has not yet been thoroughly explored (Boggs, Beck, Felder, Dimidjian, Metcalf, & Segal, 2014).

In sum, trait levels of mindfulness and mindfulness meditation treatments are clearly positively associated with psychological health, including positive affect, and negatively associated with negative affect, depression, and depression symptoms. Few studies have examined mindfulness in those at risk for depression; the studies that have examined this population have used a mindfulness-based treatment with remitted-depressed individuals and have found it to be effective in preventing relapse.

Mindfulness and Emotion Regulation

The exploration of how mindfulness is related to positive outcomes is still in its infancy, but one possibility may be in the realm of emotion regulation. Both trait mindfulness and mindfulness training are clearly related to emotion regulation (for reviews, see Hayes & Feldman, 2004; Hill & Updegraff, 2012). In community samples, there is increasing evidence

that trait mindfulness is associated with lower levels of maladaptive emotion regulation strategies (Baer et al, 2006; Hill, & Updegraff, 2012; Roemer, Lee, Salters-Pedneault, Erisman, Orsillo, & Mennin, 2009). Mindfulness has also been found to relate to emotion regulation in clinical samples. A study that examined hypersexual male patients found that low levels of trait mindfulness was related to high levels of hypersexuality over and above associations with emotion regulation functioning (Reid, Bramen, Anderson, & Cohen, 2014). Similarly, difficulties regulating emotion and low levels of trait mindfulness abilities are correlated in individuals with generalized anxiety disorder (Roemer et al., 2009). In addition, mindfulness-based interventions clearly promote health emotion regulation and decrease maladaptive emotional functioning (Hayes & Feldman, 2004).

Numerous explanations have been offered for why mindfulness affects emotion regulation ability. Mindfulness may improve emotion regulation by simply increasing awareness of emotions in the present moment (Erisman & Roemer, 2010; Goleman, 2003; Nielsen & Kaszniak, 2006), since emotional awareness has been shown to be a key component of adaptive emotion regulation (Gratz & Roemer, 2004). Taking a more mindful stance toward one's experiences and emotions may be helpful in enhancing emotion regulation by limiting emotional reactivity (Linehan, Bohus, & Lynch, 2007). Emotional reactivity refers to the characteristics of emotional responding, including the threshold of stimuli needed to generate emotional response and the intensity of the various components of the emotional response (Davidson, 1998). Mindfulness ability has repeatedly been shown to relate to lower levels of emotional reactivity (Arch & Craske, 2010; Feldman, Greeson, & Senville, 2010; Kuyken et al., 2010; van den Hurk, Janssen, Giommi, Barendregt, & Gielen, 2010). Similarly, mindfulness-based interventions may positively affect emotion regulation by decreasing maladaptive strategies that rely on over-

engagement (e.g., rumination) or under-engagement (e.g., thought suppression) with emotions (Hayes & Feldman, 2004).

Specific cognitive emotion regulation strategies, and how they relate to mindfulness, have also been previously examined in the literature. Reappraisal has been discussed as a possible pathway from mindfulness to positive outcomes (Garland, Gaylord, & Frederickson, 2011; Holzel, Lazar, Gard, Schuman-Oliver, Vago, & Ott, 2011). In a community sample, mindfulness meditation training has been associated with increased positive reappraisal, which mediated associations with stress levels (Garland et al., 2011). How exactly mindfulness affects reappraisal is not clear, but one possibility is that the nonjudgmental stance in mindfulness may reframe negative thoughts and feelings in a way similar to cognitive reappraisal (Chambers et al., 2009; Hill, & Updegraff, 2012).

Rumination has also been shown to relate to levels of mindfulness (Burg & Michalak, 2011; Kumar, Feldman, & Hayes, 2008). As discussed previously, higher levels of trait mindfulness are predictive of lower levels of rumination in community samples (Burg & Michalak, 2011; Feldman et al., 2010; Raes & Williams, 2010) and MBCT and MBSR have been shown to be effective in reducing rumination levels in clinical and community populations (Anderson et al., 2007; Campbell, Labelle, Bacon, Faris, & Carlson, 2012; Deyo, Wilson, Ong, & Koopman, 2009; Jain et al., 2007) and those with previous depressive episodes (Ames et al., 2014; Kumar et al., 2008). Similarly, rumination levels and mindfulness were shown to mediate the effect of MBCT on recovery from a depressive episode in a community sample (Shahar, Britton, Sbarra, Figueredo, & Bootzin, 2010). There are several ways that mindfulness may be affecting rumination levels. One way is the present moment focus of mindfulness; ruminative thought is inherently anchored in the past, and therefore by staying the present rumination is

curtailed. Another possible mechanism is the nonjudgmental stance in mindfulness. Ruminative thought is laden with self-referential negative statements, which is the antithesis of the nonjudgmental aspect of mindfulness.

Thought suppression has also been found to relate to mindfulness levels (de Bruin, Topper, Muskens, Bogels, & Kamphuis, 2012). Low levels of trait mindfulness are clearly related to higher levels of thought suppression in community and clinical samples (Baer et al., 2006; de Bruin et al., 2012; Erskine, Ussher, Cropley, Elgindi, Zaman, et al., 2012; Garland, & Roberts-Lewis, 2013; Lavender, Jardin, & Anderson, 2009), and thought suppression has been shown to mediate the relationship between trait mindfulness and gambling behavior (de Lisle, Dowling, & Allen, 2014) and substance use (Bowen, Witkiewitz, Dillworth, & Marlatt, 2007). In addition, mindfulness interventions have been shown to reduce levels of thought suppression in community, medical, and clinical populations (Garland, Gaylord, Boettiger, & Howard, 2010; Hepburn, Crane, Barnhofer, Duggan, Fennell, et al., 2009; Keyworth, Knopp, Roughley, Dickens, Bold, et al. 2014; McConachie, McKenzie, Morris, & Walley, 2014). This relationship between mindfulness and thought suppression is not surprising given how mindfulness and thought suppression involve opposite efforts; mindfulness emphasizes experiencing thoughts and emotions without pushing away or changing them, while thought suppression involves attempts to avoid or suppress negatively-valenced thoughts.

Only a few studies have examined how specific emotion regulation functioning may mediate the relationship between mindfulness and depression. Desrosiers, Vine, Klemanski, and Nolen-Hoeksema (2013) examined how levels of trait mindfulness may affect depression and anxiety symptoms in a clinical population. They tested whether rumination, worry, reappraisal, and nonacceptance mediate this relationship, either distinctively or transdiagnostically and found

that both reappraisal and rumination significantly mediated the relationship between mindfulness and depression and anxiety symptoms. Similarly, Desrosiers, Vine, Curtiss, and Klemanski (2014) studied a clinical sample to test whether the mindful tendencies of observing the present moment and nonreactivity had an effect on symptoms of depression and anxiety, and whether they were mediated by rumination, worry, and reappraisal. They found that rumination and reappraisal significantly mediated the indirect effect of observing on symptoms of depression.

Summary of the Literature

Depression, a disorder of sustained negative affect, is conceptualized by affective theories as resulting from maladaptive attempts to regulate unwanted negative emotions (Cole & Kaslow, 1988; Teasdale, Segal, & Williams, 1995). Research supports the assertion that individuals with depression struggle to effectively manage their emotions and experience more negative emotions and less positive emotions than nondepressed people. Poor emotion regulation functioning and this affective pattern are clearly present in those at-risk for depression, as well. Individuals with depression engage in maladaptive cognitive emotion regulation strategies, including rumination and thought suppression, more so than nondepressed individuals and they engage in adaptive strategies, such as cognitive reappraisal, less so than controls; there is also some evidence that those vulnerable to depression have similar patterns of cognitive emotion regulation strategy use, although there is a relative paucity of data on these populations. For both depressed individuals and those at-risk, this pattern of cognitive emotion regulation strategies is clearly linked to more negative affect and less positive affect.

Mindfulness has been shown to be associated with numerous benefits and positive mental health outcomes in community and clinical samples, both by measuring dispositional mindfulness and through mindful interventions. Mindfulness shows a clear negative correlation

with depression, and MBCT, a treatment that incorporate mindfulness, has been shown to be effective in preventing relapse in those with at least three previous depressive episodes (Galante et al., 2012).

Emotion regulation functioning and mindfulness are clearly related, and research supports the positive relationship between mindfulness and cognitive reappraisal and its negative relationship with rumination and thought suppression. Interventions that utilize mindfulness have also shown that mindfulness is causally-related to specific cognitive emotion regulation strategies. Preliminary studies have shown that cognitive emotion regulation strategies may mediate the relationship between mindfulness and depression, but this model has yet to be studied in those with depression vulnerability and has not been expanded beyond defining depression risk through subsyndromal psychopathology.

The Current Study

Trait mindfulness has been shown to be associated with low levels of depression (Keng et al., 2011), and treatments that incorporate mindfulness seem to be effective at preventing depression relapse (Galante et al., 2012), but the mechanisms by which mindfulness may confer protection in vulnerable populations is as of yet unknown. One possible explanation is that mindfulness may affect emotion regulation; according to affective theories of depression, depression onset, maintenance, and reoccurrence are explained through deficits in regulating emotions, such as through the use of maladaptive cognitive strategies. Only two studies to date have used mediation models to examine how mindfulness may affect depression risk through cognitive emotion regulation strategies, and no studies have examined this relationship in at-risk populations or by using trait levels of positive and negative affect to define risk. The current

literature is lacking evidence regarding how trait mindfulness, cognitive emotion regulation strategies, and depression risk are related.

The major aims of this study are to: 1) examine trait mindfulness in at-risk populations, as this has not been previously studied, 2) further explore emotion regulation in at-risk populations by examining multiple cognitive emotion regulation strategies in the same model, 3) examine underlying mechanisms of how mindfulness may impact depression risk. I hypothesized that lower levels of trait mindfulness would be associated with higher levels of dysfunctional emotion regulation, thought suppression, and rumination, and lower levels of cognitive reappraisal; these would in turn be associated with higher levels of negative affect and lower levels of positive affect. In addition, I theorized that lower levels of trait mindfulness would directly relate to higher levels of negative affect and lower levels of positive affect in individual who are vulnerable to depression. To address these aims, individuals at-risk for depression, including those with a parental history of depression and those with a past history of depression, were surveyed using measures that examine mindfulness, various cognitive emotion regulation strategies, and positive and negative affect. A mediation model was then created in which individual differences in trait mindfulness in at-risk populations affected positive and negative affect through cognitive emotion regulation mechanisms.

Method

Participants and Design

Participants were recruited from the popular crowdsourcing web service, Amazon Mechanical Turk (MTurk). Participants were pre-screened using questions from the Beck Depression Inventory-II (BDI-II; Beck, Brown, & Steer, 1996), a modified version of the Family History Screen (FHS; Weismann et al., 2000), and The Inventory to Diagnose Depression,

Lifetime version (IDD-L; Zimmerman & Coryell, 1987). Demographic information, including age and gender, was also gathered. Individuals with current depression, as indicated by a score of 14 or above on the BDI, were not included in the study. The modified version of the FHS assessed whether the participants' parents have ever been depressed, and the IDD-L assessed whether the participants ever had a depressive episode. Only those individuals with at least one vulnerability were included in the analysis. Participants then completed the questionnaires related to mood, mindfulness, and emotion regulation in a random order. Participants were paid $1.00 for their time and completed the study in an average of 32 minutes and 15 seconds.

Of the 435 people who began the study (see Figure 1), 35 quit before signing the consent form, one declined to participate, and 399 signed the consent form. Six individuals quit the study after consenting but before completing at least one question and 13 participants only completed the demographics questionnaire and were excluded from analysis. Forty-five individuals were then excluded for having a BDI score over 14, and 179 more individuals were excluded for neither having a past episode of depression nor a parental history of depression. This left 156 participants in total: 94 participants with a parental history of depression, 23 who were formerly depressed, and 39 individuals with both vulnerabilities.

Measures

The mean and standard deviations for each measure can be found in Table 2.

Depressive symptomatology. The participants were assessed for both current and past depressive symptomatology.

Current depression. The participants were administered the Beck Depression Inventory-II (BDI-II; Beck, Brown, & Steer, 1996) during the study in order to rule out current depression. The BDI-II is a self-report questionnaire used to measure depressive symptomatology and

consists of 21-items, each rated on a 4-point scale. Respondents are asked to read a group of statements and then pick out the one statement in each group that best describes the way they have been feeling during the past 2 weeks. The total range of scores is from 0–63, with higher scores equaling greater depressive symptom severity. Research has indicated test–retest reliability is sufficient and the BDI-II has been found to be valid among nonpsychiatric samples (Beck et al., 1996; Beck, Steer, & Garbin, 1988).

Past depression. In order to assess whether the participant has been depressed in the past, The Inventory to Diagnose Depression, Lifetime version (IDD-L; Zimmerman & Coryell, 1987) was administered. The IDD-L is a 22-item self-report measure in which each item is rated on a 0-3 scale. The scores range from 0 to 96 with a score of 40 or above indicative of a past depressive episode. The respondents are instructed to focus on the week in their life when they felt the most profoundly sad or depressed when filling out the questionnaire. The IDD-L is comparable in validity to the Diagnostic Interview Schedule and has been shown to have good reliability (Zimmerman & Coryell, 1987). A copy of the IDD-L can found in Appendix A.

Parental depression. Participants were administered a modified version of the Family History Screen (FHS; Weismann et al., 2000) to assess for a parental history of depression. The FHS is a 31-question inventory that documents family psychiatric history. It collects information on 15 psychiatric disorders in respondents' first-degree relatives, but for the purposes of this study only the questions pertaining to depression were asked. The test-retest reliability of this measure is adequate and the validity, especially for detecting depression, is high (Weismann et al., 2000). A copy of the modified version of the FHS can be found in Appendix B.

Mood. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegan, 1988) was used to measure mood. The PANAS consists of 20 adjectives that assess positive and

negative affect. Respondents indicated the degree to which they experienced each adjective over the past week using a 5-point Likert scale. Ten items are used to assess each subscale of positive and negative affect. The scores on each subscale range from 10 to 50 with higher scores indicative of greater affect. The PANAS has been shown to have good internal consistency and validity (Crawford. & Henry, 2004) and moderate stability when measured over 56 to 99 months (negative affect r=.43 and positive affect r=.39; Watson & Walker, 1996). A copy of the PANAS can be found in Appendix C.

Mindfulness. Mindfulness was measured using the total scale of The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), a 39-item questionnaire assessing mindfulness in daily life. The FFMQ measures specific dimensions of mindfulness (i.e., nonreactivity, observing, acting with awareness, nonjudging, and describing) as well as overall mindfulness. Items are rated on a 5-point Likert-type scale, ranging from 1 (never or very rarely true) to 5 (very often or always true). To obtain an overall measure of mindfulness, all 39 items are summed, and higher scores reflect higher levels of self-reported mindfulness. The FFMQ has shown moderate-to-high internal consistency in nonmeditators (α = .75– .91; Baer et al., 2006). A copy of the FFMQ can be found in Appendix D.

Emotion regulation. General emotion regulation functioning was measured as well as specific cognitive emotion regulation strategies.

General emotion regulation functioning. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to assess overall emotion regulation functioning. The DERS measures several elements of emotion regulation, including awareness, understanding, and acceptance of emotions as well as ability to act in desired ways regardless of emotional state and access to emotion regulation strategies. Higher scores on the DERS indicate greater

difficulties in emotion regulation. Gratz and Roemer (2004) reported internal consistency of .93 and test-retest reliability of .88 during a 4- to 8-week interval. A copy of the DERS can be found in Appendix E.

Thought suppression. The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994) was used to measure thought suppression. The WBSI is a 15-item self-report measure in which participants rate how often they suppress unwanted thoughts with a 5-point Likert-type scale. The WBSI has been found to be unidimensional in its measure of thought suppression (Muris, Merckelbach, & Horselenberg, 1996). It has a reasonably high internal consistency ($\alpha = 0.83$) and a high retest reliability after an interval of 5 days to 5 weeks ($r=0.86$; Muris et al., 1996). A copy of the WBSI can be found in Appendix F.

Rumination. Rumination was measured with the Ruminative Response Scale (RRS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). A 4-point Likert scale ranging from 1 (never) to 4 (always) is used, and participants rate the frequency with which they use ruminative strategies; higher scores reflect higher frequencies of rumination (Nolan et al., 1998) The RRS has demonstrated high internal consistency ($\alpha =.89$; Nolen-Hoeksema, & Morrow, 1991). A copy of the RRS can be found in Appendix G.

Reappraisal. Reappraisal was measured using the cognitive reappraisal subscale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), which consists of six items assessing ability to positively reframe distressing emotional experience (e.g., “when I want to feel less negative emotion, I change what I’m thinking about”). Participants rate the degree to which they use each strategy using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), and higher scores reflect higher use of reappraisal. The reappraisal subscale has

demonstrated adequate internal consistency (α =.79; Gross & John, 2003). A copy of the ERQ can be found in Appendix H.

Results

Plan of Analysis

Demographic statistical analysis was conducted using SPSS version 23 and structural modeling was conducted using MPlus version 7.4. Analysis focused on testing a mediation model using structural equation modeling (SEM). Each latent construct was first analyzed separately using confirmatory factor analysis (CFA). This was done to establish parcel formation and determine the best fitting subscale model. A CFA of the fit of the full measurement model was established which included all of the latent constructs. Following this, a full mediation model was tested with regression paths from mindfulness to cognitive emotion regulation strategies and from cognitive emotion regulation strategies to positive and negative affect. A partial mediation hypothesis was also tested by examining the effect of mindfulness outside of the effect of emotion regulation. Maximum likelihood estimation was used in all CFA analyses based upon recommendations of its robust performance in a variety of situations (Kline, 2005).

Preliminary Analyses

Participant variables. Demographic and participant characteristics are presented in Table 1. Regarding depression statistics, the average BDI-II score of the sample was 4.93 with a range of 0-13. Of those with a parental history of depression, 64 (48%) reported that their mother had been depressed, 20 (15%) reported their father had been depressed, and 49 (37%) reported both parents had been depressed. Of those with a past history of depression, 17 (27%) had experienced their depressive episode less than one month ago, 15 (24%) had experienced their depressive episode between one month and six months ago, 11 (18%) had experienced their

depressive episode six months to one year ago, and 19 (31%) experienced their depressive period over one year ago. Their depressive periods lasted on average 9 ± 14.8 weeks.

Parcel Formation

A CFA was conducted on each latent variable to determine the appropriate creation of parcels. Each CFA was identified by fixing the latent variances to 1.0. All model fit indices for latent factor CFAs are found in Table 3.

Mindfulness factor structure. The FFMQ consists of 5 subscales that measure Nonreactivity to inner experiences, Observing, Acting with awareness, Nonjudging of inner experiences, and Describing (Baer et al., 2006). Items were parceled by these subscales and the FFMQ showed a poor fit for the data ($\chi^2_{(5,\ n=156)} = 46.39$, $p<.001$; RMSEA = $.23_{(.172\text{-}.293)}$; CFI = .744; TLI = .488; SRMR = .114). It is unclear from the literature why this model fit so poorly, as this five-factor structure has been validated in other studies (Baer et al., 2006; Baer et al., 2008; Bohlmeijer et al., 2011; Christopher, Neuser, Michael, & Baitmangalkar, 2012). Examination of path analyses showed that the estimate for Nonreactivity to inner experiences was not significant ($b^* = .083$, $p = .356$), which may have contributed to the poor fit. By examining the modification indices, it was found that freeing the covariance between Nonreactivity and Observing would improve model fit significantly. Conceptually this modification makes sense; these subscales are measuring very similar concepts. With the freeing of this covariance, the model now fit mediocre ($\chi^2_{(4,\ n=156)} = 20.513$, $p<.001$; RMSEA = $.163_{(.097\text{-}.235)}$; CFI = .900; TLI = .745; SRMR = .076) although the estimate for Nonreactivity continued to be nonsignificant ($b^* = .104$, $p = .244$). It is unclear why Nonreactivity was nonsignificant in this model; a literature review suggests that Observing has been shown to be nonsignificant amongst nonmeditators in the past (Baer, et al., 2008; Williams & Dalgleish, 2014), but Nonreactivity is a well-established subscale of the

FFMQ. A model was also run in which Nonreactivity was not included, and, while this model also fit mediocre ($\chi^2_{(2, n=156)}$ = 14.521, *p*<.001; RMSEA = $.200_{(.112-.303)}$; CFI = .906; TLI = .718; SRMR = .065), it showed significantly worse fit than that with the subscale included ($\chi^2_{(2, n=156)}$ = 5.992, *p*<.05). Because of this, the model with Nonreactivity and Observing covarying was used in the full model.

Emotion regulation factor structure. Emotion regulation as measured by the DERS is divided into 6 subscales: Nonacceptance of emotional responses, Difficulties engaging in goal-directed behavior, Impulse control difficulties, Lack of emotional awareness, Limited access to emotion regulation strategies, and Lack of emotional clarity (Gratz & Roemer, 2004). Items were parceled by these subscales and the DERS showed an acceptable fit for the data ($\chi^2_{(9, n=156)}$ = 44.880, *p*<.001; RMSEA = $.160_{(.115-.208)}$; CFI = .925; TLI = .875; SRMR = .057), and so this factor structure was used in the full model.

Thought suppression factor structure. In studies of the psychometric properties of the WBSI, there is evidence of a one-factor structure underlying this measure (Muris et al., 1996), but there are also several studies that found a two-factor solution best explained the data, with one factor capturing suppression efforts and the other intrusion susceptibility (for review, see Schmidt et al., 2009). Both of these theories were tested. The model fit for the one-factor solution of the WBSI showed a poor to mediocre fit for the data ($\chi^2_{(90, n=156)}$ = 279.910, *p*<.001; RMSEA = $.116_{(.101-.132)}$; CFI = .860; TLI = .837; SRMR = .064), while the two factor solution also showed poor fit ($\chi^2_{(89, n=156)}$ = 266.044, p<.001; RMSEA = $.113_{(.097-.129)}$; CFI = .772; TLI = .747; SRMR = .075). The one-factor model structure fit the same as the two factor model fit, although neither model fit at least acceptably, and so the more parsimonious one-factor structure was kept for the full model. Parcel formation was based on the estimates created by this CFA.

Three parcels were created by pairing the highest and the lowest estimators, and then the next highest and lowest, etc., until all of the items were parceled.

Rumination factor structure. Rumination, as measured by the RRS, has commonly been conceptualize as a measure of responding style when one is in a depressed mood (Treynor et al., 2003). There have only been a few studies on the psychometric properties of the RRS, but those that have been conducted have shown that RRS may be comprised of two subscales, Brooding and Reflection (Schoofs, Hermans, & Raes, 2010; Treynor et al., 2003). Both this factor structure and a one-factor structure were tested using CFAs. The two factor structure showed a poor to mediocre fit ($\chi^2_{(208,\ n=156)} = 582.662$, $p<.001$; RMSEA = $.107_{(.097\text{-}.118)}$; CFI = .772; TLI = .747; SRMR = .075), while the one-factor structure also demonstrated poor fit ($\chi^2_{(209,\ n=156)} = 582.997$, $p<.001$; RMSEA = $.107_{(.097\text{-}.117)}$; CFI = .773; TLI = .749; SRMR = .075). While neither fit is ideal, because they both had similar model fits and the one-factor structure is the simpler solution, and it was used in the full model.

Reappraisal factor structure. Reappraisal was measured by the cognitive reappraisal subscale of the ERQ, which consists of 6 questions (Gross & John, 2003). The model fit was close for this latent variable ($\chi^2_{(9,\ n=156)} = 34.677$, $p<.001$; RMSEA = $.135_{(.090\text{-}.184)}$; CFI = .956; TLI = .927; SRMR = .034). Three parcels were created by pairing the highest and the lowest estimators, and then the next highest and lowest, etc., until all of the items were parceled.

Affect factor structure. Two subscales constitute the PANAS: negative affect and positive affect. The positive and negative affective subscales were assessed separately in the full model, as they most likely have an inverse relationship with the other latent variables and have shown to not be correlated. Positive affect showed an acceptable fit ($\chi^2_{(35,\ n=156)} = 79.000$, $p<.001$; RMSEA = $.090_{(.063\text{-}.116)}$; CFI = .947; TLI = .932; SRMR = .043). Negative affect also showed an

acceptable fit ($\chi^2_{(35, n=156)} = 108.49$, $p<.001$; RMSEA = $.116_{(.092-.141)}$; CFI = .914; TLI = .890; SRMR = .048), although it should be noted that each fit index demonstrated slightly different fit (RMSEA = poor fit, CFI = acceptable fit, TLI = mediocre fit, SRMR = close fit). From literature regarding the psychometric properties of this scale, there is no indication that any subscales make up positive and negative affect, and so parcel formation was based on the estimates created by these CFAs.

Measurement Model

After establishing parcel formation, a CFA was conducted on the full model, which included all eight latent variables. The measurement model was identified by fixing each of the latent factors' variances to 1.0. The fit for the measurement model was acceptable ($\chi^2_{(186, n=156)}$ =416.635, $p<.001$; RMSEA = $.089_{(.078-.101)}$; CFI = .922; TLI = .903; SRMR = .084). The latent variable estimates are given in Table 3. Most covariances were significant at at least the $p<.05$ level, with the exception of positive affect with mindfulness, thought suppression, rumination, and negative affect and reappraisal with thought suppression and rumination.

Structural Models

Once the measurement model was established, the various structural models could be tested. Two mediation hypotheses were tested using directional paths: cognitive emotion regulation strategies as full mediators of mindfulness with positive and negative affect and cognitive emotion regulation strategies as a partial mediator of mindfulness with positive and negative affect with direct effects of mindfulness. Meditation models were assessed by examining the significance of the paths and by using the product of coefficients method, also called the Sobel test (Sobel, 1982). In their review of 14 methods of assessing mediation effects, MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) found this method to have greater

statistical power than other methods of assessing mediation, such as the Baron and Kenny approach. In the Sobel method, the indirect effects are tested by dividing the path coefficients by their standard errors and comparing the resulting z-score with the critical value from the standard normal distribution.

Hypothesis 1: Cognitive emotion regulation strategies as full mediators. The main hypothesis tested was whether dysfunctional emotion regulation, thought suppression, rumination, and reappraisal acted as complete mediators between mindfulness and positive and negative affect. Autoregressive paths were created from the mindfulness scale to each emotion regulation scale, and from each emotion regulation scale to each measure of affect. The results of that model are shown in Figure 2. The model overall had an acceptable fit ($\chi^2_{(194,\ n=156)}$ =448.871, p<.001; RMSEA = $.092_{(.081\text{-}.103)}$; CFI = .914; TLI = .900; SRMR = .093). The statistically significant paths were from mindfulness to all four mediators (dysfunctional emotion regulation, thought suppression, rumination, and reappraisal), and from rumination and reappraisal to positive and negative affect. In addition, the path from dysfunctional emotion regulation to negative affect neared significance (p = .051). These paths indicated that, while all four emotion regulation variables were predicted by trait mindfulness, only rumination and reappraisal significantly mediate the relationship with negative and positive affect. This is consistent with my hypothesis that specific cognitive emotion regulation strategies mediate the effect of trait mindfulness on positive and negative affect.

Hypothesis 2: Cognitive emotion regulation strategies as partial mediators. The direct effect of mindfulness on positive and negative affect was also examined. In addition to the autoregressive paths described for Hypothesis 1, paths were also added from mindfulness to positive and negative affect. The results of that model are shown in Figure 3. The model overall

had an acceptable fit ($\chi^2_{(192, n=156)}$ =442.589, p<.001; RMSEA = .091$_{(.080\text{-}.103)}$; CFI = .916; TLI = .900; SRMR = .093). Although the model still had acceptable fit, the effect of mindfulness on neither negative affect (b^* = -.148, p = .086) nor positive affect (b^* = .073, p = .778) was statistically significant. In addition, the paths established in the previous hypothesis (from mindfulness to emotion regulation strategies and from rumination and reappraisal to positive and negative affect) continued to be statistically significant, with the exception of rumination on positive affect which neared significance (p = .055). This is consistent with my hypothesis that cognitive emotion regulation strategies account for the effect of mindfulness on positive and negative affect.

Discussion

The purpose of this study was to evaluate whether specific cognitive emotion regulation strategies, including thought suppression, rumination, and reappraisal, act as mediators between trait levels of mindfulness and positive and negative affect in those vulnerable to depression. The results of the study supported the hypothesized relationships. It was found that level of trait mindfulness significantly predicted change in all four emotion regulation variables, and rumination and reappraisal significantly predicted positive and negative affect. Specifically, higher levels of mindfulness predicted lower levels of thought suppression, rumination, and overall dysfunctional emotion regulation and higher levels of reappraisal. Higher levels of rumination predicted lower levels of positive affect and higher levels of negative affect, while reappraisal predicted higher levels of positive affect and lower levels of negative affect. There was no evidence from the results that trait mindfulness has a significant impact on affect outside of the effects of cognitive emotion regulation strategies.

These findings are consistent with the two other studies that have examined the how specific emotion regulation functioning may mediate the relationship between mindfulness and depression (Desrosiers et al., 2014; Desrosiers et al., 2013). Those studies found that rumination and cognitive reappraisal significantly mediated the relationship between trait mindfulness and depression and anxiety symptoms in clinical samples. However, this is the first study to test this model in an at-risk and community population and measure depression risk through trait negative and positive affect, rather than subsyndromal psychopathology.

The link between mindfulness and cognitive emotion regulation strategies fits with previous research that has found that trait mindfulness is associated with lower levels of maladaptive emotion regulation strategies (Baer et al, 2006; Hill, & Updegraff, 2012; Roemer et al., 2009), lower levels of rumination (Burg & Michalak, 2011; Feldman et al., 2010; Raes & Williams, 2010), and lower levels of thought suppression (Baer et al., 2006; de Bruin et al., 2012; Erskine, et al., 2012; Garland, & Roberts-Lewis, 2013; Lavender et al., 2009).This study extends the literature by showing that this relationship between trait mindfulness, cognitive emotion regulation strategies, and depression risk exists in an at-risk population.

The relationship found in this study between rumination and reappraisal and positive and negative affect is also in line with previous research. A ruminative response style has been shown to increase negative affect and decrease positive affect (for reviews, see Mor & Winquist, 2002; Thomsen, 2006) and, more broadly, rumination is a risk factor for developing a depressive episode for vulnerable samples (Kuehner & Weber, 1999; Spasojevic & Alloy, 2001). Individuals who habitually use reappraisal as an emotion regulation strategy are higher in overall positive affect and lower in overall negative affect than individuals who do not use this strategy (Gross & John, 2003). This study, unlike most previous studies in this field, examined multiple

cognitive emotion regulation strategies in the same model, thereby elucidating the unique contribution of each strategy to depression risk. Altogether, the findings of this research suggest that, while mindfulness might affect numerous aspects of cognitive emotion regulation, only reappraisal and rumination uniquely mediate the effect on depression risk, as measured by negative and positive affect, in a vulnerable population.

Limitations

There are some limitations of the current study that should be acknowledged. The biggest limitation is the sample used; the sample studied consisted of 156 participants, and that size of a group may have negatively impacted the model fit indices, especially when examining the individual factor structures. In addition, because of sampling constraints this study combined two different vulnerabilities, those with a parental history and remitted depressed individuals, in the model. Although previous research has established that both groups use dysfunctional emotion regulation strategies, have lower levels of trait mindfulness than never depressed controls, and show similar patterns of affect, it is possible that collapsing these groups may have obscured important differences in the model. Finally, the sample consisted of English-speaking adults who were largely well-educated and Caucasian, and therefore some caution must be exercised in any attempts to generalize these findings to individuals with a different set of demographic characteristics.

Another limitation is the correlational nature of the data gathered. As with all mediation models that are not longitudinal in form, directional interpretations of the data cannot be made (Cole & Maxwell, 2003). Although several other studies have conceptualized rumination and reappraisal as possible mediators of mindfulness (Desrosiers et al., 2013; Desrosiers et al., 2014),

the directionality of these variables is somewhat uncertain without a time-specific mediator. Further research should focus on replicating this data using a longitudinal method.

Finally, the goodness-of-fit assumptions regarding the data need to be interpreted with caution due to the model fits found during parceling. The parceling models were largely derived from existing structures of each measure, so it is unclear why the models fit poor and mediocre for many of the measures. It may be due to the fact that this population is different in some fundamental ways from the populations that were used to standardize the measures, or it may be due to secondary factors that were not represented in the model (Bandalos, & Finney, 2001). No matter the explanation, this limitation must be taken into account in the final conclusions regarding fit.

Future Directions

As previously discussed, one area of future research is to use a multiple group method to assess for difference between those with a parental history of depression, those with remitted depression, and those with both vulnerabilities. This could help to further elucidate the possible difference between these groups with regard to cognitive risk. Based on the pattern of mean samples found in the study (see Table 2), it is entirely possible that we might see an increasing level of cognitive risk when more vulnerabilities are present. Other possible group differences that could be examined are gender differences, differences in education, and different racial groups. There is abundant evidence to suggest that psychopathology prevalence is different for these groups (e.g., Blazer, Kessler, McGonagle, & Swartz, 1994; Kessler et al., 1994), but their underlying cognitive architecture has been little studied.

Another future direction would be to examine changes in the relationship between mindfulness, cognitive emotion regulation strategies, and affect for those at risk following

mindfulness training. Quite a few studies have found that mindfulness training is related to lowering depression risk, (Hayes & Feldman, 2004; Hill & Updegraff, 2012), and several studies have also examined how mindfulness training impacts specific emotion regulation strategies (e.g., Shahar, Britton, Sbarra, Figueredo, & Bootzin, 2010). A longitudinal experimental study that sought to increase mindfulness would illuminate possible causal mechanisms in this model and could further clarify possible mechanisms that underlie the effectiveness of mindfulness training at preventing depressive episodes.

There have been several recent studies that have examined the individual facets of mindfulness (observing, nonreactivity, acting with awareness, nonjudging of inner experiences, and describing) and their relationship to depression and depression risk to better determine what specific aspects of mindfulness might contribute to depression outcomes (Desrosiers, et al., 2014; Raphiphatthana, Jose, & Kielpikowski, 2016). Several subscales of mindfulness, including observing, nonreactivity, and acting with awareness, have all been shown to predict depression and anxiety symptoms in clinical samples, and future research that utilizes an at-risk community population would help to further illuminate how specific aspect of mindfulness might contribute to depression risk or resilience.

The model explored in this study would further be validated by following participants longitudinally to see the relationship amongst the variables and future psychopathology. Although inherent in this model is the assumption that lower levels of positive affect and higher levels of negative affect confer depression risk, this is not actually tested directly. A longitudinal study could examine whether and how the variables studied are predictive of future psychopathology. This would add to the growing literature on how risk and protective factors interact with an existing depression diathesis to lead to or prevent the development of depression.

Further studies could also examine this model in children with a parental history of depression to track changes in trait mindfulness, development of cognitive emotion regulation strategies, and possible psychopathology. Examining these variables beginning early in life could further illuminate their relative stability but also their origin and development in an at-risk population.

Conclusion

In sum, the present study found that for individuals with a vulnerability to depression, their levels of cognitive reappraisal and rumination significantly mediated the relationship between trait mindfulness and positive and negative affect. These results are consistent with past studies that have found that trait mindfulness levels predict the use of cognitive emotion regulation strategies, and that these strategies are predictive of positive and negative affect. By examining all of these pieces together in one study, these data provide a greater understanding of how trait levels of mindfulness may impact cognitive functioning and affect, and through these mechanisms how depression vulnerability is conferred. We now know that, for vulnerable populations, their underlying cognitive architecture could play a role in their future depression risk. These findings could have implications for our future understanding of how mindfulness training confers changes in those at risk for depression. I hope these findings will contribute to the field's knowledge regarding the interplay amongst mindfulness, cognitive vulnerability, and psychopathology.

References

Abramowitz, J. S., Tolin, D. F., & Street, G. P. (2001). Paradoxical effects of thought suppression: A meta-analysis of controlled studies. *Clinical Psychology Review, 21*, 683–703.

Abramson, L. Y., Alloy, L. B., Hankin, B. L., Haeffel, G. J., MacCoon, D. G., & Gibb, B. E. (2002). Cognitive vulnerability-stress models of depression in a self-regulatory and psychobiological context. In I H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression.* (pp. 268-294). New York, NY: Guilford Press.

Alloy, L. B., Abramson, L. Y., Gibb, B. E., Crossfield, A. G., Pieracci, A. M., Spasojevic, J., & Steinberg, J. A. (2004). Developmental antecedents of cognitive vulnerability to depression: Review of findings from the cognitive vulnerability to depression project. *Journal of Cognitive Psychotherapy, 18*(2), 115-133.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Ames, C. S., Richardson, J., Payne, S., Smith, P. & Leigh, E. (2014). Innovations in Practice: Mindfulness-based cognitive therapy for depression in adolescents. *Child and Adolescent Mental Health 19*(1), 74–78.

Anderson, N. D., Lau, M. A., Segal, Z. V., & Bishop, S. R. (2007). Mindfulness-based stress reduction and attentional control. *Clinical Psychology and Psychotherapy, 14*, 449–463.

Arch, J. J., & Craske, M. G. (2010). Laboratory stressors in clinically anxious and non-anxious individuals: The moderating role of mindfulness. *Behaviour Research and Therapy, 48*, 495–505.

Astin, J. A. (1997). Stress reduction through mindfulness meditation: Effects on psychological

symptomatology, sense of control, and spiritual experiences. *Psychotherapy and Psychosomatics, 66,* 97–106.

Augustine, A. A., & Hemenover, S. H. (2009). On the relative effectiveness of affect regulation strategies: A meta-analysis. *Cognition and Emotion, 23*(6), 1181–1220.

Bach, P., & Hayes, S. C. (2002). The use of acceptance and commitment therapy to prevent the rehospitalization of psychotic patients: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 70*, 1129–1139.

Baer, R.A. (2003). Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125–143.

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment, 11*, 191–206.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45.

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S. Walsh, E., Duggan, D., & Williams, J. M. G. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*, 329-342.

Bandalos, D. L., & Finney, S. J. (2001). Item parceling issues in structural equation modeling. In G. A. Marcoulides and R. E. Schumacker (Eds.) *New developments and techniques in structural equation modeling* (pp. 269-296). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Barnett, M. A., King, L. M., & Howard, J. A. (1979). Inducting affect about self or other: Effects on generosity of children. *Developmental Psychology, 15*, 164-167.

Barnhofer, T., Crane, C., & Didonna, F. (2009). Mindfulness-based cognitive therapy for

depression and suicidality. In F. Didonna (Ed.*), Clinical handbook of mindfulness* (pp. 221–243). New York, NY: Springer.

Beck, A. T. (1972). *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press.

Beck, A. T., Brown, G. K., & Steer, R. (1996). *Beck Depression Inventory (BDI-II).* San Antonio, TX: Psychological Corporation.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8,* 77–100.

Beevers, C. G., & Meyer, B. (2004). Thought suppression and depression risk. *Cognition & Emotion, 18*(6), 859-867.

Beevers, C. G., Wenzlaff, R. M., Hayes, A. M., & Scott, W. D. (1999). Depression and the ironic effects of thought suppression: Therapeutic strategies for improving mental control. *Clinical Psychology: Science and Practice, 6,* 133-148.

Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. M. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 77,* 855–866.

Blazer, D. G., Kessler, R. C., McGonagle, K. A., & Swartz, M. C. (1994). The prevalence and distribution of major depression in a national community sample: The National Comorbidity Survey. *American Journal of Psychiatry, 151,* 979-986.

Boggs, J. M., Beck, A., Felder, J. N., Dimidjian, S., Metcalf, C. A., & Segal, Z. V. (2014). Web-

based intervention in mindfulness meditation for reducing residual depressive symptoms and relapse prophylaxis: A qualitative study. *Journal of Medical Internet Research, 16*(3), e87.

Bohlneijer, E., ten Klooster, P. M., Fledderus, M., Veehof, M., & Baer, R. (2011). Psychometric properties of the Five Facet Mindfulness Questionnaire in depressed adults and development of a short form. *Assessment, 10*, 1-13.

Bond, F., & Bunce, D. (2000). Mediators of change in emotion-focused and problem-focused worksite stress management interventions. *Journal of Occupational Health Psychology, 5*, 156–163.

Borton, J. L. S., Markowitz, L. J., & Dieterich, J. (2005). Effects of suppressing negative self-referent thoughts on mood and self-esteem. *Journal of Social and Clinical Psychology, 24*(2), 172-190.

Bowen, S., Witkiewitz, K., Dillworth, T. M., & Marlatt, G. A. (2007). The role of thought suppression in the relationship between mindfulness mediation and alcohol use. *Addictive Behaviors, 32*(10), 2324-2328.

Branstrom, R., Kvillemo, P., Brandberg, Y., & Moskowitz, J. T. (2010). Self-report mindfulness as a mediator of psychological well-being in a stress reduction intervention for cancer patients: A randomized study. *Annals of Behavioral Medicine, 39*, 151–161.

Brenner, E. M., & Salovey, P. (1997). Emotion regulation during childhood: Developmental, interpersonal and individual considerations. In P Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence* (pp. 168-192). New York, NY: Basic Books.

Broderick, P.C. & Korteland, C. (2004). A prospective study of rumination and depression in

early adolescence. *Clinical Child Psychology and Psychiatry*, *9*, 383–94.

Brown, K. W., & Ryan, R. M. (2003). The benefit of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822-848.

Burg, J. M., & Michalak, J. (2011). The healthy quality of mindful breathing: Associations with rumination and depression. Cognitive Therapy and Research, 35, 179–185.

Butler, A.C., Chapman, J.E., Forman, E.M., & Beck, A.T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review*, *26*(1) 17–31.

Bylsma, L. M., Taylor-Clift, A., & Rottenberg, J. (2011). Emotional reactivity to daily events in major and minor depression. *Journal of Abnormal Psychology, 120,* 155–167.

Calmes, C. A., & Roberts, J. E. (2008). Rumination in interpersonal relationships: does co-rumination explain gender differences in emotional distress and relationship satisfaction among college students? *Cognitive Therapy and Research, 32*, 577–590.

Campbell-Sills, L., & Barlow, D. H. (2007). Incorporating emotion regulation into conceptualizations and treatments of anxiety and mood disorders. In J. J. Gross (Ed.), *The handbook of emotion regulation* (pp. 542-559). New York, NY: Guilford Press.

Campbell, T. S., Labelle, L. E., Bacon, S. L., Faris, P., & Carlson, L. E. (2012). Impact of mindfulness-based stress reduction (MBSR) on attention, rumination and resting blood pressure in women with cancer: A waitlist-controlled study. *Journal of Behavioral Medicine, 35*, 262–271.

Cacioppo, J. T., & Berntson, G. G. (1999). The affect system: Architecture and operating characteristics. *Current Directions in Psychological Science*, *8*, 133–137.

Carew, C. L., Milne, A. M., Tatham, E. L., MacQueen, G. M., & Hall, G. B. C. (2013). Neural

systems underlying thought suppression in young women with, and at-risk, for depression. *Behavioural Brain Research, 257*, 13– 24.

Cash, M., & Whittingham, K. (2010). What facets of mindfulness contribute to psychological well-being and depressive, anxious, and stress-related symptomatology? *Mindfulness, 1*, 177–182.

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review, 29*, 560–572.

Chen, J., & Li, X. (2013). Genetic and environmental influences on adolescent rumination and its association with depressive symptoms. *Journal of Abnormal Child Psychology, 41*(8), 1289-1298.

Christopher, M. S., Neuser, N. J., Michael, P. G., & Baitmangalkar, A. (2012). Exploring the psychometric properties of the Five Facet Mindfulness Questionnaire. *Mindfulness, 3*, 124-131.

Clark, L. A., Vittengl, J., Kraft, D., & Jarrett, R. B. (2003). Separate personality traits from states to predict depression. *Journal of Personality Disorders, 17*(2), 152-172.

Clark, L.A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*, 103–116.

Cole, P. M., Bruschi, C. J., & Tamang, B. I. (2002). Cultural differences in children's emotional reactions to difficulty situations. *Child Development, 73*, 983-996.

Cole, P. M., & Kaslow, N. J. (1988). Interactional and cognitive strategies for affect regulation: Developmental perspective on childhood depression. In L. B. Alloy (Ed.), *Cognitive processes in depression* (pp.310-345). New York, NY: Guilford Press.

Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct:

Methodological challenges and directions for child development research. *Child Development, 75,* 317-333.

Compas, J. J., Frankel, C. B., & Camras, L. (2004). On the nature of emotion regulation. *Child Development, 75,* 377-394.

Crawford, J. R. & Henry J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43,* 245–265.

D'Avanzato, C., Joormann, J., Siemer, M., & Gotlib, Ian H. (2013). Emotion regulation in depression and anxiety: Examining diagnostic specificity and stability of strategy use. *Cognitive Therapy and Research, 37*(5), 968-980.

Dalgleish, T. & Yiend, J. (2006). The effects of suppressing a negative autobiographical memory on concurrent intrusions and subsequent autobiographical recall in dysphoria. Journal of *Abnormal Psychology, 115,* 467–73.

Davidson, R. J. (1998). Affective style and affective disorders: perspectives from affective neuroscience. *Cognition and Emotion, 12,* 307–330.

de Bruin, E. I., Topper, M., Muskens, J. G. A. M., Bögels, S. M., & Kamphuis, J. H. (2012). Psychometric properties of the Five Facets Mindfulness Questionnaire (FFMQ) in a meditating and a non-meditating sample. *Assessment, 19*(2), 187-197.

de Lisle, S., Dowling, N. A., & Allen, J. S. (2014). Mechanisms of action in the relationship between mindfulness and problem gambling behaviour. *International Journal of Mental Health and Addiction, 12*(2), 206-225.

Dearing, K. F., & Gotlib, I. H. (2009). Interpretation of ambiguous information in girls at risk for depression. *Journal of Abnormal Child Psychology, 37*(1), 79-91.

Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Personality and Individual Differences, 44*, 1235–1245.

Denham, S. (1998). *Emotional development in young children*. New York, NY: Guildford Press.

Denson, T. F., Moulds, M. L., & Grisham, J. R. (2012). The effects of analytical rumination, reappraisal, and distraction on anger experience. *Behavior Therapy, 43*(2), 355–364.

Desrosiers, A., Vine, V., Curtiss, J., & Klemanski, D. H. (2014). Observing nonreactively: A conditional process model linking mindfulness facets, cognitive emotion regulation strategies, and depression and anxiety symptoms. *Journal of Affective Disorders, 165*, 31–37.

Desrosiers, A., Vine, V., Klemanski, D. H., & Nolen-Hoeksema, S. (2013). Mindfulness and emotion regulation in depression and anxiety: Common and distinct mechanisms of action. *Depression and Anxiety, 30,* 654-661.

Deyo, M., Wilson, K. A., Ong, J., & Koopman, C. (2009). Mindfulness and rumination: Does mindfulness training lead to reductions in ruminative thinking associated with depression? *Explore, 5*, 265–271.

Dietz, L. J., Birmaher, B., Williamson, D. E., Silk, J. S., Dahl, R. E., Axelson, D. A., et al. (2008). Mother-child interactions in depressed children and children at high risk and low risk for future depression. *Journal of the American Academy of Child and Adolescent Psychiatry, 47,* 574–582.

Donaldson, C., Lam, D., & Mathews, A. (2007). Rumination and attention in major depression. *Behaviour Research and Therapy, 45*(11), 2664-2678.

Downey, G., & Coyne, J. C. (1990). Children of depressed parents: An integrative review. *Psychological Bulletin, 108,* 50-75.

Dunbar, J. P., Mckee, L., Rakow, A., Watson, K. H., Forehand, R., & Compas, B. (2013). Coping, negative cognitive style and depressive symptoms in children of depressed parents. *Cognitive Therapy and Research, 37*(1), 18-28.

Eaton, W. W., Shao, H., Nestadt, G., Lee, B. H., Bienvenu, O. J., & Zandi, P. (2008). Population-based study of first onset and chronicity in major depressive disorder. *Archives of General Psychiatry, 65*(5), 513-520.

Egloff, B., Schmukle, S. C., Burns, L. R., & Schwerdtfeger, A. (2006). Spontaneous emotion regulation during evaluated speaking tasks: Associations with negative affect, anxiety expression, memory, and physiological responding. *Emotion, 6*(3), 356–366.

Ehring, T., Fischer, S., Schnulle, J., Bosterling, A., & Tuschen-Caffier, B. (2008). Characteristics of emotion regulation in recovered depressed versus never depressed individuals. *Personality and Individual Differences, 44,* 1574–84.

Ehring, T., Tuschen-Caffier, B., Schnulle, J., Fischer, S., & Gross, J. J. (2010). Emotion regulation and vulnerability to depression: Spontaneous versus instructed use of emotion suppression and reappraisal. *Emotion, 10*(4), 563-572.

Eisenbery, N., Comberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry, 9*, 241-273.

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson (Ed.), Handbook of affective sciences (pp. 572-595). New York, NY: Oxford University Press.

Erisman, S. M., & Roemer, L. (2010). A preliminary Investigation of the effects of experimentally induced mindfulness on emotion responding to film clips. *Emotion, 10*, 72–82.

Erskine, J. A. K., Ussher, M., Cropley, M., Elgindi, A., Zaman, M., et al. (2012). Effect of thought suppression on desire to smoke and tobacco withdrawal symptoms. *Psychopharmacology, 219*(1), 205-211.

Feldman, G., Greeson, J., & Senville, J. (2010). Differential effects of mindful breathing, progressive muscle relaxation, and loving-kindness meditation on decentering and negative reactions to repetitive thoughts. *Behavior Research and Therapy, 48,* 1002–1011.

Field, T. (1992). Infants of depressed mothers. *Development and Psychopathology, 4*, 49-66.

Forman, E.M., Herbert, J. D.,Moitra, E., Yeomans, P. D., & Geller, P. A. (2007). A randomized controlled effectiveness trial of acceptance and commitment therapy and cognitive therapy for anxiety and depression. *Behavior Modification, 31*, 772–799.

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises?: A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology, 84*(2), 365-376.

Frewen, P. A., Evans, E. M., Maraj, N., Dozois, D. J. A., & Partridge, K. (2008). Letting go: Mindfulness and negative automatic thinking. *Cognitive Therapy and Research, 32*, 758–774.

Frijda, N. (1986). *The emotions*. Cambridge, UK: Cambridge University Press.

Galante, J., Iribarren, S. J., & Pearce, P. F. (2012). Effects of mindfulness-based cognitive therapy on mental disorders: a systematic review and meta-analysis of randomised controlled trials. *Journal of Research in Nursing, 18*(2), 133–155.

Garber, J., Braafladt, N., & Zeman, J. (1991). The regulation of sad affect: An information-processing perspective. In J. Garber & K.A. Dodge (Eds.), *The development of emotion regulation and dysregulation* (pp. 208-240). New York: Cambridge University Press.

Garber, J., & Flynn, C. (2001). Predictors of depressive cognitions in young adolescents. *Cognitive Therapy and Research, 25*(4), 353-376.

Garland, E. L., Gaylord, S. A., Boettiger, C. A., & Howard, M. O. (2010). Mindfulness training modifies cognitive, affective, and physiological mechanisms implicated in alcohol dependence: Results of a randomized controlled pilot trial. *Journal of Psychoactive Drugs, 42*(2), 177-192.

Garland, E. L., Gaylord, S. A., & Frederickson, B. L. (2011). Positive reappraisal mediates the stress-reductive effects of mindfulness: An upward spiral process. *Mindfulness, 2*, 59–67.

Garland, E. L. & Roberts-Lewis, A. (2013). Differential roles of thought suppression and dispositional mindfulness in posttraumatic stress symptoms and craving. *Addictive Behaviors, 38*(2), 1555-1562.

Garnefski, N., & Kraaij, V. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Personality and Individual Differences, 40*, 1659-1669.

Garnefski, N., & Kraaij, V. (2007). The Cognitive Emotion Regulation Questionnaire: psychometric features and prospective relationships with depression and anxiety in adults. *European Journal of Psychological Assessment, 23*, 141-49.

Gaudiano, B. A., & Herbert, J. D. (2006). Acute treatment of inpatients with psychotic symptoms using acceptance and commitment therapy: Pilot results. *Behaviour Research and Therapy, 44*, 415–437.

Gelfand, D. M., & Teti, D. M. (1990). The effects of maternal depression on children. *Clinical Psychology Review, 10,* 329-353.

Gifford, E. V., Kohlenberg, B. S., Hayes, S. C., Antonuccio, D. O., Piasecki, M. M., Rasmussen-Hall, M. L., et al. (2004). Acceptance-based treatment for smoking cessation. *Behavior Therapy, 35,* 689–705.

Goeleven, E., DeRaedt, R., Baert, S., & Koster, E. H. W. (2006). Deficient inhibition of emotional information in depression. *Journal of Affective Disorders, 93,*149–52.

Goleman, D. (2003). *Destructive emotions. How can we overcome them? A scientific dialogue with the Dalai Lama*. New York, NY: Bantam Books.

Goodman, S. H.; Gotlib, I. H. (2002). *Children of depressed parents: Mechanisms of risk and implications for treatment.* (pp. 13-36). Washington, DC, US: American Psychological Association.

Goodman, S.H., & Tully, E. (2008). Children of depressed mothers: Implications for etiology, treatment, and prevention of depression in children and adolescents. In J. R. Z. Abela & B.L. Hankin (Eds.), *Handbook of depression children and adolescents.* (pp. 208-240). New York: Guilford Press

Gotlib, I. H., & Joorman, J. (2010). Cognition and depression: Current status and future directions. *Annual Review of Clinical Psychology, 6,* 285–312.

Gotlib, I. H., Kurtzman, & H. S., Blehar, M. C. (1997). Cognition and depression: Issues and future directions. *Cognition and Emotion, 5/6,* 663–673.

Gratz, K. L. & Roemer, L. (2004). Multidimensional assessment of emotion regulation and

dysregulation: development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathological Behavioral Assessment, 26*(1), 41–54.

Grimbos, T., Granic, I., & Pepler, D. (2013). The relation between co-rumination, maternal depressive symptoms and child psychopathology. *Journal of Psychopathology and Behavioral Assessment35*(3), 335-345.

Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74,* 224–237.

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39,* 281-291.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85,* 348-362.

Gross, J. J., & Munoz, R. F. (1995). Emotion regulation and mental health. *Clinical Psychology: Science and Practice, 2,* 151–164.

Gross, J. J., Richards, J. M., & John, O. P. (2006) Emotion regulation in everyday life. In D. K. Snyder, J. A. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 13-25). Washington, DC: American Psychological Association.

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *The handbook of emotion regulation* (pp. 3-24). New York, NY: Guilford Press.

Grossman, P., Kappos, L., Gensicke, H., D'Souza, M., Mohr, D. C., Penner, I. K., et al. (2010). MS quality of life, depression, and fatigue improve after mindfulness training: A randomized trial. *Neurology, 75*, 1141–1149.

Hammen, C. L. (2009). Children of depressed parents. In I. H Gotlib & C. L. Hammen (Eds), *Handbook of depression (2nd ed.)* (275-297). New York: Guilford Press.

Hasher, L., Zacks, R. T., & May, C. P. (1999). Inhibitory control, circadian arousal, and age. In D. Gopher & A. Koriat (Eds.), *Attention and performance* (pp. 653–75). Cambridge, MA: MIT Press.

Hayes, A. M., & Feldman, G. (2004). Clarifying the construct of mindfulness in the context of emotion regulation and the process of change in therapy. *Clinical Psychology: Science and Practice, 11*, 255–262.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1-25.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy.* New York: Guilford Press.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Bissett, R., Piasecki, M., Batten, S. V., et al. (2004). A preliminary trial of twelve-step facilitation and acceptance and commitment therapy with poly-substance-abusing methadone-maintained opiate addicts. *Behavior Therapy, 35*, 667–688.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*(6), 1152-1168.

Hepburn, S. R., Crane, C., Barnhofer, T., Duggan, D. S., Fennell, M. J. V., et al. (2009). Mindfulness-based cognitive therapy may reduce thought suppression in previously suicidal participants: Findings from a preliminary study. *British Journal of Clinical Psychology, 48*(2), 209-215.

Herndon, F. (2008). Testing mindfulness with perceptual and cognitive factors: External vs. internal encoding, and the cognitive failures questionnaire. *Personality and Individual Differences, 44*, 32–41.

Hertel, P. T., & Gerstle, M. (2003). Depressive deficits in forgetting. *Psychological Science, 14*, 573–78.

Hill, C. L. M., & Updegraff, J. A. (2012). Mindfulness and its relationship to emotional regulation. *Emotion, 12*, 81–90.

Hilt, L.M., Sander, L.C., Nolen-Hoeksema, S., & Simen, A.A. (2007). The BDNF Val66Met polymorphism predicts rumination and depression differently in young adolescent girls and their mothers. *Neuroscience Letters, 429*, 12-16.

Hopko, D. R., Lejuex, C., Le Page, J. P., Hopko, S. D., McNeil, D. W. (2003). A brief Behavioral Activation treatment for depression: A randomized pilot trial within an inpatient psychiatric hospital. *Behavior Modification, 27*(4), 458–469.

Hollon, S. D., & Beck, A. T. (1994). Cognitive and cognitive-behavioral therapies. In A. E. Bergin & S. L. Garfield (Eds.), *Handbook of psychotherapy and behavioral change* (4th ed., pp. 428-466). New York, NY: Wiley.

Hollon, S.D., & Ponniah, K. (2010). A review of empirically supported psychological therapies for mood disorders in adults. *Depression and Anxiety, 27*, 891–932.

Hollon, S. D., & Shelton, R. C. (2001). Treatment guidelines for major depressive disorder.

Behavioral Therapy, 32, 235–258.

Hollon, S. D., Stewart, M. O., & Struck, D. (2006). Enduring effects for cognitive behavior therapy in the treatment of depression and anxiety. *Annual Review of Psychology, 57,* 285–315.

Holzel, B. K., Lazar, S. W., Gard, T., Schuman-Oliver, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives in Psychological Science, 6,* 537–559.

Ingram, R. E., Miranda, J., & Segal, Z. V. (1998). *Cognitive vulnerability to depression*. New York, NY: Guildford Press.

Ingram, R.E., Atchley R. A., & Segal, Z. V. (2011). *Vulnerability to depression: From cognitive neuroscience to prevention and treatment*. New York, NY: Guildford Press.

Ito, T, & Agari, I. (2002). A prospective study of the relationship between negative rumination and a depressive state. *Japanese Journal of Counseling Science, 35,* 40-46.

Jacobson, N. S., Martell, C. R., & Dimidjian, S. (2001). Behavioral activation treatment for depression: Returning to contextual roots. *Clinical Psychology: Science and Practice, 8,* 255-270.

Jacobson, N.S., Dobson, K.S., Truax, P.A., Addis, M.E., Koerner, K., Gollan, J.K., et al. (1996). A component analysis of cognitive- behavioral treatment for depression. *Journal of Consulting and Clinical Psychology, 64*, 295-304.

Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., et al. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction. *Annals of Behavioral Medicine, 33,* 11–21.

Jaser, S. S., Champion, J. E., Dharamsi, K. R., Riesing, M. M., & Compas, B. E. (2011). Coping and positive affect in adolescents of mothers with and without a history of depression. *Journal of Child and Family Studies, 20*, 353–360.

Joormann, J. (2004). Attentional bias in dysphoria: The role of inhibitory processes. *Cognition and Emotion, 18,* 125-147.

Joormann, J. (2008). Cognitive aspects of depression. In I. H. Gotlib & C. Hammen (Eds.), *Handbook of depression* (pp. 298-321). New York, NY: Guilford Press.

Joormann, J., & D'Avanzato, C. (2010). Emotion regulation in depression: Examining the role of cognitive processes. *Cognition and Emotion, 24*(6), 913-939.

Joormann, J., & Gotlib, I. H. (2010). Emotion regulation in depression: Relation to cognitive inhibition. *Cognition and Emotion, 24,* 281-298.

Joormann, J., & Siemer, M. (2004). Memory accessibility, mood regulation, and dysphoria: Difficulties in repairing sad mood with happy memories? *Journal of Abnormal Psychology, 113,* 179–88.

Joormann, J., & Siemer, M. (2004). Memory accessibility, mood regulation, and dysphoria: Difficulties in repairing sad mood with happy memories? *Journal of Abnormal Psychology, 113,* 179-188.

Joormann, J., Siemer, M., & Gotlib, I. H. (2007). Mood regulation in depression: Differential effects of distraction and recall of happy memories on sad mood. *Journal of Abnormal Psychology, 116,* 484–90.

Joormann, J., Yoon, K. L., & Siemer, M. (2009). Cognition, attention, and emotion regulation. In A. Kring & D. Sloan (Eds.), *Emotion regulation and psychopathology* (pp. 174–203). New York, NY: Guilford Press.

Joormann, J., Yoon, K. L., & Siemer, M. (2010). Cognition, attention and emotion regulation. In A. Kring & D. Sloan (Eds.), *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment* (pp. 174-203). New York, NY: Guilford Press.

Just, N., & Alloy, L. B. (1997). The response styles theory of depression: Tests and an extension of the theory. *Journal of Abnormal Psychology, 106*, 221-229.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*, 33–47.

Kabat-Zinn, J. (1990). *Full catastrophe living: How to cope with stress, pain and illness using mindfulness meditation*. New York: NY: Bantam Dell.

Kabat-Zinn, J. (1994). *Wherever you go there you are: Mindfulness meditation in everyday life.* New York, NY: Hyperion.

Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review, 31*, 1041-1056.

Kessler, R. C. (2002). Epidemiology of depression. In I. H. Gotlib, & C. Hammen (Eds.), *Handbook of depression*, (3rd ed.). New York, NY: Guilford Press.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of *DSM-IV* disorders in the National Comorbidity Survey replication. *Archives of General Psychiatry, 62*, 593-602.

Keyworth, C., Knopp, J., Roughley, K., Dickens, C., Bold, S., et al. (2014). A mixed-methods pilot study of the acceptability and effectiveness of a brief meditation and mindfulness intervention for people with diabetes and coronary heart disease. *Behavioral Medicine, 40*(2), 53-64.

Kline, R. B. (2005). *Principles and practices of structural equation modeling* New York, NY: Guilford Press.

Koszycki, D., Benger, D., Shlik, J., & Bradwejn, J. (2007). Randomized trial of a meditation-based stress reduction program and cognitive behavior therapy in generalized social anxiety disorder. *Behaviour Research and Therapy, 45*, 2518–2526.

Kovacs, M., Joormann, J., & Gotlib, I. H. (2008). Emotion (dys)regulation and links to depressive disorders. *Child Development Perspectives, 2*, 149–155.

Kring, A., & Werner, K. (2004). Emotion regulation and psychopathology. In P. Philippot & R. S. Feldman (Eds.), *The regulation of emotion* (pp. 359-385). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Kuehner, C. & Weber, I. (1999). Responses to depression in unipolar depressed patients: An investigation of Nolen-Hoeksema's response styles theory. *Psychological Medicine, 29*(6), 1323-1333.

Kumar, S., Feldman, G., & Hayes, A. (2008). Changes in mindfulness and emotion regulation in an exposure-based cognitive therapy for depression. *Cognitive Therapy Research, 32*, 734–744.

Kuyken, W., Byford, S., Taylor, R.S., et al. (2008). Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *Journal of Consulting and Clinical Psychology, 76*(6), 966–978.

Kuyken, W., Watkins, E., Holden, E., & Cook, W. (2006). Rumination in adolescents at risk for depression. *Journal of Affective Disorders, 96*, 39–47.

Langrock, A. M., Compas, B. E., Keller, G., Merchant, M. J., & Copeland, M. E. (2002). Coping

with the stress of parental depression: Parents' reports of children's coping, emotional, and behavioral problems. *Journal of Clinical Child and Adolescent Psychology, 31*(3), 312-324.

Lappalainen, R., Lehtonen, T., Skarp, E., Taubert, E., Ojanen, M., & Hayes, S. C. (2007). The impact of CBT and ACT models using psychology trainee therapists: A preliminary controlled effectiveness trial. *Behavior Modification, 31*, 488–511.

Larson, R. W., Raffaelli, M., Richards, M. H., Ham, M., & Jewell, L. (1990). Ecology of depression in late childhood and early adolescence: A profile of daily states and activities. *Journal of Abnormal Psychology, 99,* 92–102.

Lavender, J. M., Jardin, B. F., & Anderson, D. A. (2009). Bulimic symptoms in undergraduate men and women: Contributions of mindfulness and thought suppression. *Eating Behaviors, 10*(4), 228-231.

Lavender, A. & Watkins, E. (2004). Rumination and future thinking in depression. *The British Journal of Clinical Psychology, 43,* 129-42.

Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York: Springer.

Lei, H., Zhang, X., Cai, L., Wang, Y., Bai, M., & Zhu, X. (2014). Cognitive emotion regulation strategies in outpatients with major depressive disorder. *Psychiatry Research, 218,* 87–92.

Levenson, R. W. (1999). The intrapersonal functions of emotion. *Cognition and Emotion, 13,* 481-504.

Linehan, M. M. (1993). *Cognitive behavioral treatment of borderline personality disorder*. New York, NY: Guilford Press.

Linehan, M. M., Amstrong, H. E., Suarez, A., Allmon, D. J., & Heard, H. L. (1991). Cognitive-

behavioral treatment of chronically suicidal borderline patients. *Archives of General Psychiatry, 48*, 1060–1064.

Linehan, M. M., Bohus, M., & Lynch, T. (2007). Dialectical behavior therapy for pervasive emotion dysregulation. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 581–605). New York, NY: Guilford Press.

Linehan, M. M., Comtois, K. A., Murray, A. M., Brown, M. Z., Gallop, R. J., Heard, H. L., et al. (2006). Two-year randomized controlled trial and follow-up of dialectical behavior therapy vs therapy by experts for suicidal behaviors and borderline personality disorder. *Archives of General Psychiatry, 63*, 757–766.

Linehan, M. M., Dimeff, L. A., Reynolds, S. K., Comtois, K. A., Welch, S. S., Heagerty, P., et al. (2002). Dialectical behavior therapy versus comprehensive validation therapy plus 12-step for the treatment of opioid dependent women meeting criteria for borderline personality disorder. *Drug and Alcohol Dependence, 67*, 13–26.

Lynch, T. R., Morse, J. Q., Mendelson, T., & Robins, C. J. (2003). Dialectical behavior therapy for depressed older adults: A randomized pilot study. *American Journal of Geriatric Psychiatry, 11*, 33–45.

Lynch, T. R., Trost, W. T., Salsman, N., & Linehan, M. (2007). Dialectical behavior therapy for borderline personality disorder. *Annual Review of Clinical Psychology, 3*, 181–205.

Lyubomirsky, S., Caldwell, N. D., & Nolen-Hoeksema, S. (1998). Effects of ruminative and distracting responses to depressed mood on retrieval of autobiographical memories. *Journal of Personality and Social Psychology, 75*, 166–77.

Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative

thinking and interpersonal problem solving. *Journal of Personality and Social Psychology, 69*(1), 176–190.

Lyubomirsky, S., Tucker, K. L., Caldwell, N. D., & Berg, K. (1999). Why ruminators are poor problem solvers: Clues from the phenomenology of dysphoric rumination. *Journal of Personality and Social Psychology, 77*(5), 1041–1060.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, **7**, 83-104.

Mathews, A., & MacLeod, C. (2005). Cognitive vulnerability to emotional disorders. *Annual Review of Clinical Psychology, 1,* 167–95.

Mazure, C., & Keita, G. (Eds.) (2006). *Understanding depression in women, applying empirical research to practice and policy.* Washington D.C.: American Psychological Association.

McConachie, D. A. J., McKenzie, K., Morris, P. G., & Walley, R. M. (2014). Acceptance and mindfulness-based stress management for support staff caring for individuals with intellectual disabilities. *Research in Developmental Disabilities, 35*(6), 1216-1227.

Mor, N. & Winquist, J. (2002). Self-focused attention and negative affect: A meta-analysis. *Psychological Bulletin, 128*(4), 638-662.

Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology, 58*(3), 519-527.

Muris, P., Merckelbach, H., & Horselenberg, R. (1996). Individual differences in thought suppression. The White Bear Suppression Inventory: factor structure, reliability, validity and correlates. *Behaviour Research and Therapy, 34*, 501–513.

Myin-Germeys, I., Peeters, F., Havermans, R., Nicolson, N. A., deVries, M. W., Delespaul, P., & van Os, J. (2003). Emotional reactivity to daily life stress in psychosis and affective disorder: An experience sampling study. *Acta Psychiatrica Scandinavica, 107,* 124–131.

Nielsen, L., & Kaszniak, A. (2006). Awareness of subtle emotional feelings: A comparison of long-term meditators and nonmeditators. *Emotion, 6,* 392–405.

Nolan, S.A., Roberts, J.E., & Gotlib, I.H. (1998). Neuroticism and ruminative response style as predictors of change in depressive symptomatology. *Cognitive Therapy and Research, 22*, 445-455.

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.

Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*, 504–511.

Nolen-Hoeksema, S., & Davis, C.G. (1999). "Thanks for sharing that": Ruminators and their social support networks. *Journal of Personality and Social Psychology, 77*, 801-814.

Nolen-Hoeksema, S., & Morrow, J. (1991). Prospective study of depression and distress following a natural disaster. *Journal of Personality and Social Psychology, 61,* 105–121.

Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally occurring depressed mood. *Cognition and Emotion, 7,* 561-570.

Nolen-Hoeksema, S., Morrow, J., Fredrickson, B. L. (1993). Response styles and duration of depressed moods. *Journal of Abnormal Psychology, 102,* 20-28.

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives in Psychological Science, 3,* 400–24.

Nyklicek, I., & Kuipers, K. (2008). Effects of mindfulness-based stress reduction intervention on

psychological well-being and quality of life: Is increased mindfulness indeed the mechanism? *Annals of Behavioral Medicine, 35*, 331–340.

Ochsner, K. N., Bunge, S. A., Gross, J. J., & Gabrieli, J. D. E. (2002). Rethinking feelings: An fMRI study of the cognitive regulation of emotion. *Journal of Cognitive Neuroscience, 14*, 1215-1229.

Ochsner, K. N. & Gross, J. J. (2008). Cognitive emotion regulation: Insights from social cognitive and affective neuroscience. *Current Directions in Psychological Science, 17*, 153–158.

O'Grady, M. A., Tennen, H., & Armeli, S. (2010). Depression history, depression vulnerability and the experience of everyday negative events. *Journal of Social and Clinical Psychology, 29*, 949–974.

O'Hara, R. E., Armeli, S., Boynton, M. H., & Tennen, H. (2014). Emotional stress-reactivity and positive affect among college students: The role of depression history. *Emotion, 14*(1), 193-202.

Oman, D., Shapiro, S. L., Thoresen, C. E., Plante, T. G., & Flinders, T. (2008). Meditation lowers stress and supports forgiveness among college students. *Journal of American College Health, 56*, 569–578.

Ortony, A., Clore, G., & Collins, A. (1988). *The cognitive structure of emotions.* New York, NY: Cambridge University Press.

Papageorgiou, C. & Wells, A. (2001). Metacognitive beliefs about rumination in recurrent major depression. *Cognitive and Behavioral Practice, 8,* 160-164.

Peeters, F., Nicolson, N. A., Berkhof, J., Delespaul, P., & deVries, M. (2003). Effects of daily

events on mood states in major depressive disorder. *Journal of Abnormal Psychology, 112*, 203–211.

Quigley, L., & Dobson, K. (2014). An examination of trait, spontaneous and instructed emotion regulation in dysphoria. *Cognition and Emotion, 28* (4), 622-635.

Raes, F., & Williams, M. G. (2010). The relationship between mindfulness and uncontrollability of ruminative thinking. *Mindfulness, 1*, 199–203.

Raphiphatthana, B., Jose, P E., & Kielpikowski, M. (2016). How do the facets of mindfulness predict the constructs of depression and anxiety as seen through the lens of the tripartite theory? *Personality and Individual Differences, 93*, 104-111.

Rasmussen, M. K., & Pidgeon, A. M. (2011). The direct and indirect benefits of dispositional mindfulness on self-esteem and social anxiety. *Anxiety, Stress & Coping, 24*, 227–233.

Reid, R. C., Bramen, J. E., Anderson, A., & Cohen, M. S. (2014). Mindfulness, emotional dysregulation, impulsivity, and stress proneness among hypersexual patients. *Journal of Clinical Psychology, 70*(4), 313.

Rimes, K. A. & Watkins, E. (2005). The effects of self-focused rumination on global negative self-judgments in depression. *Behaviour Research and Therapy, 43*(12), 1673-1681.

Riskind, J. H., Kleiman, E. M., & Schafer, K. E. (2013). "Undoing" effects of positive affect: Does it buffer the effects of negative affect in predicting changes in depression? *Journal of Social and Clinical Psychology, 32*(4) 363-380.

Roberts, J. E., Gilboa, E., & Gotlib, I. H. (1998). Ruminative response style and vulnerability to episodes of dysphoria: Gender, neuroticism, and episode duration. *Cognitive Therapy and Research, 22(*4), 401-423.

Robins, C. J., & Chapman, A. L. (2004). Dialectical behavior therapy: Current status, recent

developments, and future directions. *Journal of Personality Disorders, 18,* 73–79.

Roemer, L., Lee, J.K., Salters-Pedneault, K., Erisman, S. M., Orsillo, S.M., & Mennin, D.S. (2009). Mindfulness and emotion regulation difficulties in generalized anxiety disorder: Preliminary evidence for independent and overlapping contributions. *Behavioral Therapy, 40,* 142–154.

Rothaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology, 42,* 5-37.

Rude, S.S., & McCarthy, C. T. (2003). Emotional functioning in depressed and depression-vulnerable college students. *Cognition and Emotion, 17*(5), 799-806.

Rude, S. S., Wenzlaff, R. M., Gibbs, B., Vane, J., Whitney, T. (2002). Negative processing biases predict subsequent depressive symptoms. *Cognition and Emotion, 16*(3), 423-440.

Rusting, C. L., & Nolen-Hoesksema, S. (1998). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology, 74,* 790-803

Sarin, S., Abela, J. R. Z., & Auerbach, R. P. (2005). The response styles theory of depression: A test of specificity and causal mediation. *Cognition and Emotion19*(5), 751-761.

Schmidt, R. E., Gay, P., Courvoisier, D., Jermann, F., Ceschi, G., David, M., Brinkmann, K., & Van Der Linden, M. (2009). Anatomy of the White Bear Suppression Inventory (WBSI): tA review of previous findings and a new approach. *Journal of Personality Assessment, 91*(4), 323–330.

Schmaling, K. B., Dimidjian, S., Katon, W., Sullivn, M. (2012). response styles among patients

with minor depression and dysthymia in primary care. *Journal of Abnormal Psychology, 111,* 350-356.

Schmertz, S. K., Anderson, P. L., & Robins, D. L. (2009). The relation between self-report mindfulness and performance on tasks of sustained attention. *Journal of Psychopathology and Behavioral Assessment, 31*, 60–66.

Schoofs, H., Hermans, D., & Raes, F. (2010). Brooding and reflection as subtypes of rumination: Evidence from confirmatory factor analysis in nonclinical samples using the Dutch Ruminative Response Scale. *Psychopathology Behavioral Assessment, 32*, 609–617.

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse.* New York, NY: Guilford Press.

Sephton, S. E., Salmon, P., Weissbecker, I., Ulmer, C., Floyd, A., Hoover, K., et al. (2007). Mindfulness meditation alleviates depressive symptoms in women with fibromyalgia: Results of a randomized clinical trial. *Arthritis and Rheumatism, 57*, 77–85.

Shahar, B., Britton, W. B., Sbarra, D. A., Figueredo, A. J., & Bootzin, R.R. (2010). Mechanisms of change in mindfulness-based cognitive therapy for depression: preliminary evidence from a randomized controlled trial. *International Journal of Cognitive Therapy, 4*, 402–418.

Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management, 12*, 164–176.

Shapiro, S. L., Oman, D., Thoresen, C. E., Plante, T. G., & Flinders, T. (2008). Cultivating mindfulness: Effects on well-being. *Journal of Clinical Psychology, 64*, 840–862.

Shapiro, S. L., Schwartz, G., & Bonner, G. (1998). Effects of mindfulness-based stress reduction

on medical and premedical students. *Journal of Behavioral Medicine, 21*, 581–599.

Shawyer, F., Meadows, G. N., Judd, F., Martin, P. R., Segal, Z., & Piterman, L. (2012). The DARE study of relapse prevention in depression: design for a phase 1/2 translational randomised controlled trial involving mindfulness-based cognitive therapy and supported self monitoring. *BMC Psychiatry, 12*(3), 1-10.

Sheppes, G. & Gross, J. J. (2011). Is timing everything? Temporal considerations in emotion regulation. *Personality and Social Psychology Review, 15*, 319–331.

Shields, C. (2006). Searching for mechanisms of family effect on individuals. *Families, Systems, & Health, 24*, 195-197.

Siemer, M., Mauss, I., & Gross, J. (2007). Same situation different emotions: How appraisals shape our emotions. *Emotion, 7*, 592-600.

Silk, J. S., Forbes, E. E., Whalen, D. J., Jakubcak, J. L., Thompson, W. K., Ryan, N. D., . . . Dahl, R. E. (2011). Daily emotional dynamics in depressed youth: A cell phone ecological momentary assessment study. *Journal of Experimental Child Psychology, 110*, 241–257.

Silk, J. S., Shaw, D. S., Skuben, E. M., Oland, A.A., & Kovacs, M. (2006). Emotion regulation strategies in offspring of childhood-onset depressed mothers. *Journal of Child Psychology and Psychiatry, 47*, 69-78.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhart (Ed.), *Sociological methodology 1982* (pp. 290-312). San Francisco: Jossey-Bass.

Spasojevic, J., & Alloy, L. B. (2001). Rumination as a common mechanism relating depressive risk factors to depression. *Emotion, 1*(1), 25-37.

Spasojevic, J., & Alloy, L. B. (2002). Who becomes a depressive ruminator? Developmental antecedents of ruminative response style. *Journal of Cognitive Psychotherapy, 16*(4), 405-419.

Speca, M., Carlson, L. E., Goodey, E., & Angen, M. (2000). A randomized, wait-list controlled clinical trial: The effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Medicine, 62*, 613–622.

Tarullo, L. B., DeMulder, E. K., Martinez, P. E., & Radke-Yarrow, M. (1994). Dialogues with preadolescents and adolescents: Mother-child interaction patterns in affectively ill and well dyads. *Journal of Abnormal Child Psychology, 22*, 33–50.

Teasdale, J.D. (1985). Psychophysiological treatments for depression: How do they work? *Behaviour Research and Therapy, 23*, 157- 165.

Teasdale, J. D. (1999). Emotional processing and three modes of mind, and the prevention of relapse in depression. *Behavior Research and Therapy, 37*, 553-557.

Teasdale, J. D., Segal, Z., & Williams, M. G. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behavior Research and Therapy, 33*, 25-39.

Teasdale, J. D., Segal, Z., & Williams, J. M. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control training help? *Behaviour Research and Therapy, 33*, 25–39.

Teasdale, J. D., Segal, Z., & Williams, M. G. Ridgeway, V. A., Soulsby, J. M. et al. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology, 68*(4), 615-623.

Thomsen, D.K. (2006). The association between rumination and negative affect: A review. *Cognition and Emotion, 20*(8), 1216–35.

Treynor, W., Gonzalez, R., & Nolen-Hoeksema S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy Research, 27,* 248–259.

Trinder, H., & Salkovskis, P. M. (1994). Personally relevant intrusions outside the laboratory: Long-term suppression increases intrusion. *Behavior Research and Therapy, 32,* 833-842.

van den Hurk, P., Janssen, B., Giommi, F., Barendregt, H., & Gielen, S. (2010). Mindfulness meditation associated with alterations in bottom-up processing: Psychophysiological evidence for reduced reactivity. *International Journal of Psychophysiology, 78,* 151–157.

van Winkel, M., Nicolson, N. A., Wichers, M., Viechtbauer, W., Myin-Germeys, I., et al. (2015). Daily life stress reactivity in remitted versus non-remitted depressed individuals. *European Psychiatry, 30*(4), 441-447.

Waller, E. M., & Rose, A. J. (2009). Adjustment trade-offs of co-rumination in mother–adolescent relationships. *Journal of Adolescence, 33,* 487-497.

Watkins, E., & Baracaia, S. (2001). Why do people ruminate in dysphoric mood? *Personality and Individual Difference, 30,* 723-734.

Watkins, E., & Baracaia, S. (2002). Rumination and social problem-solving in depression. *Behaviour Research and Therapy, 40*(10), 1179-1189.

Watkins, E. & Moulds, M. (2007). Revealing negative thinking in recovered major depression: A preliminary investigation. *Behaviour Research and Therapy, 45,* 3069–3076.

Watson, D., & Clark, L. A. (1997). Measurement and mismeasurement of mood: Recurrent and emergent issues. *Journal of Personality Assessment, 68,* 267–296.

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and negative affectivity and their relation to anxiety and depressive disorders. *Journal of Abnormal Psychology, 97,* 346–353.

Watson, D., Clark, L. A., & Tellegan, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070.

Watson, D., & Walker, L. M. (1996). The long-term stability and predictive validity of trait measures of affect. *Journal of Personality and Social Psychology, 70,* 567-577.

Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53,* 5–13.

Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality, 62,* 615–640.

Weissman, M.M., Warner, V., Wickramaratne, P., Moreau, D., & Olfson, M. (1997). Offspring of depressed parents: 10 years later. *Archives of General Psychiatry, 54,* 932–940.

Weissman, M. M., Wickramaratne, P., Adams, P., Wolk, S., Verdeli, H. & Olfson, M. (2000). Brief screening for family psychiatric history: The family history screen. *Archives of General Psychiatry, 57,* 675-682.

Wenzlaff, R.M., & Bates, D.E. (1998). Unmasking a cognitive vulnerability to depression: How lapses in mental control reveal depressive thinking. *Journal of Personality and Social Psychology, 75,* 1559–1571.

Wenzlaff, R. M. & Eisenberg, A. R. (1998). Parental restrictiveness of negative emotions: Sowing the seeds of thought suppression. *Psychological Inquiry, 9*(4), 310-313.

Wenzlaff, R. M. & Eisenberg, A. R. (2001). Mental control after dysphoria: Evidence of a

suppressed, depressive bias. *Behavior Therapy, 32*(1). 27-45.

Wenzlaff, R. M. & Luxton, D. D. (2003). The role of thought suppression in depressive rumination. *Cognitive Therapy and Research, 27*(3), 293-308.

Wenzlaff, R., Rude, S., Taylor, C., Stultz, C., & Sweatt, R. (2001). Beneath the veil of thought suppression: Attentional bias and depression risk. *Cognition and Emotion, 15*, 435-452.

Wenzlaff, R., Rude, S., & West, L. (2002). Cognitive vulnerability to depression: The role of thought suppression and attitude certainty. *Cognition and Emotion, 16*, 533-548.

Wenzlaff, R. M. & Wegner, D. M. (2000). Thought suppression. *Annual Review of Psychology, 51*, 59–91.

Wenzlaff, R. M., Wegner, D. M., & Roper, D.W. (1988). Depression and mental control: The resurgence of unwanted negative thoughts. *Journal of Personality and Social Psychology, 55*, 882-892.

Wichers, M., Jacobs, N., Derom, C., Thiery, E., & van Os, J. (2008). Depression: Too much negative affect or too little positive affect? *Twin Research and Human Genetics, 10s*, 19-20.

Wichers, M., Peeters, F., Geschwind, N., Jacobs, N., Simons, C. J. P., Derom, C., Thiery, E., Delespaul, P.H., & van Os, J. (2010). Unveiling patterns of affective responses in daily life may improve outcome prediction in depression: A momentary assessment study. *Journal of Affective Disorders, 124*, 191–195.

Williams, J. M. G., Barnhofer, T., Crane, C., Herman, D., Raes, F., et al. (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin, 133*, 122–48.

Williams, J. M. G., Watts, F., MacLeod, C., & Mathews, A. (1997). *Cognitive psychology and*

emotional disorders (2nd ed.). Chichester, UK: Wiley.

Williams, K. A., Kolar, M. M., Reger, B. E., & Pearson, J. C. (2001). Evaluation of a wellness-based mindfulness stress reduction intervention: A controlled trial. *American Journal of Health Promotion, 15,* 422–432.

Williams, M. J. & Dalgeish, T. (2014) Examining the factor structure of the Five Facet Mindfulness Questionnaire and the Self-Compassion Scale. *Psychological Assessment, 26*(2), 407-418.

Wisco, B.E., & Nolen-Hoeksema, S. (2010). Valence of autobiographical memories: The role of mood, cognitive reappraisal, and suppression. *Behaviour Research and Therapy 48,* 335–340.

World Health Organization (2004). *The Global Burden of Disease: 2004 Update.* Geneva, Switzerland: World Health Organization Press.

Zahn-Waxler, C., Kochanska, G., Krupnick, J., & McKnew, D. (1990). Patterns of guilt in children of depressed and well mothers. *Developmental Psychology, 26*(1), 51-59.

Zettle, R. D., & Hayes, S. C. (1986). Dysfunctional control by client verbal behavior: The context of reason giving. *Analysis of Verbal Behavior, 4,* 30–38.

Zettle, R. D., & Rains, J. C. (1989). Group cognitive and contextual therapies in treatment of depression. *Journal of Clinical Psychology, 45*, 438–445.

Zimmerman, M., & Coryell, W. (1987). The Inventory to Diagnose Depression (IDD): A self-report scale to diagnose major depressive disorder. *Journal of Consulting & Clinical Psychology, 55,* 55-59.

Table 1

Characteristics of Participants

Characteristic	Group			
	Total (n = 156)	Parental Depression (n = 94)	Remitted Depressed (n = 23)	Both Vulnerabilities (n = 39)
Age, years, *mean ± SD*	35.8 ± 11.4	37 ± 11	36.4 ± 14	32.7 ± 10.6
Gender, *No. female (%)*	63 (59.6)	64 (68.1)	9 (39.1)	20 (51.3)
Race, *No. (%)*				
Caucasian	122 (78.2)	72 (76.6)	17 (73.9)	33 (84.6)
African-American	19 (12.2)	15 (16)	2 (8.7)	2 (5.1)
Hispanic/Latino	7 (4.5)	4 (4.3)	2 (8.7)	1 (2.6)
Asian	5 (3.2)	2 (2.1)	2 (8.7)	1 (2.6)
Native American	1 (.6)	0	0	1 (2.6)
Biracial/Multiracial	2 (1.3)	1 (1.1)	0	1 (2.6)
Marital Status, *No. (%)*				
Single	66 (42.3)	32 (34)	12 (52.2)	22 (56.4)
Married	75 (48.1)	52 (55.3)	7 (30.4)	16 (41)
Separated	3 (1.9)	2 (2.1)	0	1 (2.6)
Divorced	8 (5.1)	6 (6.4)	2 (8.7)	0
Widowed	4 (2.6)	2 (2.1)	2 (8.7)	0
Education, *No. (%)*				
Less than High School	1 (0.6)	0	0	1 (2.6)
High School/GED	19 (12.2)	14 (14.9)	3 (13)	2 (5.1)
Some College	41 (26.3)	26 (27.7)	7 (30.4)	8 (20.5)
2-Year College Degree	16 (10.3)	4 (4.3)	1 (4.3)	11 (28.2)
4-Year College Degree	51 (32.7)	33 (35.1)	4 (17.4)	14 (35.9)
Graduate Degree	28 (17.9)	17 (18.2)	8 (34.7)	3 (7.7)

Table 2

Mean Scores for Main Measures

	Group			
	Total (n = 156)	Parental Depression (n = 94)	Remitted Depressed (n = 23)	Both Vulnerabilities (n = 39)
Measure, *mean* ± *SD*				
FFMQ	129.19 ± 18.74	133.56 ± 20.01	128.61 ± 14.53	118.97 ± 13.24
DERS	84.50 ± 23.62	76.99 ± 23.90	92.87 ± 20.59	97.67 ± 16.51
WBSI	48.38 ± 13.32	45.57 ± 14.93	49.35 ± 8.63	54.56 ± 8.71
RRS	46.65 ± 13.08	42.74 ± 13.21	51.09 ± 10.95	53.44 ± 10.20
ERQ	30.03 ± 6.82	31.43 ± 6.38	29.48 ± 7.12	26.97 ± 6.80
PANAS - positive	33.01 ± 8.65	33.70 ± 8.58	33.04 ± 8.01	31.33 ± 9.17
PANAS - negative	18.96 ± 8.05	16.80 ± 7.43	23.35 ± 8.64	21.59 ± 7.44

Note: FFMQ = Five Facet Mindfulness Questionnaire; DERS = Difficulties in Emotion Regulation Scale; WBSI = White Bear Suppression Inventory; RRS = Ruminative Response Scale; ERQ = Emotion Regulation Questionnaire; PANAS = Positive and Negative Affect Schedule.

Table 3

Model Fit Indices for Latent Factor Structures Used for Parceling

	$\chi 2$	df	P-value	RMSEA	90% CI	CFI	TLI	SRMR
MIND	46.390	5	0	.230	.172-.293	.744	.488	.114
MIND with crossloading of NR and O	20.513	4	0	.163	.097-.235	.900	.745	.076
MIND without NR	14.521	2	0	.200	.112-.303	.906	.718	.065
ER	44.880	9	0	.160	.101-.140	.925	.875	.057
TS – 1 Factor	279.910	90	0	.116	.101-.132	.860	.837	.064
TS – 2 Factor	266.044	89	0	.113	.097-.129	.870	.846	.064
RUM – 1 Factor	582.997	209	0	.107	.097-.117	.773	.749	.075
RUM – 2 Factor	582.662	208	0	.107	.097-.118	.772	.747	.075
RL	34.677	9	0	.135	.090-.184	.956	.927	.034
POSAFF	79.000	35	0	.090	.063-.116	.947	.932	.043
NEGAFF	108.490	35	0	.116	.092-141	.914	.890	.048

Note: MIND = mindfulness; NR = Nonreactivity to inner experiences subscale; O = Observing subscale; ER = dysfunctional emotion regulation; TS = thought suppression; RUM = rumination; RL = reappraisal; POSAFF = positive affect; NEGAFF = negative affect.

Table 4

Standardized Latent Estimates for Measurement Model

C	MIND	ER	TS	RUM	RL	POSAFF	NEGAFF
MIND	1.000						
ER	-.946***	1.000					
TS	-.742***	.596***	1.000				
RUM	-.814***	.746***	.552***	1.000			
RL	-218*	-.314***	.001	-.026	1.000		
POSAFF	.110	-.175*	-.085	.087	.448***	1.000	
NEGAFF	-.544***	.648***	.367***	.646***	-.247**	-.044	1.000

Note: MIND = mindfulness; ER = dysfunctional emotion regulation; TS = thought suppression; RUM = rumination; RL = reappraisal; POSAFF = positive affect; NEGAFF = negative affect.
Note: * = p<.05, ** = p<.01, *** = p<.001

Figure 1. Flow-chart showing recruitment of participants to study.

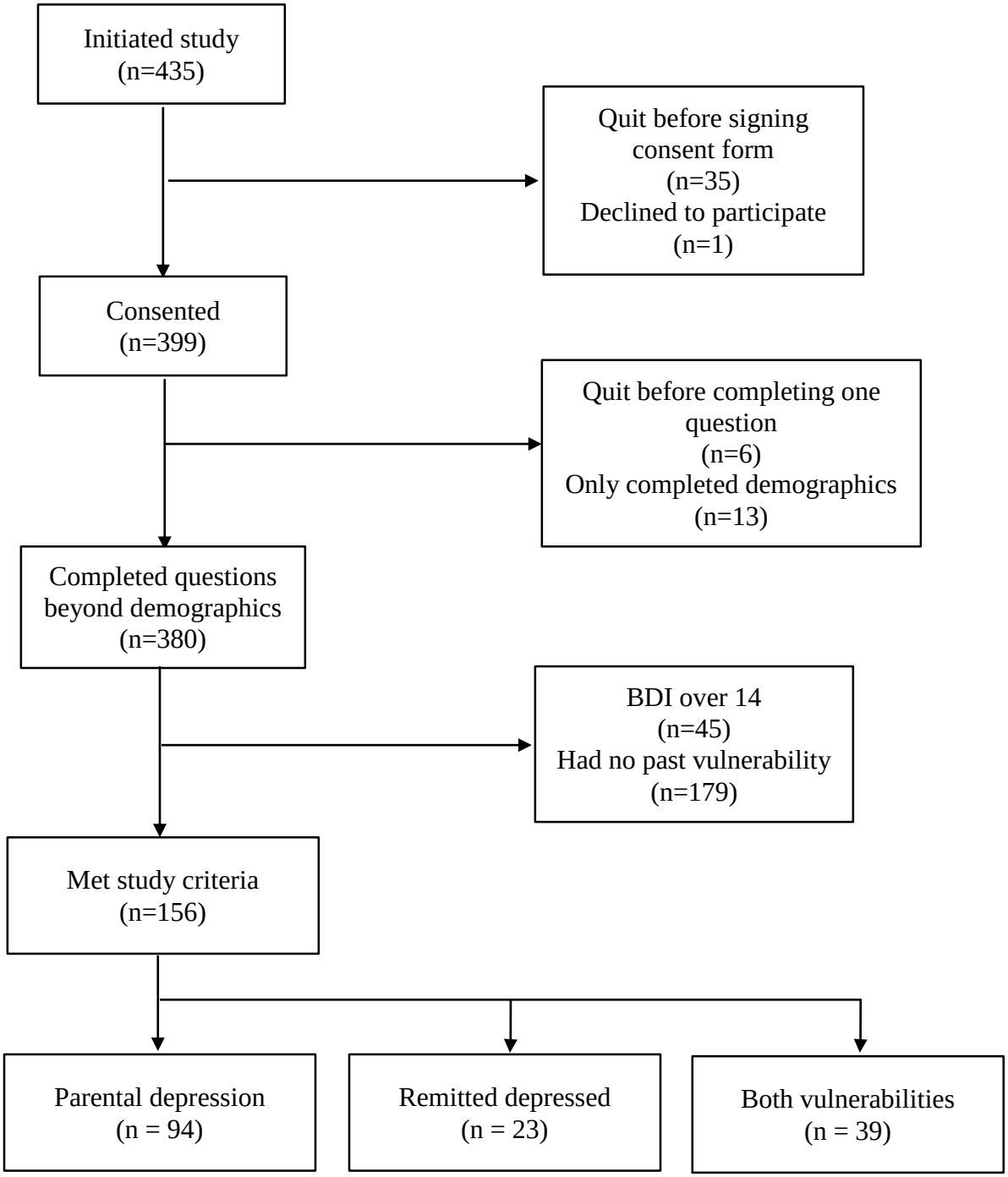
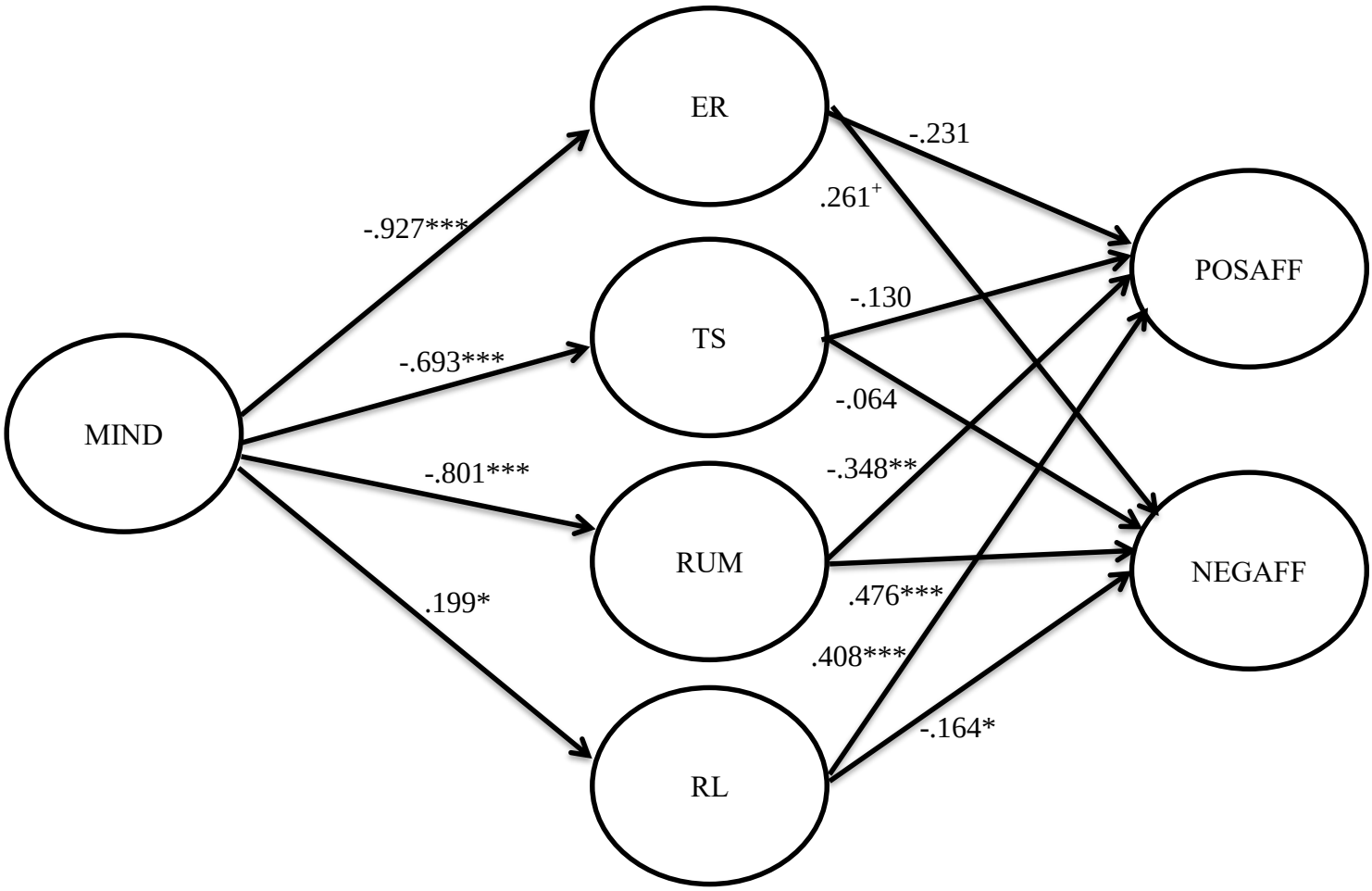
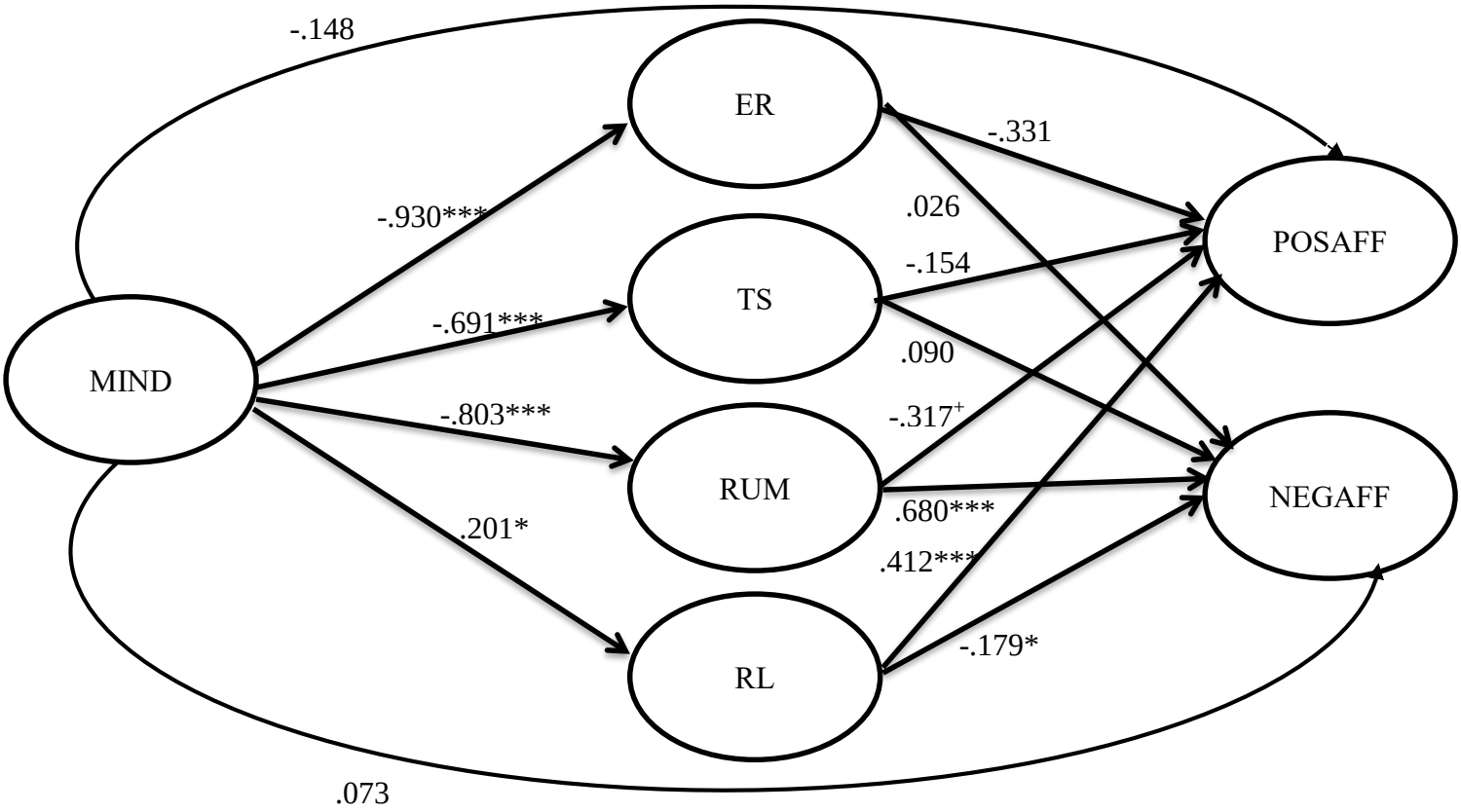


Figure 2. Structural equation model of cognitive emotion regulation strategies as full mediators of mindfulness and affect.



Note: MIND = mindfulness; ER = dysfunctional emotion regulation; TS = thought suppression; RUM = rumination; RL = reappraisal; POSAFF = positive affect; NEGAFF = negative affect. + = p<.06, * = p<.05, ** = p<.01, *** = p<.001; Results are standardized; Residual and factors loadings not shown due to lack of space.

Figure 3. Structural equation model of cognitive emotion regulation strategies as partial mediators of mindfulness and affect.



Note: MIND = mindfulness; ER = dysfunctional emotion regulation; TS = thought suppression; RUM = rumination; RL = reappraisal; POSAFF = positive affect; NEGAFF = negative affect. + = p<.06, * = p<.05, ** = p<.01, *** = p<.001; Results are standardized; Residual and factors loadings not shown due to lack of space.

Appendix A: The Inventory to Diagnose Depression, Lifetime version

IDD-L

For the following questions, indicate the one statement that best describes how you felt across (or longer than) the whole two-week span WHEN YOU WERE MOST DEPRESSED. IF YOUR ANSWER CHOICE DID NOT LAST AT LEAST TWO WEEKS, MARK THE TOP ANSWER CHOICE.

1. What one statement best describes how you felt?

0 I did not feel sad or depressed. (or lasted less than 2 weeks)
1 I occasionally felt sad or down.
2 I felt sad most of the time, but I was able to snap out of it.
3 I felt sad all the time, and I couldn't snap out of it.
4 I was so sad or unhappy that I couldn't stand it.

2. What one statement best describes how you felt?

0 My energy level was normal. (or change lasted less than 2 weeks)
1 My energy level was a little lower than normal.
2 I got tired more easily and had less energy than is usual.
3 I got tired from doing almost anything.
4 I felt tired or exhausted almost all the time.

3. What one statement best describes how you felt?

0 I was not feeling more restless and fidgety than usual. (or change lasted < 2 weeks)
1 I felt a little more restless or fidgety than usual.
2 I was very fidgety, and I had some difficultly sitting still in a chair.
3 I was extremely fidgety, and I paced a little bit almost everyday.
4 I paced more than an hour per day, and I couldn't sit still.

4. What one statement best describes how you felt?

0 I did not talk or move more slowly than usual. (or change lasted < 2 weeks)
1 I talked a little slower than usual.
2 I spoke slower than usual, and it took me longer to respond to questions, but I could still carry on a normal conversation.
3 Normal conversations were difficult for me because it was hard to start talking.
4 I felt extremely slowed down physically, like I was stuck in mud.

5. What one statement best describes how you felt?

0 I did not lose interest in my usual activities. (OR change lasted less than 2 weeks)
1 I was a little less interested in 1 or 2 of my usual activities.
2 I was less interested in several of my usual activities.
3 I lost most of my interest in almost all of my usual activities.
4 I lost interest in all of my usual activities.

6. What one statement best describes how you felt?

0 I got as much pleasure out of my usual activities as usual. (OR change lasted <2 weeks)
1 I got a little less pleasure from 1 or 2 of my usual activities.
2 I got less pleasure from several of my usual activities.
3 I got almost no pleasure from several of my usual activities.
4 I got no pleasure from any of the activities which I usually enjoy.

7. What one statement best describes how you felt?

0 My interest in sex was normal. (OR change lasted < 2 weeks)
1 I was only slightly less interested in sex than usual.
2 There was noticeable decrease in my interest in sex.
3 I was much less interested in sex then usual.
4 I lost all interest in sex.

8. What one statement best describes how you felt?

0 I did not feel guilty. (OR I felt this way less than 2 weeks)
1 I occasionally felt a little guilty.
2 I often felt guilty.
3 I felt quite guilty most of the time.
4 I felt extremely guilty most of the time.

9. What one statement best describes how you felt?

0 I did not feel like a failure. (or feelings were for less than 2 weeks)
1 My opinion of myself was occasionally a little low.
2 I felt I was inferior to most people.

3 I felt like a failure.
4 I felt I was a totally worthless person.

10. What one statement best describes how you felt?

0 I could concentrate as well as usual. (or difficulties lasted < 2 weeks)
1 My ability to concentrate was slightly worse than usual.
2 My attention span was not as good as usual and I had difficulty collecting my thoughts; but this didn't cause any problems.
3 My ability to read or hold a conversation was not as good as usual.
4 I could not read, watch TV, or have a conversation without great difficulty.

11. What one statement best describes how you felt?

0 I made decisions as well as usual. (OR difficulties lasted < 2 weeks)
1 Decision making was slightly more difficult than usual.
2 It was harder and took longer to make decisions, but I did make them.
3 I was unable to make some decisions.
4 I couldn't make any decisions at all.

12. What one statement best describes how you felt?

0 My appetite was not less than normal. (OR change lasted < 2 weeks)
1 My appetite was slightly worse than usual.
2 My appetite was clearly not as good as usual, but I still ate.
3 My appetite was much worse.
4 I had no appetite at all, and I had to force myself to eat even a little.

13. What one statement best describes how you felt?

0 I didn't lose any weight.
1 I lost less than 5 pounds.
2 I lost between 5-10 pounds.
3 I lost between 11-25 pounds.
4 I lost more than 25 pounds.

14. What one statement best describes how you felt?

0 My appetite was not greater than normal. (OR change was < 2 wks)
1 My appetite was slightly greater than usual.
2 My appetite was clearly greater than usual.

3 My appetite was much greater than usual.
4 I felt hungry all the time.

15. What one statement best describes how you felt?

0 I didn't gain any weight.
1 I gained less than 5 pounds.
2 I gained between 5-10 pounds.
3 I gained between 11-25 pounds.
4 I gained more than 25 pounds.

16. What one statement best describes how you felt?

0 I was not sleeping less than usual. (OR change was for less than 2 weeks)
1 I occasionally had light difficulty sleeping.
2 I clearly didn't sleep as well as usual.
3 I slept about half my normal amount of time.
4 I slept less than 2 hours per night.

17. What one statement best describes how you felt?

0 I was not sleeping more than normal. (OR change was for < 2 weeks)
1 I occasionally slept more than usual.
2 I frequently slept at least 1 hour more than usual.
3 I frequently slept at least 2 hours more than usual.
4 I frequently slept at least 3 hours more than usual.

18. What one statement best describes how you felt?

0 I did not feel anxious, nervous or tense. (OR these feelings last < 2 weeks)
1 I occasionally felt a little anxious.
2 I often felt anxious.
3 I felt anxious most of the time.
4 I felt terrified and near panic.

19. What one statement best describes how you felt?

0 I did not feel discouraged about the future. (OR felt discouraged < 2 weeks)
1 I occasionally felt a little discouraged about the future.
2 I often felt discouraged about the future.

3 I felt very discouraged about the future most of the time.
4 I felt that the future was hopeless and that things would never improve.

20. What one statement best describes how you felt?

0 I did not feel irritated or annoyed (OR felt irritated/annoyed < 2 weeks)
1 I occasionally got a little more irritated than usual.
2 I got irritated or annoyed by things that usually didn't bother me.
3 I felt irritated or annoyed almost all the time.
4 I felt so depressed that I didn't get irritated at all by things that would normally bother me.

21. What one statement best describes how you felt?

0 I was not worried about my physical health. (OR concerns lasted < 2 weeks)
1 I was occasionally concerned about bodily aches and pains.
2 I was worried about my physical health.
3 I was very worried about my physical health.
4 I was so worried about my physical health that I could not think about anything else.

22. What one statement best describes you?

0 This bout of depression is the only one I have ever had.
1 I have had an additional period of depression similar to the one I already described.
2 I have had two more periods of depression similar to the one I already described.
3 I have had three more periods of depression similar to the one I already described.
4 I have had five or more periods of depression similar to the one I already described.

23. What one statement best describes the period?

0 I did not get any treatment for how I felt.
1 I got psychotherapy, but did not take anti-depressant medication.
2 I took anti-depressant medication, but did not get psychotherapy.
3 I got psychotherapy and took anti-depressant medication(s).
4 I was admitted to a psychiatric hospital for treatment.

Additional Questions:

24. How long did this depressive period last?_____

25. How long ago was this depressive period?_____

Appendix B: Modified Family History Screen

FHS

Below are various questions that ask about the psychiatric histories and behaviors of your parents. Check the box that most appropriately reflects your knowledge of your MOTHER. When answering, **exclude times when your mother was physically ill.**

MOTHER:

	Yes	No	Don't Know
1. Has there ever been a period of time during which your mother felt sad, blue, or depressed for **most of the day, nearly every day** and it lasted at least TWO WEEKS?			
2. Has there ever been a time when your mother lost interest or pleasure in her usual activities **most of the day, nearly every day** and it lasted at least TWO WEEKS? If you answered NO to both questions, proceed to **#13** If you answer YES to either question, focus on that period of time for the following questions.			
3. During this period of time did your mother experience a significant change in appetite, (either eating more or less)?			
4. During this period did your mother experience a significant weight gain or loss (not intentional)?			
5. During this period did your mother ever have sleep problems, like trouble falling asleep, or waking up too early, or sleeping too much, that lasted as much as an hour a night?			
6. During this period did your mother ever act so fidgety or restless that she was unable to sit still?			
7. <u>If you answered no</u>, what about your mother talking or moving more slowly than is normal for her?			
8. During this period did your mother seem fatigued and have less energy?			
9. During this time did your mother has feelings of worthlessness and/or excessive guilt about things done or not done?			
10. During this period did your mother have trouble thinking or concentrating?			
11. During this period did your mother have difficulty making decisions about everyday things?			
12. Because of these symptoms has your mother ever had difficulty carrying out her usual responsibilities such as working, going to school, or taking care of the family or household for a WEEK OR MORE?			
13. Has your mother ever suffered from depression?			

14. Has your mother ever seen a psychiatrist, psychologist, social worker, doctor, or other health professional for depression?			
15. Has your mother ever stayed overnight or longer in a hospital or treatment facility because of depression?			
16. Has a doctor ever given your mother any medicine for depression?			

FHS

Below are various questions that ask about the psychiatric histories and behaviors of your parents. Check the box that most appropriately reflects your knowledge of your FATHER. When answering, **exclude times when your father was physically ill.**

FATHER:

	Yes	No	Don't Know
1. Has there ever been a period of time during which your father felt sad, blue, or depressed for **most of the day, nearly every day** and it lasted at least TWO WEEKS?			
2. Has there ever been a time when your father lost interest or pleasure in his usual activities **most of the day, nearly every day** and it lasted at least TWO WEEKS? If you answered NO to both questions, proceed to **#13** If you answer YES to either question, focus on that period of time for the following questions.			
3. During this period of time did your father experience a significant change in appetite, (either eating more or less)?			
4. During this period did your father experience a significant weight gain or loss (not intentional)?			
5. During this period did your father ever have sleep problems, like trouble falling asleep, or waking up too early, or sleeping too much, that lasted as much as an hour a night?			
6. During this period did your father ever act so fidgety or restless that he was unable to sit still?			
7. <u>If you answered no</u>, what about your father talking or moving more slowly than is normal for him?			
8. During this period did your father seem fatigued and have less energy?			
9. During this time did your father has feelings of worthlessness and/or excessive guilt about things done or not done?			
10. During this period did your father have trouble thinking or concentrating?			
11. During this period did your father have difficulty making decisions about everyday things?			
12. Because of these symptoms has your father ever had difficulty carrying out his usual responsibilities such as working, going to school, or taking care of the family or household for a WEEK OR MORE?			
13. Has your father ever suffered from depression?			
14. Has your father ever seen a psychiatrist, psychologist, social worker, doctor, or other health professional for depression?			

15. Has your father ever stayed overnight or longer in a hospital or treatment facility because of depression?			
16. Has a doctor ever given your father any medicine for depression?			

Appendix C: Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988)
PANAS Questionnaire
This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you have felt this way over the past week.**

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

_____ 1. Interested	_____ 11. Irritable
_____ 2. Distressed	_____ 12. Alert
_____ 3. Excited	_____ 13. Ashamed
_____ 4. Upset	_____ 14. Inspired
_____ 5. Strong	_____ 15. Nervous
_____ 6. Guilty	_____ 16. Determined
_____ 7. Scared	_____ 17. Attentive
_____ 8. Hostile	_____ 18. Jittery
_____ 9. Enthusiastic	_____ 19. Active
_____ 10. Proud	_____ 20. Afraid

Appendix D: The Five Facet Mindfulness Questionnaire

APPENDIX A: FIVE FACET MINDFULNESS QUESTIONNAIRE (FFMQ)

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes *your own opinion* of what is *generally true for you*.

1	2	3	4	5
Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true

1. When I'm walking, I deliberately notice the sensations of my body moving.
2. I'm good at finding words to describe my feelings.
3. I criticize myself for having irrational or inappropriate emotions.
4. I perceive my feelings and emotions without having to react to them.
5. When I do things, my mind wanders off and I'm easily distracted.
6. When I take a shower or bath, I stay alert to the sensations of water on my body.
7. I can easily put my beliefs, opinions, and expectations into words.
8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
9. I watch my feelings without getting lost in them.
10. I tell myself I shouldn't be feeling the way I'm feeling.
11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
12. It's hard for me to find the words to describe what I'm thinking.
13. I am easily distracted.
14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
15. I pay attention to sensations, such as the wind in my hair or sun on my face.
16. I have trouble thinking of the right words to express how I feel about things.
17. I make judgments about whether my thoughts are good or bad.
18. I find it difficult to stay focused on what's happening in the present.
19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
21. In difficult situations, I can pause without immediately reacting.
22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
23. It seems I am "running on automatic" without much awareness of what I'm doing.
24. When I have distressing thoughts or images, I feel calm soon after.
25. I tell myself that I shouldn't be thinking the way I'm thinking.

26. I notice the smells and aromas of things.
27. Even when I'm feeling terribly upset, I can find a way to put it into words.
28. I rush through activities without being really attentive to them.
29. When I have distressing thoughts or images, I am able just to notice them without reacting.
30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
32. My natural tendency is to put my experiences into words.
33. When I have distressing thoughts or images, I just notice them and let them go.
34. I do jobs or tasks automatically without being aware of what I'm doing.
35. When I have distressing thoughts or images, I judge myself as good or bad depending what the thought or image is about.
36. I pay attention to how my emotions affect my thoughts and behavior.
37. I can usually describe how I feel at the moment in considerable detail.
38. I find myself doing things without paying attention.
39. I disapprove of myself when I have irrational ideas.

Appendix E: The Difficulties in Emotion Regulation Scale

Difficulties in Emotion Regulation Scale (DERS)

Response categories:
1 Almost never (0-10%)
2 Sometimes (11-35%)
3 About half the time (36-65%)
4 Most of the time (66 – 90%)
5 Almost always (91-100%)

1. I am clear about my feelings.
2. I pay attention to how I feel.
3. I experience my emotions as overwhelming and out of control.
4. I have no idea how I am feeling.
5. I have difficulty making sense out of my feelings.
6. I am attentive to my feelings.
7. I know exactly how I am feeling.
8. I care about what I am feeling.
9. I am confused about how I feel.
10. When I'm upset, I acknowledge my emotions.
11. When I'm upset, I become angry with myself for feeling that way.
12. When I'm upset, I become embarrassed for feeling that way.
13. When I'm upset, I have difficulty getting work done.
14. When I'm upset, I become out of control.
15. When I'm upset, I believe that I will remain that way for a long time.
16. When I'm upset, I believe that I'll end up feeling very depressed.
17. When I'm upset, I believe that my feelings are valid and important.
18. When I'm upset, I have difficulty focusing on other things.
19. When I'm upset, I feel out of control..
20. When I'm upset, I can still get things done.
21. When I'm upset, I feel ashamed with myself for feeling that way.
22. When I'm upset, I know that I can find a way to eventually feel better.
23. When I'm upset, I feel like I am weak.
24. When I'm upset, I feel like I can remain in control of my behaviors.
25. When I'm upset, I feel guilty for feeling that way.
26. When I'm upset, I have difficulty concentrating.
27. When I'm upset, I have difficulty controlling my behaviors.
28. When I'm upset, I believe there is nothing I can do to make myself feel better.
29. When I'm upset, I become irritated with myself for feeling that way.
30. When I'm upset, I start to feel very bad about myself.
31. When I'm upset, I believe that wallowing in it is all I can do.
32. When I'm upset, I lose control over my behaviors.

33. When I'm upset, I have difficulty thinking about anything else.
34. When I'm upset, I take time to figure out what I'm really feeling.
35. When I'm upset, it takes me a long time to feel better.
36. When I'm upset, my emotions feel overwhelming.

Appendix F: The White Bear Suppression Inventory

WBSI

This survey is about thoughts. There are no right or wrong answers, so please respond honestly to each of the items below. Be sure to answer every item by circling the appropriate letter beside each.

A	B	C	D	E
Strongly Disagree	Disagree	Neutral or Don't Know	Agree	Strongly Agree

A B C D E 1. There are things I prefer not to think about.
A B C D E 2. Sometimes I wonder why I have the thoughts I do.
A B C D E 3. I have thoughts that I cannot stop.
A B C D E 4. There are images that come to mind that I cannot erase.
A B C D E 5. My thoughts frequently return to one idea.
A B C D E 6. I wish I could stop thinking of certain things.
A B C D E 7. Sometimes my mind races so fast I wish I could stop it.
A B C D E 8. I always try to put problems out of mind.
A B C D E 9. There are thoughts that keep jumping into my head.
A B C D E 10. There are things that I try not to think about.
A B C D E 11. Sometimes I really wish I could stop thinking.
A B C D E 12. I often do things to distract myself from my thoughts.
A B C D E 13. I have thoughts that I try to avoid.
A B C D E 14. There are many thoughts that I have that I don't tell anyone.
A B C D E 15. Sometimes I stay busy just to keep thoughts from intruding on my mind.

Appendix G: Ruminative Response Scale

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed. Please indicate what you generally do, not what you think you should do.

1 almost never 2 sometimes 3 often 4 almost always

1. think about how alone you feel
2. think "I won't be able to do my job if I don't snap out of this"
3. think about your feelings of fatigue and achiness
4. think about how hard it is to concentrate
5. think "What am I doing to deserve this?"
6. think about how passive and unmotivated you feel.
7. analyze recent events to try to understand why you are depressed
8. think about how you don't seem to feel anything anymore
9. think "Why can't I get going?"
10. think "Why do I always react this way?"
11. go away by yourself and think about why you feel this way
12. write down what you are thinking about and analyze it
13. think about a recent situation, wishing it had gone better
14. think "I won't be able to concentrate if I keep feeling this way."
15. think "Why do I have problems other people don't have?"
16. think "Why can't I handle things better?"
17. think about how sad you feel.
18. think about all your shortcomings, failings, faults, mistakes
19. think about how you don't feel up to doing anything
20. analyze your personality to try to understand why you are depressed
21. go someplace alone to think about your feelings
22. think about how angry you are with yourself

Appendix H: Emotion Regulation Questionnaire

Instructions and Items

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1----------2----------3----------4----------5----------6----------7

strongly disagree	**neutral**	**strongly agree**

1. ____ When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.
2. ____ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
3. ____ When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
4. ____ When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.
5. ____ I control my emotions by *changing the way I think* about the situation I'm in.
6. ____ When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.