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New Directions in the Psychopathology of Generalized Anxiety Disorder: An Investigation of the Role of Emotion Regulation in the Development and Maintenance of Chronic Worry and Anxiety

A dissertation submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in Clinical Psychology

by

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Abstract

Generalized anxiety disorder (GAD) is a condition characterized by the experience of chronic and excessive worry and anxiety, which affects nearly seven million people in the United States alone. Research has demonstrated that GAD is the least effectively treated anxiety disorder. Some have argued that this is because treatment development, thus far, may not accurately conceptualize the clinical problem; treating the symptoms rather than the underlying dysfunction that produces them. This paper will argue that GAD pathology stems from problems associated with dysfunctional emotion regulation and that the diagnostic features of GAD, such as chronic worry, are not the cause of the pathology, but rather the product of it. Eighty-four subjects were assigned to one of three groups based on self reported worry levels and GAD symptoms. These groups included a GAD criteria group, a high worry/non-GAD group, and a non-anxious group. Following a battery of trait measures, all participants underwent a negative mood induction. Their emotional reactions to that induction were measured, and they were then asked to actively regulate their emotional experience. This regulation process was tracked over a 24 hour time period. The results of this study suggest specific differences between these three groups with regard to how they experience, and modulate emotional reactions. Further, we provide evidence that emotion regulation affects one's experience of anxiety, independently of their level of worry. Implications for a new model of generalized anxiety disorder are discussed alongside trans-diagnostic implications for emotion regulation across the anxiety disorders.

Introduction

Generalized Anxiety Disorder was originally demarcated as a psychological disorder in the Diagnostic and Statistical Manual of Mental Disorders III (DSM-III; American Psychiatric Association, 1980). The most recent revision of the criteria of GAD in the DSM-IV (American Psychiatric Association, 1994) describes it as a set of anxiety related symptoms that include both cognitive (excessive and uncontrollable worry) as well as somatic (Sleep disturbance, muscle tension, restlessness, irritability, poor concentration) features that must persist for a majority of the time for at least six months and be causing some sort of impaired functioning or severe distress in one's life. These impairments may include but are not limited to the romantic, social, occupational, legal, or academic activities of an individual.

This paper will review relevant, current research regarding the epidemiology, theory, and treatment of GAD. Additionally, a newly developed model of the etiology of GAD, based in emotion regulation theory, will be discussed in the context of an original research investigation designed to replicate and extend previous findings. Implications for theory, research, and treatment will be discussed.

Epidemiology.

Using DSM-III criteria the original National Comorbidity Study (NCS; Wittchen, Zhao, & Kessler, 1994), employed a sample of 8,098 subjects (ages 15-54) from the general population, found that 1.6% of subjects met criteria for GAD at the time of assessment. In the year prior to assessment 3.1% of the

population met criteria and 5.1% had a lifetime incidence of GAD. A higher proportion of women than men met GAD criteria. Being over age 24, being previously married, being unemployed or a homemaker, and living in the Northeast of the United States were all significantly and positively correlated with GAD prevalence. More than half of those meeting GAD criteria also met criteria for at least one other DSM-III-R disorder.

The National Comorbidity Survey Replication (NCS-R), a ten year update of the original NCS using DSM-IV criteria, has suggested that the one year prevalence of GAD for Americans over the age of 18 is approximately 6.8 million, or 3.1 percent of the adult population, largely unchanged from the 1994 study (Kessler, Berglund, Demler, Jin, & Walters, 2005; Kessler, Brandenburg, Lane, Roy-Byrne, Stang, Stein, & Wittchen, 2005).

Studies examining the occurrence of clients presenting with GAD in primary care settings have suggested that prevalence ranges from 2.8% to 8.5% with a median figure of 5.8%, nearly twice that of the NCS-R, suggesting a link between GAD and health-care seeking behavior, and as a result increased health care costs (Kessler & Merikangas, 2004; Roy-Byrne & Wagner, 2004).

This is not surprising given the literature suggesting that many cases of GAD initially present to their primary care physician rather than any type of mental health specialist (Katon, Von Korff, Lin, & Walker, 1994). Kennedy and Schwab (1997) have suggested that this over utilization of medical services burdens both physicians and the health care system. They found that twice as many GAD patients sought treatment from gastrointestinal specialists than

psychiatrists. This highlights the need for effective diagnosis and treatment with regard to GAD.

As a result of the findings of the NCS-R, several researchers have begun to question the validity of specific DSM criteria for GAD. The criterion receiving the most attention is the "excessive" quality of worry. Interestingly, excessive worry is absent as a diagnostic feature in ICD-10 criteria (World Health Organization, 1993). Using data from the NCS-R, Ruscio et al. (2005) removed the excessiveness criterion and found a 40% increase in the prevalence of GAD cases. When compared to those that met the excessive worry criterion, those without excessive worry showed similar impairment, treatment seeking rates, and demographic variables. One difference that emerged between the two groups is that chronic worriers met GAD criteria earlier in life. Those without excessive worry typically had a slightly milder presentation and a less chronic course, but were largely comparable to those using traditional diagnostic criteria. Ruscio et al. (2005) have suggested that excessive worry is vague and inadequate as a diagnostic criterion and that a reexamination of our clinical conceptualization of this problem may be timely.

GAD can develop throughout life; however the median age of onset is 31 years (Kessler, Berglund, Demler, Jin, & Walters, 2005). Despite this, GAD can also develop both in childhood and in later life. GAD is one of the most frequently occurring psychological diagnoses among those over age 65, and is three times more common than major depression (Beekman et al., 1998; Blazer, 1997). Nearly half of elderly persons meeting criteria for GAD developed the

disorder later in life. Earlier development, however, is associated with a more severe course (LeRoux, Gatz, & Wetherell, 2005). As mentioned previously, more women than men meet GAD criteria with a ratio of approximately 2:1 (National Institute of Mental Health, 2006).

Treatment.

The search for an effective, evidence based treatment for GAD has been underway almost since GAD was first included in DSM-III. Over the past two decades a wide variety of treatments have been applied to this clinical presentation with varying degrees of success. Initially, the same exposure based techniques used to treat other anxiety related conditions such as phobias or panic disorder were applied to the treatment of GAD (Borkovec and Whisman, 1996). However, the field quickly reached a consensus that GAD phenomenology was too diffuse to use exposure effectively (Borkovec & Ruscio, 2001). This may be true, but an alternative hypothesis is that the exposure techniques employed were not treating the appropriate targets (Forsyth, Eifert, & Barrios, 2006).

As a result of the failure of traditional exposure based interventions, treatments became more wide-ranging, incorporating relaxation techniques and cognitive therapy (Beck & Emery, 1985; Öst, 1987). Ultimately this developed into a well supported cognitive behavioral therapy for worry and GAD that has come to be recognized as the standard of care (Gould, Safren, O'Neill-Washington, & Otto, 2004). This treatment involves a combination of cognitive therapy, behavior therapy and relaxation techniques, self-control desensitization,

imaginal exposure, anxiety management training, and coping rehearsal (Borkovec & Whisman, 1996). This treatment package has received the most support for producing long term improvement in both the somatic and cognitive features of chronic worry and anxiety (Gould et al., 2004). Four major treatment outcome reviews and meta-analyses of sixteen outcome studies have supported the use of CBT approaches (Borkovec & Ruscio, 2001; Borkovec & Whisman, 1996; Gould, Otto, Pollack, and Yap, 1997; Gould, Safren, O'Neill-Washington, & Otto, 2004). These reviews employed very stringent controls to ensure rigorous quality standards were met in order for a project to be included. Comparison groups included active treatments (e.g. applied relaxation, CT or BT alone, self control desensitization, and various forms of pharmacotherapy) as well as inactive placebo treatments (both pill and psychotherapy) and no-treatment/waitlist control conditions.

Cognitive behavioral interventions have demonstrated consistently large effect sizes, superior to other intervention strategies, and also demonstrate treatment gains that are durable and which also impact co-morbid conditions. The typical case presentation of GAD is complicated and may involve a long history of worry related problems and, commonly, symptoms of other anxiety disorders and depression. The use of a treatment that not only targets the primary concern, but also impacts other related concerns simultaneously should be considered over treatments that are more limited in breadth. This approach streamlines treatment to be both comprehensive and efficient. Across studies the mean effect size for CBT treatments with regard to anxiety change pre- to

post- treatment was 0.90, a large effect size given Cohen's (1988) criteria. Additionally, the number of comorbid diagnoses decreased significantly (Gould, Safren, O'Neill-Washington, & Otto, 2004).

Despite the support for CBT treatments, they still are lacking in some very important ways. First, individual response rates to CBT treatments tend to be less than ideal with treatment response rates in the 50-70% range. Fisher and Durham (1999) have stated that these rates may be misleading, and that an individual treatment recovery rate of 48% is more accurate. One treatment outcome study by Butler, Fennell, Robson, and Gelder (1991) found significant improvement for those receiving CBT, yet only 32% met criteria for high end state functioning. Rates of clinically significant change are also less than ideal with estimates ranging from 50% to 58%, suggesting that nearly half of those that are treated do not attain normal levels of functioning at the end of treatment and still retain some symptomatology (Borkovec & Costello, 1993; Borkovec & Newman, 1999; Crits-Christoph, Connolly-Gibbons, & Crits-Christoph, 2004; Ladouceur, Dugas, Freeston, Léger, Gagnon, & Thibodeau, 2000).

It is not surprising then that the best technology we have for treating GAD lags behind the treatments of other anxiety related problems, earning it the title of the most difficult anxiety disorder to treat effectively (Brown, Barlow, & Liebowitz, 1994). For example, the treatment of panic disorder has been demonstrated as effective in 70-90% of cases (Antony, & McCabe, 2002). Borkovec and Ruscio (2001) described GAD as being "treatment resistant."

GAD Phenomenology.

What is different about GAD and why can these other, theoretically related conditions, be treated so effectively while those same approaches are significantly less potent in the case of chronic worry? One argument is that GAD differs from the other anxiety disorders in key ways. Generalized anxiety disorder lacks the stimulus specificity of specific phobia, and unlike social phobia, occurs across a range of contexts. It also lacks the overt, ritualistic behavior seen with obsessive-compulsive disorder (OCD), although some have likened worry related safety behavior (e.g., checking, reassurance seeking, etc.) to OCD compulsions (Rachman, 2003). The onset of GAD can not be linked back to a specific experience or event, as is the case with posttraumatic stress disorder and acute stress disorder, and it is a chronically anxious condition, rather than having extremely severe, but short lived periods of anxiety as in panic disorder. The anxiety experienced in GAD is broader and more omnipresent, and the core pathology is often masked by the severity and visibility of the central symptom of worry. Because of these differences the treatments used to address these other disorders cannot simply be applied generally to the treatment of GAD. Some have argued that this is because GAD represents the “fundamental” anxiety disorder (Barlow, 2002; Rapee, 1991). Alternatively, this may be because GAD represents a different functional process from these other conditions. In these other conditions there are specific fear targets that are amenable to exposure and can often be resolved from that level or with the adjunct of psychoeducation and cognitive modification. In GAD, however, worry is often the primary treatment target. Worry, however, is not a specific fear, it is a behavioral coping

strategy used either strategically or without awareness to avoid or produce distance from aversive experiences. It is more akin to safety behaviors seen in panic disorder or specific phobias than it is to the physiological arousal, barking dog, or enclosed area that serve as the exposure target. Yet, treatments for GAD often treat worry as the barking dog, ignoring the fact that exposure to that stimulus can be neutralized if the person is allowed to use safety behaviors or in the case of worry a maladaptive coping strategy to regulate their experience while interacting with the feared object.

Treatments for GAD need to target the core processes that lead to the use of worry as a means of coping, rather than treating the worry in isolation. Again, to draw an analogy with panic disorder, you would not treat the panic attack itself, but you would treat the fear of- or aversive reaction to- physiological arousal. So, if the core process in panic is fear of physiological arousal, or what has been termed anxiety sensitivity, then what may underlie the dysfunctional processes in GAD? Some have suggested that it is the experience of aversive cognitive content and imagery (Borkovec, Alcaine, & Behar, 2004). Others have pared this down even further to aversive experiences of emotion (Williams, Chambless, & Ahrens, 1997).

Targeting only worry, a topographical feature of the disorder, in treatment fails to address these more core processes. Worry is a normal process that becomes over learned and may serve to regulate one's own emotional experience in the absence of more adaptive strategies; it is not a new pathological behavior that develops, although its frequency of use may increase

as it gains strength in one's behavioral repertoire due to the reinforcing effects of its avoidant function.

Avoidance Theory of Worry.

The work of Borkovec and colleagues (Borkovec, 1994; Borkovec, Alcaine, & Behar, 2004; Borkovec & Hu, 1990; Borkovec & Inz, 1990; Borkovec, Robinson, Pruzinsky, & Depree, 1983; Borkovec & Roemer, 1995; Hazlett-Stevens & Borkovec, 2004) has so far, paved the way for a truly functional model of GAD. Borkovec has theorized that normal worry behavior has both a distractive and suppressive function. The inherent characteristics of worry support this; it is a future focused strategy that allows for preparations to address vague and often unlikely scenarios that lend themselves to catastrophic and all or nothing thinking. Indeed, Borkovec and Inz (1990) have provided evidence that those meeting GAD criteria, when compared to non-anxious control participants, reported experiencing proportionally more verbal/linguistic cognitive material (thoughts/worry) than imagery based visual cognition. Therefore, normal worry behavior is negatively reinforced by distracting the worrier from more aversive, and concrete, thoughts and feelings in the present while suppressing the associated emotional reactions.

Additionally, worry may also stem the physiological reactions associated with worry. Engaging in worry before exposure to a fear invoking stimulus has been shown to dampen physiological reactions to that stimulus to a greater degree than relaxing prior to exposure (Borkovec & Hu, 1990). Additionally, Hoehn-Saric, McLeod, and Zimmerli (1989) have demonstrated that individuals

meeting GAD criteria have lower galvanic skin responses and cardiac reactivity to stressors than controls participants. Those meeting GAD criteria have also shown lower levels of parasympathetic arousal and more rigidity in heart beat rates (Bokovec, Lyonfields, Wiser, & Diehl, 1993). This leaves the individual at a constant level of arousal rather than adapting parasympathetic activation to meet the demands of the environment. This corresponds with the rather constant use of worry by this population, rather than effectively altering one's coping strategy.

As this worry response gains strength in one's repertoire, it becomes the prominent coping response to anxious arousal, eventually becoming over learned and rigidly applied. This serves as a means to increase anxious arousal. When this occurs worry loses the adaptive function that it serves for most people (e.g. planning ahead and problem solving).

Borkovec and colleagues have done a great deal of work identifying the cognitive and physiological effects of worry and building some of the most effective treatment strategies we have today to address these factors. Borkovec's avoidance theory of worry has provided a great deal of information about how worry is selected as an avoidance strategy, however, this theory does not delineate why avoidant consequences of worry are reinforcing beyond the initial escape. What internal experience accounts for the use of such a powerful and negative coping strategy?

Worry appears to be only half of the problem; deficits in emotion regulation have been shown to contribute more to the prediction of GAD than the contribution of worry (Mennin, Heimberg, Turk, & Fresco, 2005). We turn now to

a discussion of emotion and emotion regulation to clarify the other half of the problem.

Emotion Regulation Theory of GAD.

Over the past several years a theory of worry complimentary to Borkovec's has emerged. This theory acknowledges worry's avoidant function, while attributing the need for an avoidance response to problems of emotion regulation and deficient means of coping (Mennin, Heimberg, Turk, & Fresco, 2005). Specifically, Mennin and colleagues (2005) have proposed an etiological model of GAD that includes specific emotion regulation deficits including high levels of emotional sensitivity/ reactivity/ intensity, inadequate emotional awareness, negative reactivity and fear toward one's own emotions, and an ineffective/deficient emotion regulation skills repertoire. These four factors may predispose individuals to make attempts to control and constrain their emotional experiences in the immediate present (due to emotional experiences being aversive) by employing maladaptive coping strategies such as worry. More adaptive coping, which includes processing an emotion through attending to- and allowing- emotion, and the application of coping strategies that allow for emotional processing are either deficient in one's repertoire, or are unable to be accessed. Once this suppression of emotion is sufficiently strong in one's behavioral repertoire, it begins to operate under the control of the mechanisms outlined in Borkovec's avoidance theory (Borkovec et al., 2004).

Mennin et al. (2005) have tested this model with a series of experiments that have supported all four proposed emotion regulation deficits. Study one was

a questionnaire investigation designed to investigate the relationships among components of emotion in a college student sample. The investigators were interested in how GAD participants would differ from non anxious control participant with regard to the four factors described above. In addition, Mennin et al. (2005) proposed that these particular indices of emotion dysregulation may predict the presence of GAD in the sample independent of the variance explained by trait anxiety, worry, and symptoms of depression. Their results suggested that in regard to the proposed inability to engage in adaptive coping, those with GAD had difficulty engaging in self-soothing behavior after experiencing negative emotions. Their results also provided evidence that those meeting GAD criteria experienced more intense emotions, and had more difficulty identifying and describing their emotional experiences. Further results confirmed their hypothesis that a composite emotion regulation score could significantly predict the presence of GAD after worry, anxiety, and depressive symptoms were controlled.

Study two of Mennin et al. (2005) was a replication of study one with a clinical population rather than a student sample. The results of study one were largely replicated in study two, with the exception that no difference emerged in study two regarding the amount of attention one gives emotion in their day to day life. Unfortunately, the logistic regression analysis to examine emotion dysregulation as a predictor of GAD could not be conducted in study two due to a high degree of muliticollinearity among the emotion measures and various other

measures of psychopathology. Tabachnick & Fidell (2000) site this as a violation of the assumptions of logistic regression.

Study three of Mennin et al. (2005) was an experimental investigation designed to induce emotion and compare the resulting emotional response and regulation strategies between participants meeting GAD criteria and non anxious control participants. This study employed a 2 (Group: analog GAD, Control) x 3 (Mood Induction: Anxious, Sad, Neutral) x 2 (Time: Pre and Post Induction) mixed factorial design. Eighty-eight participants were selected a student population based on whether they met GAD criteria or not, and then randomly assigned to mood induction condition. The mood induction stimuli were three pieces of music that have been used in previous research and intended to produce anxious, sad, and neutral moods. Measures of mood, anxiety, physiological arousal, and depression were used to look at change from pre to post mood induction. Their results indicated that after being exposed to the emotionally evocative music, participants with GAD had larger, self-reported physiological responses than controls, and had more difficulty managing their reactions.

This series of studies provided preliminary evidence for the importance of examining emotion processes, in conjunction with more traditional variables, in the processes of psychopathology. Mennin et al. (2005; pg. 1306) suggested that emotion regulation may serve as the “tie that binds” these other important processes, such as cognition, overt behavior, and interpersonal processes together.

Experiencing Emotion.

Individuals with GAD may be caught in a paradox with regard to the expression of emotion. On the one hand, it is proposed that individuals with GAD have emotional reactions that are more frequent and intense than those without GAD (Mennin, Heimberg, Turk, & Fresco, 2005). On the other hand, the individual must go to further lengths to suppress their reactions to these experiences. Gross and John (1997) suggested that there is a positive correlation between experienced emotional intensity and degree of emotional expression (presumably negative emotional expression in the case of GAD). Frequent disclosure of negative emotion to others may lead to criticism and rejection from one's social network, which in turn results in frequent and intense emotional reactions. When asked directly, many with GAD perceive their relationships with others close to them to be significantly impaired (Turk, Mennin, Fresco, & Heimberg, 2000). Pincus and Borkovec (1994) have added to this notion, suggesting that those with GAD endorse interpersonal styles that are characterized as over-nurturing and intrusive. Eng and Heimberg (2004) have argued that those with GAD endorse interpersonal styles that are more likely to elicit negative emotional experiences more frequently than control participants. Given that those with GAD may be both more sensitive and reactive to emotion; these findings highlight the need for this population to be able to self-generate ways of self-soothing after negative emotional experiences.

Emotional Awareness.

Because of the intensity of their emotional reactions, those people meeting GAD criteria may experience emotion as overwhelming and undifferentiated. In the Mennin et al. (2005) studies, the GAD participants scored higher than non anxious control participants on the Difficulty Identifying and Describing Emotions scales of the Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994). Without being able to identify clearly what emotion one is experiencing, it is unlikely that they would then be able to benefit from any useful information that emotion would normally prompt. Confusing emotional reactions that do not have any perceived benefit may very well be experienced as aversive. As a result, the individual may become hypervigilant regarding potential threat related information and endorse negative beliefs about emotions (Mennin, Heimberg, Turk, & Fresco, 2005).

Negative Reactivity to Emotion.

Given that emotions may be experienced as overwhelming and confusing, it is reasonable that those with GAD have reactions to their own emotional experience that are negative. Mennin et al. (2005) have suggested that those with GAD endorsed more negative beliefs about emotional experiences than control participants, and showed elevated scores on all of the Affective Control Scale's subscales (Williams, Chambless, & Ahrens, 1997). Because of this heightened degree of negative reactivity, maladaptive coping strategies are selected for use because they are effective at quickly reducing emotional arousal in the short term. However, these strategies must be used repeatedly and rigidly because of their potential to increase negative emotion over time. These

strategies also maintain common emotion regulation difficulties such as inflexibility in how one modulates their emotions, and the frequent, preemptive use of control strategies designed to suppress emotion.

Regulatory Skills.

The fourth deficit proposed by Mennin et al. (2005) is that those with GAD either lack or are unable to use skills to manage their level of emotional arousal effectively. Individuals meeting GAD criteria reported feeling that it would be more difficult to engage in self-soothing activities following a negative mood induction than non-GAD participants (Mennin, et al., 2005). It should be noted that this finding only speaks to the participant's perception of ability to self-soothe, not whether they were actually able to produce the response. This question of perceived ability versus actual ability remains unanswered in the literature.

Emotion Regulation and the Etiology of GAD.

Given these proposed deficits, GAD can be conceptualized as the result of an interaction between any biological vulnerabilities that may predispose a person to be more sensitive to anxiety, a host of factors influencing how one relates to their own emotional experience, and learning histories in which avoidance has reduced negative emotional arousal (and thus been over-learned as a control strategy) as well as the absence of adaptive means of coping. The result is an aversion to high levels of emotional arousal which elicits the use of avoidance strategies to control cognitive and physiological experiences. Worry, is one such approach that may become the predominant control strategy in those

that develop GAD because of the suppressive effects it exerts on emotional experience, distracting attention away from the original aversive thought or image. Once worry behavior acquires this function, the mechanisms proposed by Borkovec and colleagues begin to exert control over one's behavior.

Examining emotion regulation not only appears to have relevance to our understanding of GAD, but it also offers a model of pathology that is less concerned with the impact of symptomatology, but rather seeks to explain the underlying etiological factors that may ultimately produce the dysfunction.

Defining Emotion Regulation.

Emotion regulation has been examined as a contributing factor in many different clinical populations, including borderline personality disorder, eating disorders, panic disorder, posttraumatic stress disorder, and depression (Baker, Holloway, Thomas, Thomas, & Owens, 2004; Cloitre, Scarvalone, & Difede, 1997; Gross & Munoz, 1995; Kring & Bachorowski, 1999; Rude & McCarthy, 2003; Wagner & Linehan, 1999). Only recently has this model of emotion been applied to generalized anxiety.

Generally, emotion regulation is defined as "the process by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275). Emotions themselves are part of an adaptive system which aids decision making processes by providing information as to whether a particular action or plan should be engaged in or avoided (Frijda, 1986). This system is continually active even though we are not always aware of our emotional experience (Efran,

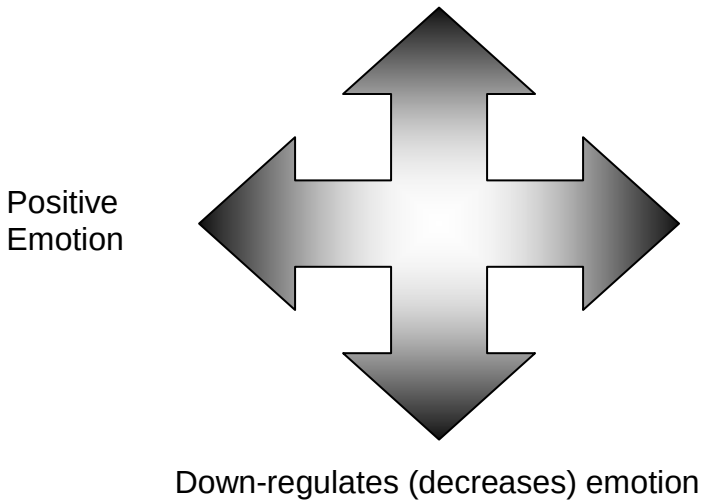


Figure 1. Dimensional conceptualization of Emotion Regulation (Egloff, Schmukle, Burns, & Schwerdtfeger, 2006).

Lukens, & Lukens, 1990). Gross and Munoz (1995) have argued that the successful management of one's emotional experience (emotion regulation) is an important mental health variable.

Emotion regulation can be conceptualized as having two dimensional characteristics yielding four different actions (Cicchetti, Ackerman, & Izard, 1995; Gross, 1998). The first axis relates to whether emotion regulation strategies increase or decrease one's emotional arousal—the intensity of the emotional response, and the degree of control that intensity asserts over the behavioral repertoire.

The second axis deals with the affective quality of the emotion, either positive or negative. Any given behavior, depending on the quadrant it falls into, can increase or decrease positive or negative emotion (see figure 1).

Additionally, these processes of emotion regulation can be either automatic (averting your eyes during a scary scene in a horror movie) or effortful (purposely engaging in slow, deep breathing during a stressful meeting).

Regulating Emotion.

Emotion regulation strategies generally fall into two distinct categories which differ with regard to when they occur in relation to the emotional response and subsequent effects that each one fosters (Egloff, Schmukle, Burns, & Schwerdtfeger, 2006). Gross (2002) coined these "antecedent-focused strategies" and "response focused strategies." Antecedent strategies include selection and modification of the environmental context, attention discrimination, and cognitive reappraisal. Reappraisal is described as the core antecedent strategy, and involves altering one's perception of a situation (Lazarus & Alfert, 1964). For

example reappraising a public speech as a challenge as opposed to threat, or seeing an alcohol relapse as a chance to learn about one's triggers as opposed to being a complete failure. These strategies are generally employed before the emotional response is fully activated. Conversely, response focused strategies generally work by altering the emotional response after it has already been triggered. A prototypical example of this type of strategy is the suppression of emotional expression, which seeks to truncate ongoing emotional experiencing.

Both strategies have the effect of reducing one's experience of emotion in the moment, and therefore have a reinforcing consequence for those experiencing aversive levels of emotion. Reappraisal, however, since it acts

early on before the entire emotional response is activated can impact the entire process leading to a broad effect. Suppression on the other hand only works on the part of the emotion response that has not already occurred by the time it is activated, and therefore, is limited in scope. These effects manifest themselves differentially. Reappraisal results in reductions of emotional experience as well as negative affect, but does not affect levels of physiological arousal or memory. Suppression also reduces the emotional experience, but has no effect on levels of negative affect. It also increases physiological arousal and impairs memory for emotional events (Richards & Gross, 2000). Other studies have added that reappraisal is associated with better interpersonal functioning and well being, while the opposite is true for habitual suppression (Gross & John, 2003; Krohne, 2003).

Frequent suppression of emotion, such as that seen in GAD, may be related to skill deficits in understanding one's own emotional reactions and changing the associated emotions (Mennin, Heimberg, Turk, & Fresco, 2005). These problems in turn may impede positive emotion regulation, producing a predominance of negative emotion in one's daily experience. Novick-Kline et al. (2005) argued that this can lead to emotion dysregulation which produces problems with the latency, strength, length, expression, and appropriateness of emotional reactions.

While there are several factors that are commonly used to describe how one regulates their emotional experiences; one's level of emotion regulation skill is dependent on various factors which are not identical for each person, but

rather can produce various levels of ER sophistication based on their configuration. Emotional sensitivity refers to how frequently a person appraises their experience as having triggered an emotion or an emotion based response. Reactivity is a measure of the strength or degree of the emotional reaction; this is closely tied to the amount of time it takes the individual to return to their baseline level of functioning after experiencing an emotion reaction. Emotional awareness refers to the individual's ability to accurately describe their emotional experience. Negative reactivity describes how one appraises their emotions; for example, do they react with fear toward emotion, or do they react more positively, or neutral. Finally, the skill with which an individual can manipulate their own internal experience is another measure, and is often used to describe the effectiveness of one's behavioral repertoire for regulating emotion.

Much like worry or anxiety, emotion regulation is a normal part of human psychological function. This regulatory mechanism allows us to influence and control our reactions to situations that will pull for strong emotional reactions. Imagine a life where emotions were allowed to exert control over behavior unchecked, chaos would surely ensue (Linehan, 1993). Emotion regulation is much like the homeostatic factors that maintain our physiological balances of heat, hydration, hunger, blood pressure, etc. Imagine the effects if one of these systems were not functioning normally.

To extend this analogy a step further, imagine several people who are unable to modulate their blood pressure; one may have low blood pressure and faint, another may have high blood pressure and experience a stroke, a third may

also have high blood pressure but experience a heart attack, and a fourth may exhibit no symptomatology at all. This is much like emotion regulation in that this one malfunctioning system may produce a wide variety of dysfunction including but not limited to binge eating, substance abuse, self injurious behavior, suicide, anxiety, and worry (Baker, Holloway, Thomas, Thomas, & Owens, 2004; Cloitre, Scarvalone, & Difede, 1997; Gross & Munoz, 1995; Kring & Bachorowski, 1999; Rude & McCarthy, 2003; Wagner & Linehan, 1999).

Emotion Regulation and GAD.

For a long time the field has focused on highlighting how these various types of psychopathology differed from one another, leading each to be compartmentalized with their own forms of treatment, their own centers of study, and their own noteworthy champions. And as a result we fail to see potential commonalities. Of course each of these conditions has specific features that differentiate them, but defining pathology based only on how it differs from other types of behavior may truncate our understanding of their underlying mechanisms. Being able to identify and address functional processes that are common to different pathologies has the potential to be both an efficient and effective means of learning more about our subjects of study.

The common process relevant to GAD, may be twofold; a) the problematic and deficient ER abilities of those that go on to develop GAD or any other type of problem with ER as a central feature, and b) the negative reinforcement of maladaptive coping strategies that are highly effective in producing short term

avoidance or escape, but that come with the cost of long term maintenance of dysfunctional behavior.

Turning the discussion back to worry and GAD, Salters-Pedneault, Roemer, Tull, Rucker, and Mennin (2006) have suggested that worry, itself, could be considered an emotion regulation strategy that falls under the category of down regulating negative emotion. The problem is that this strategy is temporary and may maintain emotional distress by reducing functional exposure to the feared stimulus, which may prevent emotional processing of the perceived threat. This suppression of emotion may produce a rebound effect whereby the aversive thought content is intensified (Wegner, Schneider, Carter, & White, 1987). Worry may also be maladaptive as a coping mechanism because it facilitates experiential avoidance by seeking to over-control one's emotional experience, resulting in another paradoxical effect (Mennin, Heimberg, Turk, & Fresco, 2002; Mennin, Turk, Heimberg, & Carmin, 2004). Given that the adaptive function of emotion is to discriminate between which stimuli, encountered in the environment, should be approached or avoided (Frijda, 1988; Izard, 1971), worry may interfere with this adaptive function by producing inaccurate discriminations that may increase distress in the long run. This may also account for why worry becomes pervasive, as non-threatening situations are frequently avoided, preventing naturalistic exposure to that feared situation from occurring.

Further, as emotional experiences continue to be suppressed, the person may lose access to the adaptive functions of emotion such as providing informational cues about appropriate situational behavior, and the initiation,

motivation and organization of behavioral responses to the demands of one's environment (Novick-Kline, Turk, Mennin, Hoyt, & Gallagher, 2004).

An ER focused treatment therefore may be able not only to impact the fundamental processes of GAD pathology, but as a result, also impact the use, frequency, and distress produced by chronic worry by building more skillful alternative behavioral responses to handle emotional experiences more effectively. Additionally, it addresses important emotion variables that are generally absent or relegated to byproducts of cognition in traditional CBT conceptualizations and treatment (Greenberg & Safran, 1987; Samoilov & Goldfried, 2000). This approach holds promise, and in fact, treatment development and testing is already underway for an Emotion Regulation Therapy for GAD (Mennin, personal communication, 2007).

However, there is still much work to be done in this domain to replicate and extend current knowledge. While Mennin et al. (2005) clearly identified theoretical ER deficits in GAD; there still has not been much empirical work outside of their initial studies. Additionally, one important area of emotion research, which is not addressed directly my Mennin et al., is the distinction between primary and secondary emotions. This issue in particular has been raised as an important distinction by emotion researchers in other areas (Greenberg, 2006; Linehan, 1993). By lumping all emotion together under one umbrella, we may miss that it is the primary emotions which may be aversive to experience, while secondary emotions work much like worry to avoid those initial, intense primary reactions.

One additional point of interest is that ER is a continuous variable. Past conceptualizations of GAD tend to dichotomize the population into those with normal levels of worry versus those with pathological worry and GAD. The findings of Ruscio et al. (2005) suggest that this may not be an accurate approach because this conceptualization may miss an important group of people that report high levels of worry but do not meet full diagnostic criteria. Ruscio et al. (2005) have argued that this third group of high worriers needs to be considered separately because they may represent a distinct group from both the non-anxious and those with GAD. Yet, if this group of people has been included in the "non-GAD" groups of past research, the experimenters may have inadvertently created a situation in which those with high worry skew the "normal" subject scores toward those of the GAD group, minimizing any group differences. Given that the percentage of those meeting GAD criteria increased by 40% with the removal of the excessiveness criteria, it is an important question to ask about how closely this high worry group may mirror a GAD group.

Hypotheses.

This study seeks to replicate the findings of Mennin, Heimberg, Turk, and Fresco (2005), further explore the issues raised by Ruscio et al. (2005), and extend these lines of research by providing data which seek to describe the functions of these processes that, currently, remain largely hypothetical.

Specifically, we hypothesize that 1) those meeting full GAD criteria will use ER strategies that function to suppress emotion more frequently than either the non-anxious and high worry non-GAD groups, 2) those participants in the GAD

group will have more intense emotional responses to a negative mood induction task than those in the other groups, 3) the ER strategies employed by the GAD group will be rated as least effective followed by those used by the non-GAD high worry group, with non-anxious participants reporting effective ER skills, 4) the length of the return to baseline period following a negative mood induction will be the greatest for GAD participants, with non-anxious participants having the shortest return to baseline, with non-GAD high worry participants falling between these to extremes, and 5) GAD participants, as a group, will endorse stronger emotional intensity, poorer understanding of emotion, heightened negative reactivity to emotions, and poorer emotion management when compared to the other two groups.

Method

Participants.

The study sample consisted of 84 individuals, with thirty individuals in the non-anxious group, thirty individuals in the GAD criteria group, and twenty-four individuals in the high-worry group. Of the overall sample, 14.3 percent of participants were male, with the remaining 85.7 percent being female. The non-anxious group was 20 percent male (n=6), while the high worry group was 16.4 percent male (n=4) and the GAD criteria group was 6.7 percent male (n=2). The overall sample was predominately Caucasian (70.2%, n=59), followed by those reporting their ethnicity as Asian-American (11.9%, n=10), Hispanic/Latino (8.3%, n=7), African-American (2.4%, n=2), or Native-American (2.4%, n=2). Four individuals (4.8%) identified belonging to an ethnic group outside of those listed

above. The sample's education level reflected their position as undergraduates at the University, with a mean education level of 14.2 years.

Participants were eligible to take part in the study if they were between 18 and 65 years of age. Participants that did not meet these criteria were asked to not participate in the screening phase of the study. Before inviting a participant to the investigation, their age was validated by the experimenter. The Generalized Anxiety Disorder Questionnaire-IV (a self-report diagnostic measure of generalized anxiety disorder based on DSM-IV diagnostic criteria) and Penn State Worry Questionnaire (A self report measure of worry level and severity) scores were used to identify and sort participants into groups of interest (Newman, Zuellig, Kachin, Constantino, Przeworski, Erickson, & Cashman-McGrath, 2002; Meyer, Miller, Metzger, & Borkovec, 1990).

The initial screenings occurred either in a group format (in class) or individual format (on-line). The investigation phase occurred in an individual participant format only. Participants were compensated with extra course credit for their participation. Participants who were eligible for study participation were contacted by a member of the research team and invited to participate. Participants who met criteria for the non-anxious group, a high worry but non-GAD group, and a high worry GAD group were included.

The non-anxious group consisted of participants whose GAD-Q-IV score was less than 5.7, did not endorse full DSM-IV GAD criteria, and who fell below a score of 62 on the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The 5.7 cut-off score for the GAD-Q-IV has been

suggested by Newman et al. (2002) as the point where levels of both sensitivity and specificity to differentiate those who would meet DSM-IV GAD criteria from those who would not is maximized. The same is true for the cut-off score of 62 on the PSWQ with regard to excessive worry (Behar, Alcaine, Zuellig, & Borkovec, 2003). The high worry non-GAD group was included to address the arguments raised by Ruscio and colleagues (2005) who have suggested that combining this group along side a non-worried group would skew their scores toward those of the GAD group. The high worry, non-GAD group consisted of participants whose GAD-Q-IV scores fell below the 5.7cut-off and who did not endorse full DSM-IV GAD criteria, but whose PSWQ scores were above 62. The high worry, GAD criteria group consisted of participants with GAD-Q-IV scores greater than 5.7 and who did endorse the necessary diagnostic criteria on the GAD-Q-IV to meet the DSM-IV-TR definition of GAD.

This method allowed for the examination of a high worry group that does not endorse the impairment in functioning necessary for a diagnosis of GAD. Examination of this high worry group compared to a GAD group yielded information about whether the hypothesized emotion regulation deficits occurred in tandem with worry behavior, or if instead, excessive worry occurred independently of problematic emotion regulation—indicating that dysfunctional emotion regulation may be a more likely cause of impairment than the actual worry behavior.

Procedure.

Mass screening procedures were used to sample 1,175 undergraduate students from a wide range of undergraduate psychology classes. Students could also engage in the study screening via the undergraduate psychology subject pool. The mass screening packet included informed consent as well as the GAD-Q-IV, PSWQ, Deliberate Self-Harm Inventory (DSHI; Gratz and Roemer, 2004), and a demographic form. The scores from these measures were used to identify participants in the three groups of interest mentioned above.

Upon arriving to the individual study session, participants completed their informed consent materials. Following this, participants engaged in a brief imagery exercise to neutralize any preexisting affect prior to beginning the study as a means of minimizing the impact of various external factors (a participant feeling worried about participating in a study, or excited/upset at a test score they received before coming to the experiment) that that may have skewed baseline measurements of the sample. This neutral imagery task consisted of an exercise described in Craske (1999) where participants were instructed to create a detailed, imaginary scenario involving a series of neutral stimuli (See appendix C). Upon the conclusion of this exercise, the participant was asked to start completing the battery of trait measures as well as the first set of state measures.

After completing these materials the participant was asked to identify, and disclose to the experimenter, the first name of- and their relationship to- the person that they feel most connected to in their personal life. The experimenter asked the participant, in a conversational tone, to describe the relationship that they have with this person, how long they have known that person, and what

sorts of meaningful life experiences they have shared with this person. This unstructured interview was designed to act as a prime to elicit stronger emotional arousal in the mood induction that followed. After the unstructured interview, the participant was asked to listen to and follow the instructions of a tape recorded message that was to be played for them by the experimenter. This message included a description of the emotion induction task discussed previously (detailed in appendix B) which entailed having the participant imagine learning of the unexpected death of that person discussed in the unstructured interview and what emotions they might feel while attending the funeral. The participants were asked to imagine this task for a period of five minutes. Following the conclusion of the initial instructions the participant received reminders to stay focused on the task each subsequent minute.

After the conclusion of this five minute mood induction the participants were asked to complete a questionnaire that contained the second administration of the state battery as well as a manipulation check to determine if the mood induction did indeed increase their emotional arousal. They were also asked to indicate what emotional reactions they experienced. This included a list of both primary and secondary emotions that the participants chose from.

Once these forms were completed, the participant spent the next fifteen minutes engaging in whatever activities, mental or physical, that they would normally do in response to the thoughts and feelings evoked during the imagined funeral scene.

At the conclusion of this emotion regulation period, the participants completed the state measures for the third and final time. In addition to this, they were asked to choose, from a list of both adaptive and maladaptive coping strategies, what methods of ER they used during that fifteen minute period, and to rate how successful this strategy was at affecting their emotional experience (See appendix D). For example, this list contained common tactics that characterized a broad range of coping strategies such as re-appraisal, thought suppression, distraction, self-soothing, worry, support seeking, etcetera.

Upon completion of these measures the participants were provided with a "homework" packet to take with them after they left the study, this contained instructions for how to complete the "Return to Baseline Monitoring Form" as well as the form itself. The experimenter reviewed this material with the participant before they were excused from the study. This packet contained a fourth administration of the state measures as well as an experimenter generated questionnaire asking the participant to "think back over the past few hours since you finished the study. How long after you left the study did it take for your emotions to return to a typical, day to day level?" And, "Regarding the person you said you felt most connected to, did you take any action after leaving the study with regard to this person?" This question was followed by a checklist of potential actions such as "I called them to see how they were doing," "I worried about their safety," "I didn't do anything," etc (See appendix E). Participants were then asked to return the materials the following day to the experimenter's lab, either in person or through campus mail.

Four specific dependent variables were measured, and were of particular interest to the hypothesis of this study. First, following the emotion induction and a period where participants were asked to regulate their emotion, the methods of emotion regulation that each group engaged in most frequently was measured by having participants select the strategies that they used from a list of commonly used regulatory behaviors. This variable was designed to address Mennin et al.'s (2004) suggestion that those meeting GAD criteria use different ER strategies than those not meeting GAD criteria. Second, the duration of time that each group stayed emotionally aroused following the emotion induction was measured. This variable was designed to measure whether people meeting GAD criteria do indeed have a slower return to baseline than non-GAD individuals after reacting to an emotionally evocative situation (Mennin et al., 2004). This variable was the reason that the follow-up period was included so that emotional arousal which lasts longer than the investigational period could be captured in the data. Third, participant's state level of emotional arousal was measured pre- and post- emotional induction, and following the regulation period to asses whether those with GAD were more sensitive to emotion than others, and also to serve as a manipulation check of the effectiveness of the induction. Finally, state affect was measured at those time points as well to address the issue of GAD participants being more sensitive and reactive to negative emotion (Mennin et al., 2004).

Mood Induction

Following the completion of informed consent and baseline measures, participants were asked to engage in a mood induction task in which they imagined learning of the unexpected death of a loved one and what emotions they might feel while attending the funeral (See appendix B). They were asked to engage in some imagery tasks related to this event as well (i.e. imagine the face of that person as you attend a funeral viewing). This scenario was chosen because it evoked strong, negative, and primary emotions such as feelings of grief and loss, and because it involved a great deal of imagery, which is an important component of Borkovec's avoidance theory of worry. A brief version of this scenario was piloted with a sample of 10 anonymous graduate student participants. One-hundred percent of participants reported that the imagery was vivid and engaging. Seventy percent of the sample endorsed that the induced mood persisted after the imaginal scenario. This group was also asked to rate how emotionally evocative the scenario was on a scale from 0 to 10, the mean score for the participants was 7.9. When asked to endorse which emotions they experienced, sadness, fear, loss, love, and grief were the most frequently and most strongly reported emotions. The instructions of this induction were given via a tape recorded message so that delivery of these instructions was standardized across participants.

Emotion Regulation Period

Following the conclusion of the emotion regulation period and a subsequent manipulation check using the Multiple Affect Adjective Checklist-Revised (Zuckerman & Lubin, 1985), the participants were asked to "take the

next fifteen minutes to engage in whatever activities, mental or physical, that you would normally do in response to the thoughts and feelings you experienced while imagining the funeral scene." The purpose of this activity was to facilitate an analog situation in which the participants attempted to regulate their own emotional experience using the skills that were already in their behavioral repertoire. Mennin et al. (2004) and Mennin et al. (2005) have suggested that those meeting GAD criteria are less able, or less effective at employing adaptive ER strategies. This activity was designed to capture specific data about the type of strategies participants used to regulate emotion, and how effective those strategies were.

Trait Measures

Participants were asked to complete a battery of self report, trait measures for relevant psychological processes. This allowed for the examination of baseline sample characteristics, equivalency of groups, as well as a replication of study one of Mennin, Heimberg, Turk, and Fresco (2005). See appendix A for copies of measures.

Demographic Form. The demographic form was a six item questionnaire that gathered general participant information including age, gender, ethnicity, years of education, relationship status, and religious affiliation.

Affective Control Scale (ACS; Williams, Chambless, & Ahrens, 1997). The ACS is a 42 item self report measure. Each item is scored using a seven point likert scale. Generally, the measure assesses fear related to- and control behaviors regarding- one's emotional experience. Four specific subscales

focusing on fear of anxiety, fear of depression, fear of anger, and fear of positive emotion can be isolated from the total score. Berg, Shapiro, Chambless, and Ahrens (1998) suggested that the subscales are internally consistent. Additionally, the overall score of the measure displays a strong positive correlation to measures of neuroticism and emotional control. It is correlated very weakly with measures of social desirability Williams, et al. (1997).

Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979; Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961). The BDI is a 21-item self-report measure, which assesses severity of depression. Scores range from 0 to 63, where higher scores indicate more severe depression. The authors reported good test-retest reliability (0.60) and internal consistency (0.81).

Berkeley Expressivity Questionnaire (BEQ; Gross & John, 1997). The BEQ is a 16 item measure of the strength- and degree of overt expression- of one's emotional experience. It is scored on a 7 point likert scale from 1 *strongly disagree* to 7 *strongly agree*. It contains three subscales which include impulse strength, negative expressivity, and positive expressivity. Internal consistency and test-retest reliability estimates for this measure are adequate. Alpha levels are 0.86 for the total BEQ, and 0.70, 0.70, and 0.80 for the three subscales, respectively.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36 item self report measure yielding a total score as well as six subscale scores related to problematic emotion regulation. The subscales include; acceptance/non-acceptance of emotions, difficulty engaging in goal

directed behavior while distressed, difficulty with impulse control, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Each item is scored on a five point likert scale with responses ranging from 1 *almost never* to 5 *almost always*, where higher scores are indicative of more severe problems. Overall this measure shows high internal consistency (0.93) with good internal consistency for each subscale (0.80). The measure has also demonstrated good test-retest reliability over 4-8 week periods of time (0.88 for total score; 0.57 for subscales).

Generalized Anxiety Disorder Questionnaire-IV (GAD-Q-IV; Newman et al., 2002). The GAD-Q-IV is a nine item self-report diagnostic measure of generalized anxiety disorder based on DSM-IV diagnostic criteria. This measure has demonstrated good test-retest reliability, convergent validity and discriminant validity. When compared to a diagnostic interview employing the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, DiNardo, & Barlow, 1994), the GAD-Q-IV demonstrates a kappa agreement of 0.67. A cutoff of 5.7 maximizes the levels of specificity (89%) and sensitivity (83%) when differentiating those that would meet DSM-IV diagnostic criteria versus those that would not. This continuous scoring system is recommended by the authors, but a direct comparison to DSM-IV criteria is also acceptable, providing a more conservative diagnostic picture as DSM-IV requirements can be enforced.

Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ is one of the most widely used and studied self-report measures of trait worry available, largely because it is designed to capture

specific qualities of pathological worry such as excessiveness and uncontrollability. It contains 16 items that focus on the frequency and intrusiveness of one's worry. Each question is scored on a 1 ("Not at all typical") to 5 ("Very typical") scale. Scores range from 16 to 80, with high scores representing more severe worry. A cut-off score of 56 was used to differentiate high worriers from non worriers (Behar, Alcaine, Zuellig, & Borkovec, 2003). This measure has good internal consistency, and has demonstrated good test-retest reliability over periods as long as 10 weeks (Meyer et al., 1990).

Questionnaire Upon Mental Imagery (QMI; Sheehan, 1967). The QMI is a general measure of imagery ability based off of Betts' Questionnaire Upon Mental Imagery (1909), which assesses one's ability to produce imagery across sensory modalities. When compared to the original 150 item Betts' questionnaire, the QMI shows a high degree of correlation. The measure reliably differentiates subjects on ability to image in a variety of experimental settings. The measure contains seven subscales of five items each. Each subscale corresponds to an imagery domain; Visual, auditory, cutaneous, kinesthetic, gustatory, olfactory, and organic. Subjects read a description of a stimulus item and modality ("the sun sinking below the horizon"), asked to create an imaginal experience. The subject is then asked to rate the vividness of the item. Items are scored on a seven point scale from 1 *"perfectly clear and vivid"* to 7 "*no image present at all."* This measure is included as a means of ruling out imagery ability as a third factor confound in any observed differences on the study's dependent variables of interest.

State-Trait Anxiety Inventory-Trait (STAI-T; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1970). The STAI-T contains 20-items which assess trait anxiety, with scores ranging from 20 to 80. Test-retest reliability for the trait anxiety scale is 0.81, and for the state anxiety scale, 0.40. Internal consistency ranges from 0.83 to 0.92.

Toronto Alexithymia Scale-20 (TAS-20; Bagby, Parker, & Taylor, 1994; Bagby, Taylor, & Parker, 1994). The TAS-20 is a 20 item self report measure with three subscales. These subscales include a) difficulty identifying feelings, b) difficulty describing feelings, and c) externally oriented thinking. It is scored using a 5 point Likert scale. Bagby, Parker, and Talor (1994) suggested that the TAS-20 has good internal consistency and correlates negatively to measures assessing emotional openness.

Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). The TMMS is a 30 item self-report measure of emotional intelligence. It includes three subscales which focus on attention to emotion, emotional clarity, and mood repair. The subscales are internally consistent and demonstrate good convergent validity.

State Measures

Repeated assessment of state level anxiety, emotional arousal, and affect occurred at several points throughout the study; first, at the beginning of the study prior to the mood induction; second, during the manipulation check immediately following the mood induction; and third, at the end of the study

directly following the emotion regulation period. These state measures included the following.

Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991). Following the rationale of Mennin et al. (2005) a slightly altered version of the MASQ was used to assess state change in anxious physiological arousal. This included items from the "General Distress: Anxiety" and "General Distress: Mixed" subscales to capture aspects of anxious arousal relevant to GAD and chronic anxiety (as opposed to intense but brief panic symptoms of panic). This composite measure was composed of 15 items (11 items from the "General Distress: Anxiety" subscale, and 4 items from the "General Distress: Mixed" subscale). Item wording was changed to the present tense to better address change in state arousal. Items are scored on a 1 *"not at all"* to 5 *"extremely"* likert type scale. Watson, Weber, Smith-Assenheimer, Clark, Strauss, and McCormick (1995) have reported that the Anxiety and Mixed subscales of the MASQ have good internal consistency (0.78-0.86) across a variety of populations including students, adult non students, and adult clinical patients.

Positive Affect/Negative Affect Schedule (PANAS). The PANAS (Watson, Clark, & Tellegan, 1988) is a 20-item measure of state and trait positive affect (PA; 10 items) and negative affect (NA; 10 items), with each item rated on a scale from *1 not at all* to *5 extremely*. Test-retest reliability for the state version of this measure is acceptable for both the PA (r = .54) and NA (r = .45) sub-scales.

State Level of Emotional Arousal. An experimenter generated measure of degree of emotional arousal, much like a Subjective Unit of Distress rating (Wolpe, 1990) occurring on a 0-100 point scale ranging from *Not at all emotional* to *Extremely emotional*.

State Meta-Mood Scale-Meta Evaluation Subscale (SMMS; Mayer & Stevens, 1994). This is a measure of the degree of monitoring, evaluation, and regulation of current mood. Specifically, the SMMS assesses four constructs: a) belief about the control and influence of current mood, b) emotional clarity, c) acceptability of emotion, and d) typicality and frequency of the current mood. This measure is composed of twenty-four items, each of which is scored on a five point likert type scale from 1 *"Definitely does not describe my mood"* to 5 *"Definitely describes my mood."* The internal consistency of this measure is good (0.75-0.87) and has been demonstrated to have good convergent validity with other mood related measures as well as low correlations between the four subscales of the measure (Mayer & Stevens, 1994).

Stat-Trait Anxiety Inventory Short Form (6-Item; Marteau & Bekker, 1992); The short form STAI contains a 6-item scale that assess state anxiety based on the original State-Trait Anxiety Inventory (Spielberger et al., 1970), with scores ranging from 6 to 24. Test-retest reliability for the state anxiety scale is 0.40. Internal consistency ranges from 0.83 to 0.92.

Emotion Regulation Period

Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The ERQ is a ten item measure of both emotion suppression as well as re-appraisal; these

two subscales are correlated only weakly *r* = -0.01. Items are scored on a seven point likert scale with scores ranging from 1 *strongly disagree* to 7 *strongly agree*. Reliability levels, averaged across four independent samples, are 0.79 for the re-appraisal scale, and 0.73 for the suppression scale. Test-Retest levels across a three month period are 0.63 for both subscales.

Manipulation Check

Multiple Affect Adjective Checklist—Revised (MAACL-R; Zuckerman & Lubin, 1985). A modified version of the MAACL-R state form "Anxiety" and "Depression" subscales was used to assess state mood following the negative mood induction, creating a 22 item measure. Mennin et al. (2005) have suggested that this measure is commonly used in manipulation checks. To increase measure reliability items were rated on a 1 *"Right now I do not feel like this at all"* to 5 *"Right now feel very much like this"* scale rather than by checklist which tend to elicit over endorsement of items (Herron, 1969). Lubin, Whitlock, and Zukerman (1998) have demonstrated good convergent and discriminant validity as well as high internal consistency.

Return to baseline Period

Return to Baseline

An experimenter generated measure of the amount of time a participant required to return to a pre mood induction level of emotional arousal. Upon completion of the primary investigation, participants were given a form to track emotional arousal levels on their own. Participants were asked to rate their level of emotional arousal on a 0-100 point scale ranging from *Not at all emotional* to

Extremely emotional at specific intervals over the twenty-four hour period following completion of the primary investigation.

Data Management and Analysis

All data were collected using paper and pencil methods and self report by participants. The completed data packets were entered in a Statistical Package for the Social Sciences (SPSS; Statistical Package for the Social Sciences Inc., 2006) database by undergraduate research assistants. Double entry of the data packets occurred by separate research assistants and was then complied into a final database using Excel software, taking advantage of a function which examined both files for discrepancies in data values before compiling a final database. This final SPSS database was used for all analyses. All data entry was supervised by the investigator, and all analyses were conducted by the investigator. All research staff were compliant with the ethical and methodological standards of the Social-Behavioral Institutional Review Board of the University of Nevada-Reno.

Results

Trait Measures and Individual Difference Variables.

Deliberate Self Harm Screening Data

Initially, no group differences emerged on either the number of various types of- ($F(2, 83) = 0.754$, $p > 0.474$), or frequency of- ($F(2, 83) = 0.707$, $p > 0.496$) deliberate self harm behavior, suggesting that the GAD criteria group (type: M = 1.37, SD = 2.62; frequency: M = 9.90, SD = 43.22), high worry group (type: M = 1.00, SD = 1.62; frequency: M = 14.29, SD = 60.96), and non anxious

group (type: M = 0.70, SD = 1.86; frequency: M = 1.20, SD = 3.46) were all equivalent.

However, because these variables contained several outliers, the means were inflated to such a degree that the ANOVA's were invalid. The median, more resistant to the effects of outliers, suggested that the central tendency of both deliberate self harm type and frequency may be more accurately estimated near zero. The outliers in this case were so extreme that even after a square-root transformation they still exerted a disproportionate amount of influence on the data and were thus removed from these analyses. When the ANOVAs were re-run, group differences emerged with regard to the number of types of deliberate self harm individuals engaged in ($F(2, 67) = 3.65$, $p < 0.032$). In particular, those in the high worry group (M = 0.35, SD = 0.002) engaged in more types of deliberate self harm than those in the non-anxious group (M = 0.00, SD = 0.00). The GAD criteria group (M = 0.25, SD = 0.003) was not significantly different from either of the others. When considering the frequency with which individuals deliberately harmed themselves, there was also a significant between group effect ($F(2, 73) = 4.04$, $p < 0.022$). Individuals in the GAD criteria group (M = 1.64, SD = 2.95) reported engaging in self harm behavior more frequently than the non anxious group (M = 0.00, SD = 0.00), but not significantly more than the high worry group (M = 1.23, SD = 2.05).

Substance use screening data

There were no between group differences with regard to reported substance abuse ($F(2, 83) = 1.02$, $p > 0.364$), suggesting the same degree of

use between the non-anxious (M = 2.3, SD = 3.57), high worry (M = 4.63, SD = 7.98), and GAD criteria (M = 4.68, SD = 9.11) groups. This finding held (F (2, 83) = 0.975, p > 0.381) when alcohol was removed from the analysis and only rates of illicit drug use was examined.

Medication Usage

During the screening phase of the study, participants were asked to indicate any and all medications that they were currently taking, or had taken in the last two weeks, as well as the dose and how frequently the medication was taken. Each individual's responses were examined, and non-psychoactive medications (e.g. birth control, blood pressure medications) were removed from the count. All psychoactive medications were summed for each individual, yielding a total count. This total count was used in an ANOVA to compare rates of usage. Results suggest that the overall statistic was significant (F (2, 83) = 4.30, p < 0.017). Post hoc, Bonferroni analyses indicated that individuals in the GAD criteria group (M = 0.500, SD = 0.86) used significantly more psychoactive medications than the non-anxious group (M = 0.067, SD = 0.25). The high worry group did not differ from either of the other two (M = 0.167, SD = 0.48). Twenty-one individuals in the GAD criteria group indicated that they do not take any psychoactive medications, while four endorsed taking one medication, four endorsed taking two medications, and one individual endorsed taking three psychoactive medications. Twenty-one individuals in the high worry group also indicated no medication use; two endorsed taking one medication, while one endorsed using two medications. No one in the high worry group endorsed

taking three medications. For the non-anxious group, twenty-eight individuals reported not taking any medications, two endorsed one medication, and no one endorsed taking two or three medications. No one in the entire sample indicated taking more than three psychoactive medications.

Between Group Comparisons

All between group comparisons in which direction and differences are described in the following sections were determined by using post-hoc Bonferroni corrections for Type I error levels following a significant outcome for each analysis of variance test that was used to examine the variables of interest. Means and standard deviations for the following trait measure results can be found in table 1. Trait measures were initially broken into two distinct groups: anxiety and depression symptom measures and emotion measures. Multivariate Analysis of Variance (MANOVA) statistics were completed for each of these groups. The MANOVA for the anxiety and depression symptom measures included the PSWQ, STAI-T, and BDI. The overall MANOVA was significant ($F(3, 79) = 1601.18$, $p < 0.000$), with all univariate effects also being significant for each group. The second MANOVA for emotion measures included total scores for the Affective Control Scale, Berkeley Expressivity Questionnaire, Difficulties in Emotion Regulation Scale, Toronto Alexithymia Scale, and Trait Meta-Mood Scale. The overall analysis was also significant ($F(5, 77) = 5179.71$, $p < 0.000$), and all univariate effects were significantly different with the exception of the Berkely Expressivity Questionnaire's total score ($F(2, 81) = 1.44$, $p > 0.244$).

Table 1. Means and Standard Deviations for all Trait Measures and Sub-scales.

	Group		
	GAD Criteria	High Worry	Non-Anxious
	Mean (SD)	Mean (SD)	Mean (SD)
Measure:			
Subscale:			
Symptom Measures:			
BDI**	25.70 (13.83)[a]	12.96 (9.52)	11.97 (8.93)
PSWQ**	69.43 (5.54)[a]	63.67 (5.95)[a]	44.17 (9.48)[a]
STAI-T**	55.96 (12.40)[a]	47.38 (11.61)	40.30 (11.72)
Emotion Measures:			
ACS**	43.29 (8.97)[a]	35.55 (10.20)	32.18 (8.95)
Fear of Anger**	34.63 (8.88)[a]	28.63 (8.68)	26.87 (6.70)
Fear of Anxiety**	61.26 (14.16)[a]	49.83 (12.72)[a]	40.17 (12.83)[a]
Fear of Depression**	35.70 (10.42)[a]	26.42 (12.67)	24.43 (10.73)
Fear of Positive Emotion	41.57 (11.10)	37.33 (15.31)	37.23 (11.57)
BEQ	79.47 (16.85)	73.83 (16.91)	73.10 (13.42)
Impulse Strength*	33.53 (7.23)[a]	29.25 (8.26)	28.97 (7.22)
Negative Expressivity	24.30 (7.05)	23.54 (5.85)	21.57 (6.17)
Positive Expressivity	21.63 (5.44)	21.04 (5.51)	22.57 (2.97)
DERS**	103.33 (25.17)[a]	86.75 (23.54)	75.03 (21.93)
Diff. In Goal Dir. Behavior*	19.07 (4.98)[b]	17.33 (5.26)	14.27 (4.86)
Lack of Emot. Awareness	16.37 (5.61)	14.29 (4.52)	14.33 (5.65)
Lack of Emotional Clarity*	13.80 (4.53)[b]	11.08 (2.65)	10.03 (4.69)
Diff. with Impulse Control*	15.13 (5.97)[b]	12.00 (5.69)	10.50 (3.28)
Lack of Access to ER**	22.37 (8.10)[b]	18.29 (8.15)	14.40 (5.84)
Non Acceptance*	16.60 (6.87)[b]	13.75 (6.91)	11.50 (5.10)
TAS*	51.77 (11.58)[b]	44.29 (10.01)	44.47 (12.07)
Diff. Describing Feelings*	14.60 (4.72)[a]	12.63 (4.21)	11.63 (4.06)
Diff. Identifying Feelings*	18.97 (5.96)[a]	13.58 (5.57)	13.97 6.67)
Ext. Oriented Thinking	18.20 (5.30)	18.03 (5.37)	18.87 (4.13)
TMMS**	129.23 (16.01)[a]	138.25 (14.30)	146.23 (15.03)
Attention to Emotion	46.30 (10.82)	47.46 (12.14)	50.00 (12.65)
Emotional Clarity**	41.70 (10.61)[a]	48.75 (6.48)	52.77 (11.08)
Mood Repair**	37.53 (9.61)	42.04 (7.53)	47.17 (6.47)

* = $p < 0.05$; ** = $p < 0.001$; [a] = significantly different from all other groups; [b] = significantly different from the non-anxious group only

Anxiety and Depression Symptom Measures

All three groups were significantly different from each other ($F (2, 84) = 97.65$, $p < 0.000$) on the PSWQ, with the GAD criteria group showing the highest scores, followed by the high worry group, and then the non anxious group. These findings were not surprising given that the PSWQ scores were used to define participant groups.

Results from the STAI-T measure suggested that the GAD group reported significantly more ($F (2, 83) = 12.96$, $p < 0.000$) trait anxiety, than either the high worry or the non-anxious groups, providing further evidence that we achieved the population samples we hoped to capture in each group.

Depression scores, derived from the BDI, suggested ($F (2, 83) = 13.93$, $p < 0.000$) that the GAD criteria group had significantly more severe symptoms of depression than the other two groups, which did not differ from one another.

Emotion Measures

Findings derived from the Affective Control Scale data suggested that the GAD criteria group reported significantly higher fear of anger ratings than either the high worry or non-anxious groups ($F (2, 84) = 7.48$, $p < 0.000$). No between group differences emerged with regard to the fear of positive emotions subscale ($F (2, 83) = 1.12$, $p > 0.332$), with all groups having similar means. There were, however, significant differences on each of the other ACS subscales as well as the ACS total score. With regard to the fear of anxiety subscale, the GAD criteria group was significantly higher than each of the other groups ($F (2, 83) = 18.93$, $p < 0.000$). The high worry group, distinct from each of the other two, fell in the

middle, and participants in the non-anxious group showed the lowest scores. For the depression subscale ($F (2, 83) = 8.49$, $p < 0.000$) the GAD criteria group's scores were significantly higher than both the high worry and non-anxious groups. This pattern held true for the ACS total score ($F (2, 83) = 11.12$, $p < 0.000$) as well, with the GAD criteria group being elevated, compared to the high worry and non-anxious groups which did not differ, suggesting that those meeting GAD criteria may be more fearful of emotional arousal than either of the other two groups.

Analysis of the data from the impulse strength subscale of the Berkeley Expressivity Questionnaire suggested a between group difference ($F (2, 83) = 3.36$, $p < 0.040$), with the GAD criteria group endorsing more impulse strength than either the high worry or the non-anxious group. All three groups were equivalent with regard to the strength of expression of both positive ($F (2, 83) = 0.722$, $p > 0.489$) and negative ($F (2, 83) = 1.44$, $p > 0.243$) emotions, indicating no difference between the GAD criteria, high worry, and non-anxious groups. There were no statistical differences between groups ($F (2, 83, = 1.44)$, $p > 0.244$) on the BEQ total score either. These findings indicated that the GAD criteria group may be more reactive to emotional impulses, but are able to express those emotions in the same manner as those not meeting GAD criteria.

Results from the non-acceptance of emotion subscale of the DERS suggested a difference ($F (2, 83) = 4.93$, $p < 0.010$) between the GAD criteria group, being more non-accepting, and the non-anxious group having the lowest scores on this subscale. The high worry group landed right in the middle

between the other two groups, and ended up differing from neither. This pattern also held for the difficulty in goal directed behavior subscale of the DERS ($F(2, 83) = 7.002$, $p < 0.002$), with the GAD criteria group endorsing more difficulty with goal directed behavior than the non-anxious group, and the high worry group not differing from either of the others. With regard to the lack of impulse control subscale of the DERS ($F(2, 83) = 6.47$, $p < 0.002$), the non-anxious group showed the greatest degree of impulse control followed by, but not differing significantly from, the high worry group. The GAD criteria group had the most difficulty with impulse control. The results from this measure also indicated that the GAD criteria group had significantly more ($F(2, 83) = 8.73$, $p < 0.000$) difficulty accessing emotion regulation behavior than the non anxious group. Neither group differed significantly from the high worry group, whose mean fell in the middle of the other two groups. The non-anxious group showed the highest degree of emotional clarity ($F(2, 83) = 6.53$, $p < 0.002$), and the GAD criteria group showed the lowest. Again, the high worry group fell between the other groups, and resulted in a trend level difference from the GAD criteria group ($p = 0.057$). Interestingly, on the lack of emotional awareness subscale of the DERS there were no differences between the GAD criteria, high worry, and non anxious groups ($F(2, 83) = 1.43$, $p > 0.247$). The total score of the DERS largely highlights the individual subscales, with the GAD criteria group reporting significantly more ($F(2, 83) = 10.89$, $p < 0.000$) difficulty with emotion regulation than either the high worry or non-anxious groups, which did not differ from each other.

Results from the TAS suggested that the GAD criteria group had significantly more difficulty ($F (2, 83) = 6.91$, $p < 0.002$) identifying their feelings than the high worry or the non-anxious groups, which did not differ from one another. The same was true in terms of being able to describe feelings, wherein the GAD criteria group endorsed more ($F (2, 83) = 3.61$, $p < 0.032$) difficulty describing their feelings than the high worry and non-anxious groups, which reported similar levels of difficulty. There were no differences however on the TAS externally oriented thinking subscale ($F (2, 83) = 0.21$, $p > 0.813$) with equivalent means for the non anxious, high worry, and GAD criteria groups. Overall, data from the TAS total score suggested that the GAD criteria group experienced a greater degree of alexithymia symptoms than the non-anxious group ($F (2, 83) = 4.08$, $p < 0.020$) and showed a trend to be more alexithymic than the high worry group ($p = 0.055$).

Findings from the Trait Meta-Mood Scale gave information about how the groups typically manage their emotional experiences. A one-way ANOVA for the emotional clarity subscale established that the GAD criteria group reported significantly less emotional clarity ($F (2, 83) = 9.13$, $p < 0.000$) than the high worry and non-anxious groups. The degree to which an individual can make repairs to their emotional state was also disparate, with the non-anxious group displaying greater levels of mood repair ($F (2, 83) = 10.86$, $p < 0.000$) than either the high worry, or GAD criteria groups. Concerning the amount of attention one pays to their emotion, there were no group differences ($F (2, 83) = 0.757$, $p > 0.472$), suggesting that the non-anxious group, high worry group, and GAD

criteria group were equivalent. The total score on the measure suggested that, overall, the GAD criteria group was less adept at managing emotion ($F (2, 83) = 9.41$, $p < 0.000$) than the high worry and non-anxious groups.

Imagery Ability

Results from the QMI measure, included to assure that all groups could participate in imagery exercises to the same degree, suggested that no differences between groups existed in the ability to recall and imagine experiences across various sensory domains ($F (2, 83) = 0.069$, $p > 0.933$). Means ranged from 181.67 (SD = 31.31) for the non-anxious group, to 183. 21 (SD = 33.59) for the high worry group, to 185.00 (SD = 38.66) for the GAD criteria group.

Regression Analysis

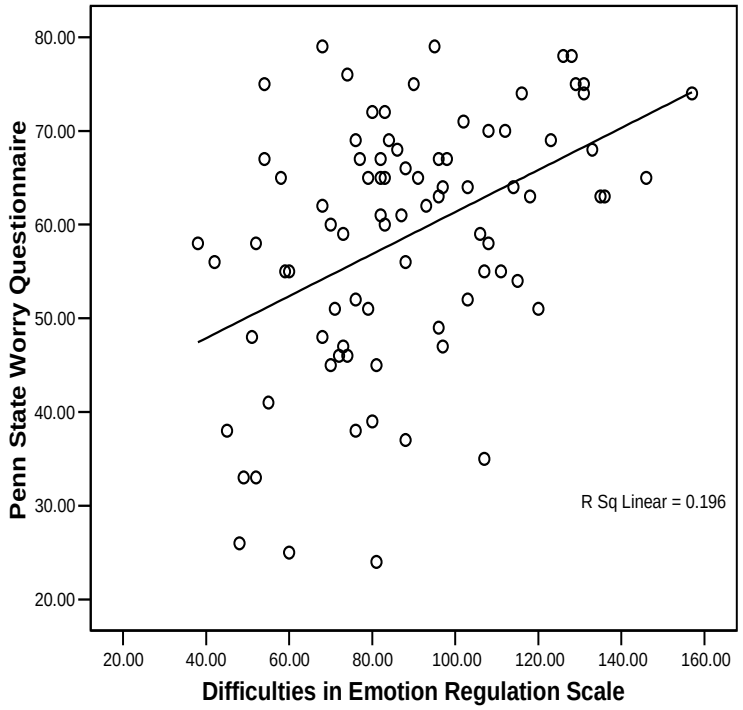
An ordinal logistic regression was conducted with scores on the PSWQ, a continuous measure of worry severity, used as the dependant variable. This variable was chosen as the dependant variable instead of group classification, because groups were already ordered in degree of PSWQ severity since it was used in the screening process, and it provided a more meaningful understanding of the data (worry severity) as opposed to the group variable which was simply descriptive. Further, since the PSWQ data were continuous, a more conservative test could be conducted because the data had a wider range of values in which to fluctuate, creating greater variability in responses, which was then utilized in the regression equation. The ACS, BEQ, DERS, TAS, and TMMS trait measures were entered as predictors, giving an R^2 value of 0.265, with a

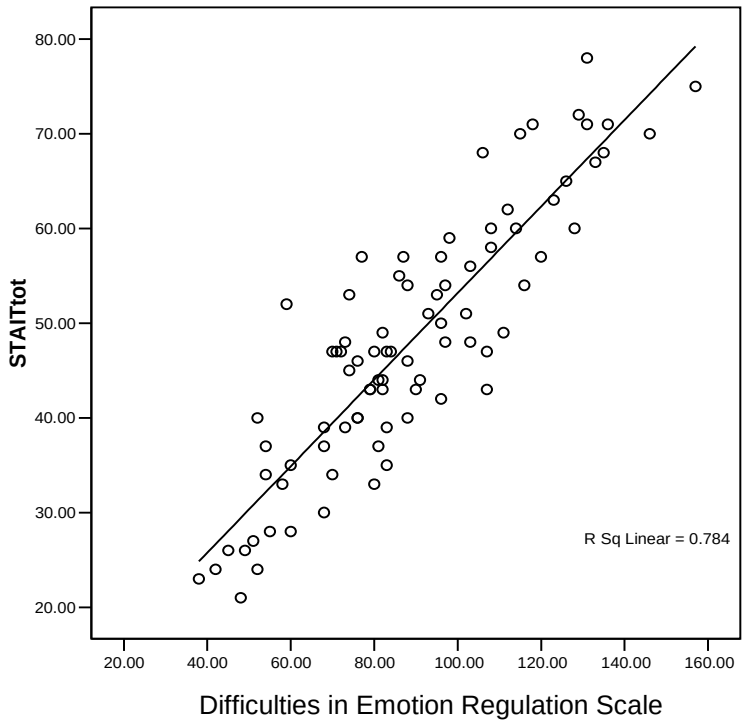
significant model ($F (5, 83) = 5.61$, $p < 0.00$). However, no individual predictor was significant due to a high level of multicolinearity in the predictors, especially the DERS and the ACS, which were very highly correlated ($r = 0.852$). The ACS was dropped from the model at this point because its prediction value was equivalent to that of the DERS, and the DERS served as a more direct measure of emotion regulation. With this change, the DERS then emerged as a significant predictor of PSWQ scores ($F (2, 83) = 14.62$, $p < 0.00$). A linear, hierarchical analysis was then conducted with the STAI-T and BDI entered into the regression equation at the first step, which accounted for 24.7% of the variance in predicting PSWQ scores, largely attributable to the STAI-T. The DERS, BEQ, TAS, and TMMS were then entered into the regression equation in the second step, but did not add to the predictive value of the equation beyond the STAI-T ($R^2 = 0.238$). A scatter plot of the relationship between the PSWQ and the DERS, and the STAI-T and DERS can be seen in Figure 2.

Mediation Analysis

Understanding the link from emotion regulation to worry, however, is only half of the puzzle. The second half is understanding how these two variables lead to chronic anxiety. To test this, the emotion measures were used in a mediation analysis of trait anxiety to determine if the emotion measures were a better predictor of the relationship to trait anxiety than the worry measure. Step one of this analysis suggested that the emotion measures were a significant predictor of the mediator, PSWQ scores ($R^2 = 0.234$; $F (4, 83) = 6.03$, $p < 0.00$). The second step demonstrated that the emotion measures were also a

Figure 2. Scatterplot with Fitted Regression Line of the Relationship Between the DERS and the PSWQ, and the DERS and STAI-T.





significant predictor of the trait anxiety outcome variable (R^2 = 0.802; F (4, 83) = 80.15, p < 0.00). Next, the results suggested that the PSWQ (mediator) also predicts STAI-T (outcome) scores (R^2 = 0.512; F (1, 83) = 29.06, p < 0.00). According to the logic of Baron and Kenny (1986), if the mediator is to be used to explain the relationship between the predictor and outcome, then the predictor variable (emotion measures) should no longer predict the outcome variable (STAI-T) once the mediator (PSWQ) is simultaneously included in the regression equation. To test this, both the emotion measures and the PSWQ were included in the regression equation (R^2 = 0.903; F (5, 83) = 69.13, p < 0.00). Since the predictor was still significant, the relationship between ER and Trait anxiety cannot be explained through worry alone. Instead, this indicates that a more direct relationship between ER and trait anxiety may exist, and that ER makes an independent contribution to one's anxious arousal.

State Changes.

Anxious arousal and affect during the study procedure

A series of repeated measures ANOVA's were used to examine change over time as participants progressed through the study's procedure, followed up with post-hoc Bonferroni corrections for Type I error rates. State measures were collected at four time points, Time 1 occurred just prior to the mood induction, and Time 2 occurred just post. Time 3 occurred just after the emotion regulation period. Time 4 occurred during the follow up period, with participants being instructed to complete that block of measures prior to going to sleep that

evening. The means and standard deviations for each state measure at each time point can be found in Table 2.

Overall, a main effect of both group ($F(2, 72) = 9.65$, $p < 0.000$) and time ($F(1, 72) = 15.87$, $p < 0.000$) were observed in the data from the STAI-S state anxiety measure, but no group x time interaction was found ($F(2, 72) = 8.90$, $p > 0.955$), suggesting that generally, the GAD criteria group experienced more anxious arousal throughout the study, than either of the other two groups, which did not differ.

The same analysis for change in positive affect, measured by the PANAS, indicated no main effect for group ($F(2, 72) = 0.09$, $p > 0.916$), but did specify a main effect of time ($F(1, 72) = 9.23$, $p < 0.003$). There was no group x time interaction ($F(2, 72) = 0.38$, $p > 0.687$) with regard to positive affect, suggesting that all groups underwent a similar drop in positive affect during the imaginal scenario. The negative affect subscale of the PANAS suggested both a significant group ($F(2, 72) = 6.36$, $p < 0.003$) and time ($F(1, 72) = 20.12$, $p < 0.000$) main effect. No group x time interaction was indicated ($F(2, 72) = 2.06$, $p > 0.135$). These results suggest that all groups underwent a similar increase in negative affect during the imaginal scenario, but that the GAD criteria group showed consistently higher negative affect than either of the other two groups, throughout.

Regarding data yielded from the MASQ, a main effect of group ($F(2, 72) = 12.63$, $p < 0.000$) emerged. A main effect of time ($F(2, 72) = 18.49$, $p < 0.000$) was also observed. There was no group x time interaction, despite there being

Table 2. Means and standard deviations of state variables at time 1, 2, 3, and 4.

		Time 1	Time 2	Time 3	Time 4
Measure		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
	Group				
STAI-S	GAD	15.16 (4.85)	19.48 (4.31)	16.36 (5.11)	13.08 (5.16)
	HW	11.75 (3.34)	17.13 (4.13)	14.00 (4.34)	11.04 (4.02)
	Non-Anxious	10.08 (3.86)	16.42 (4.59)	11.62 (3.70)	10.23 (3.20)
PANAS-PA	GAD	22.24 (7.91)	18.48 (6.58)	19.52 (7.47)	18.96 (10.2)
	HW	22.54 (6.78)	19.13 (6.58)	18.67 (5.78)	20.29 (6.71)
	Non-Anxious	23.5 (9.77)	18.92 (6.42)	21.69 (8.47)	17.96 (8.53)
PANAS-NA	GAD	21.20 (8.65)	29.16 (9.99)	22.36 (10.33)	17.88 (8.60)
	HW	15.75 (5.86)	23.83 (11.35)	17.88 (8.76)	15.50 (5.36)
	Non-Anxious	13.96 (6.64)	22.65 (8.66)	15.23 (6.08)	14.04 (5.34)
MASQ	GAD	42.28 (15.89)	54.24 (12.45)	44.68 (16.77)	35.60 (14.21)
	HW	31.63 (11.55)	41.96 (14.91)	35.38 (14.33)	31.25 (8.96)
	Non-Anxious	25.04 (11.15)	38.62 (14.83)	27.42 (11.54)	24.58 (9.67)
SMMS	GAD	96.04 (14.72)	96.04 (13.67)	99.72 (12.03)	103.68 (12.12)
	HW	101.92 (11.97)	104.13 (11.39)	103.75 (11.47)	108.54 (14.22)
	Non-Anxious	101.54 (12.60)	103.50 (13.15)	103.85 (13.40)	103.65 (12.98)
SLEA	GAD	57.20 (26.25)	72.20 (26.96)	68.40 (25.71)	52.76 (26.70)
	HW	54.83 (23.22)	74.46 (21.14)	65.63 (23.09)	48.71 (23.42)
	Non-Anxious	44.50 (27.75)	66.46 (27.02))	52.92 (22.65)	42.54 (24.06)

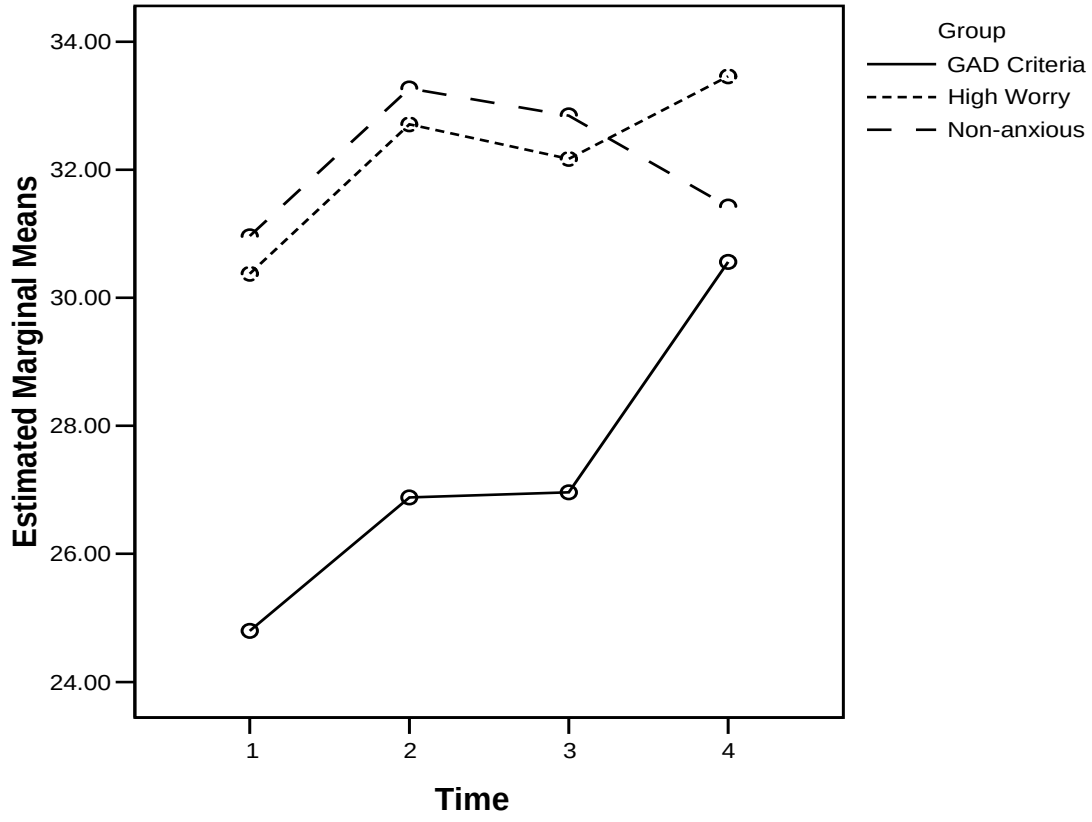
a trend for such a comparison ($F (2, 72) = 2.92$, $p > 0.060$). These findings suggest, again, that all groups underwent a similar increase in anxious and depressive symptomatology between Time 1 and Time 2, but that the GAD criteria group remained significantly more elevated than either of the other two groups at each of the four time points.

Both a main effect for group ($F (2, 72) = 5.58$, $p < 0.006$) and time ($F (1, 72) = 12.24$, $p < 0.001$) were observed on the emotional clarity subscale of the SMMS. Additionally, a group x time interaction was found ($F (2, 72) = 3.45$, $p < 0.037$) as well. Post hoc, Bonferroni analyses suggest that the GAD criteria group reported lower emotional clarity throughout the study. Interestingly, the interaction occurred at time point 3, the end of the initial study procedures, where the GAD criteria and high worry groups were increasing in emotional clarity, the non-anxious group showed a mean decrease. By Time 4, the non-anxious group had nearly returned to baseline levels, while the other two groups were at their highest points overall. This interaction can be seen in figure 3.

The scores for the SMMS acceptance of emotion subscale did not result in a main effect of group ($F (2, 72) = 2. 51$, $p > 0.088$), but did have a main effect of time ($F (1, 72) = 13.24$, $p < 0.001$). No group x time interaction emerged ($F (2, 72) = 0.59$, $p > 0.555$), indicating that all three groups showed an increase in their degree of emotional acceptance from the beginning to the end of the study.

Analysis of the data from the SMMS typicality subscale, measuring how characteristic one's current emotions are of them generally, resulted in a main

Figure 3. Means of the SMMS Emotional Clarity Subscale at Times 1- 4.



effect of group (F (2, 72) = 4.10, p < 0.021), indicating that the GAD group rated their emotional experience of the study as more typical than those in the non-anxious group. No such effect was recorded for time (F (1, 72) = 0.41, p > 0.523), and there was also no interaction effect, (F (1, 72) = 0.35, p > 0.707).

No group effect was noted for the SMMS control of emotion subscale (F (2, 72) = 1.14, p > 0.326), nor was there a main effect of time (F (1, 72) = 0.00, p > 0.984). No interaction effect was observed either (F (2, 72) = 1.881, p > 0.160).

Overall, the total score for the SMMS indicated a non-significant group effect ($F(2, 72) = 2.59$, $p > 0.082$). However, a significant main effect of time was observed ($F(1, 72) = 11.86$, $p < 0.001$), suggesting that the SMMS total scores for all three groups increased as the study progressed, and were significantly higher at Time 4 than they were at Time 1. No group x time interaction effect resulted ($F(2, 72) = 1.33$, $p > 0.271$).

Finally, the State Level of Emotional Arousal ratings that participants completed at each time point were analyzed. While no group effect emerged ($F(2, 72) = 2.11$, $p > 0.129$), there was a main effect of time ($F(1, 72) = 6.73$, $p < 0.011$). However, no interaction effect occurred ($F(2, 72) = 0.14$, $p > 0.873$), suggesting that all participants moved in parallel from baseline, to a peak following the mood induction, and then back down toward their baseline level by Time 4.

Changes in Emotional Experience

To assess the effect of the imaginal scenario involving the death of the person that they disclosed they are closest to, ratings of emotional arousal were given just prior to- and just following- the tape recorded vignette. Five emotional labels were presented to the participant, and they were asked to indicate the strength with which they were experiencing that emotion at that time, from 1 *I feel very much like this,* to 5 *I do not feel like this at all*. The five words presented to the participants included: sadness, grief, loss, joy (reverse scored), and anger. The scores for each emotion label were summed to calculate a total score for each time point. This total score was used in a repeated measures ANOVA to

assess change from just prior to the emotional induction, to just after the induction. This analysis showed a main effect of time ($F(1, 81) = 142.20$, $p < 0.000$) suggesting that all groups experienced an increase in negative emotion from Time 1 (GAD criteria: $M = 12.23$, $SD = 5.01$; high worry: $M = 10.25$, $SD = 4.64$; non-anxious: $M = 9.27$, $SD = 4.40$) to Time 2 (GAD criteria: $M = 20.80$, $SD = 4.17$; high worry: $M = 19.71$, $SD = 4.35$; non-anxious: $M = 17.17$, $SD = 5.56$) as a result of listening to the imaginal scenario. Further, all groups experienced this increase in negative emotion to the same degree as evidenced by a lack of group x time interaction ($F(2, 81) = 0.371$, $p > 0.691$).

To gauge the presence and strength of specific emotional experiences a checklist of ten emotional labels, that pilot data suggested were common reactions to the mood induction, was presented to participants. Participants were asked to rate the intensity with which they were feeling the emotion described by each of the ten words on a scale from 1 *None*, to 10 *Extremely*. One-way ANOVAs were conducted for each emotion label. Table 3. details the means, standard deviations, and statistical outcomes for each of the 10 labels. Of those ten analyses, only “anxious” resulted in between group differences with the GAD criteria group ($M = 8.17$, $SD = 2.55$) reporting significantly stronger feelings ($F(2, 83) = 4.77$, $p < 0.011$) of anxiety than either the high worry ($M = 6.67$, $SD = 2.81$) or non-anxious group ($M = 5.83$, $SD = 3.42$).

Changes in Emotion Regulation

How participants reacted to the mood induction and what emotions they experienced was only part of what this study was designed to investigate. We

Table 3. Means, standard deviations, and statistical outcomes of the Emotion Checklist.

	GAD Criteria	High Worry	Non-Anxious	
		Mean (SD)		Statistical Outcome
Emotional Cue				
Sadness	8.7 (2.19)	8.42 (2.28)	7.93 (2.48)	F (2, 83) = 4.49, p > 0.44
Fear	7.13 (3.22)	6.21 (2.89)	5.53 (3.52)	F (2, 83) = 1.84, p > 0.17
Anger	5.60 (3.52)	5.33 (3.14)	4.03 (3.07)	F (2, 83) = 1.95, p > 0.15
Frustration	5.80 (3.55)	5.63 (2.95)	4.30 (3.01)	F (2, 83) = 1.93, p > 0.12
Loss	9.03 (1.75)	8.58 (2.17)	7.80 (2.82)	F (2, 83) = 2.21, p > 0.12
Worry	8.10 (2.55)	7.17 (2.70)	5.50 (3.46)	F (2, 83) = 2.10, p > 0.13
Love	8.20 (2.88)	8.04 (2.39)	6.87 (3.42)	F (2, 83) = 1.77, p > 0.18
Grief	8.13 (2.43)	8.33 (2.37)	7.40 (3.06)	F (2, 83) = 0.96, p > 0.39
Anxiety	8.17 (2.55)	6.67 (2.81)	5.83 (3.42)	F (2, 83) = 4.77, p < 0.01*
Remorse	7.96 (2.72)	6.92 (2.90)	6.20 (3.52)	F (2, 83) = 2.50, p > 0.09

* Significant at the 0.05 level

were also interested in what strategies participants use to regulate their emotions, and how effective they were at doing so. The method of collecting this data came from the Emotion Regulation Questionnaire, which specifically examines the degree to which an individual engages in regulation strategies that involve either emotional reappraisal or, conversely, emotional suppression. One-way ANOVAs revealed no group differences on the reappraisal subscale of the ERQ ($F (2, 83) = 1.22$, $p > 0.301$), with the GAD criteria ($M = 26.93$, $SD = 7.07$), high worry ($M = 29.96$, $SD = 7.15$), and non-anxious ($M = 28.97$, $SD = 7.73$)

groups all displaying similar means. The same was true of the suppression subscale ($F (2, 83) = 0.21$, $p > 0.808$; GAD criteria ($M = 13.70$, $SD = 4.99$), high worry ($M = 13.58$, $SD = 6.11$), non-anxious ($M = 12.87$, $SD = 4.87$)).

Additionally, data from the emotion regulation manipulation check form, a list of 5 questions assessing how well participants engaged in emotion regulation behavior, was used to detail how participants initiated emotional change. Each question was scored on a Likert-type rating scale with values from 1 *Not at all*, to 10 *Very much so*. When participants were asked "were you able to actively change how you were feeling," the non anxious group ($M = 7.90$, $SD = 2.24$) endorsed this strategy significantly more often ($F (2, 83) = 6.12$, $p < 0.003$) than the GAD criteria group ($M = 6.00$, $SD = 2.51$). Neither group differed, statistically from the high worry group ($M = 6.75$, $SD = 2.13$), which fell in between the other two. When asked "how strongly did you feel you were able to engage with this task," the GAD criteria group ($M = 7.03$, $SD = 2.63$), high worry group ($M = 6.88$, $SD = 2.56$), and non-anxious group ($M = 7.90$, $SD = 1.69$) did not differ significantly ($F (2, 83) = 1.61$, $p > 0.206$). In rating how able they were "to stay focused throughout the task," all participants indicated similar levels of attention (GAD criteria: $M = 6.80$, $SD = 2.40$; high worry: $M = 7.17$, $SD = 2.37$; non-anxious: $M = 7.50$, $SD = 2.13$; $F (2, 83) = 0.697$, $p > 0.501$). Participants were also asked to rate to what degree they were "able to complete the task as it was described in the instructions." No group differences were observed ($F (2, 83) = 0.193$, $p > 0.825$) between the GAD criteria ($M = 8.13$, $SD = 2.00$), high worry group ($M = 7.79$, $SD = 2.28$), and non-anxious group ($M = 8.00$, $SD = 1.78$). In

ratings of “how difficult” it was to follow the instructions for the task, the GAD criteria (M = 6.80, SD = 2.67), high worry (M = 7.88, SD = 1.65), and non-anxious (M = 7.07, SD = 2.61) groups were all equivalent ($F(2, 83) = 1.41$, $p > 0.250$). While participants had similar ratings on all but one of these questions, those scores suggested that not only did all participants engage in the emotion regulation task to the same degree, but indeed they followed the instructions and executed the task according to the study design. The one item they did differ on, the ability to change feelings, speaks more to how well participants were able to affect their emotional state, rather than how compliant they were with the task, suggesting an interesting difference attributable to the GAD group.

Additional differences between the three groups emerged on the Predictions of Emotional Repair questionnaire, an author generated assessment of various actions, both adaptive and dysfunctional, taken by the participant to re-regulate their emotional state had the person they reported being closest to actually died. Responses were given as a singular data point on a scale from 1 *Very Unlikely,* to 10 *Very Likely.* Data from the PER suggested that the GAD criteria group (M = 5.70, SD = 2.95) were less likely ($F(2, 83) = 4.25$, $p < 0.018$) to engage in behavior that they see as positive than either the high worry (M = 7.58, SD = 2.32), or the non-anxious (M = 7.40, SD = 2.70) groups. Interestingly, the GAD criteria group (M = 4.47, SD = 2.78) also endorsed that they were less likely ($F(2, 83) = 4.82$, $p < 0.011$) to work to reframe their emotional reactions than the non-anxious group (M = 6.57, SD = 2.53). The mean of the high worry group (M = 5.58, SD = 2.54), fell between the other two, but did not differ

statistically from either. No group differences emerged ($F(2, 83) = 1.24$, $p > 0.294$) between the three groups (GAD criteria: $M = 7.60$, $SD = 3.33$; high worry: $M = 8.67$, $SD = 1.99$; non-anxious: $M = 7.60$, $SD = 2.77$) on ratings of how likely they were to seek support from others. Additionally, equivalent ratings ($F(2, 83) = 0.582$, $p > 0.561$) were observed between the GAD criteria group ($M = 5.17$, $SD = 3.09$), high worry group ($M = 6.08$, $SD = 3.22$), and non-anxious group ($M = 5.73$, $SD = 3.22$) for ratings of how likely participants were to try to avoid thinking about the death of their loved one. With regard to how likely participants in the GAD criteria group ($M = 4.63$, $SD = 3.23$), high worry ($M = 4.92$, $SD = 3.36$) and non-anxious ($M = 3.80$, $SD = 3.01$) groups were to use substances to change how they were feeling, no group differences were observed ($F(2, 83) = 0.923$, $p > 0.401$). The same pattern held for how likely participants were to have engaged in deliberate self harm ($F(2, 83) = 0.639$, $p > 0.531$) and also for the likelihood of positive self soothing ($F(2, 83) = 1.125$, $p > 0.330$). Concerning the self-harm question, the GAD criteria group ($M = 2.40$, $SD = 2.55$) had the highest mean, followed by the high worry group ($M = 2.08$, $SD = 2.50$), and then by the non-anxious group ($M = 1.73$, $SD = 1.76$). With regard to self-soothing, the opposite spread occurred, with the non-anxious group showing the highest mean, 8.58 ($SD = 1.93$), followed by the high worry group ($M = 7.63$, $SD = 3.01$) and then by the GAD criteria group ($M = 7.53$, $SD = 3.07$).

The Worry and Action Questionnaire (WAQ) from the follow up packet gave another clue about how those in the GAD criteria group may have regulated their emotions differently. The WAQ queried whether participants took any action

regarding the person they listed feeling closest to, after they left the experimental session. A series of Chi-square analyses were conducted for each item on the WAQ. This questionnaire showed that participants in the GAD criteria group were more likely to focus on memories of the emotional event than would be expected by chance alone ($\chi 2$ (2) = 7.453, $p < 0.024$, no Fisher's exact was calculated because all expected counts were greater than 5). The high worry and non-anxious groups did not depart from what would be expected by chance alone. No departures from the expected counts were observed for any groups with regard to contacting the person ($\chi 2$ (2) = 0.992, $p > 0.609$), worrying about them ($\chi 2$ (2) = 0.509, $p > 0.775$), seeking support from them ($\chi 2$ (2) = 4.70, $p > 0.095$), thinking about how much that person means to them ($\chi 2$ (2) = 2.17, $p > 0.337$), worry in general ($\chi 2$ (2) = 2.461, $p > 0.292$), or, doing "nothing" ($\chi 2$ (2) = 1.568, $p > 0.457$). Trends emerged for the non anxious group to report not going to physically visit the person ($\chi 2$ (2) = 5.763, $p > 0.056$), and for the GAD criteria group, and the non-anxious group to report not seeking support from others ($\chi 2$ (2) = 0.509, $p > 0.052$).

Data from the coping strategies checklist was analyzed three ways. First, the overall number of coping strategies that participants endorsed were summed and compared. No between group differences emerged (F (2, 83) = 0.273, $p > 0.762$), as all groups endorsed roughly the same number of coping strategies (GAD criteria: $M = 6.40$, $SD = 2.87$; High worry: $M = 6.71$, $SD = 2.77$; and Non-anxious: $M = 6.10$, $SD = 3.32$).

Next, the items were separated into adaptive (e.g. seeking support, paying attention to the present, relaxation, etc.) and non-adaptive (e.g. worry, thought suppression, ignoring emotion, etc) coping strategies. Again, the GAD criteria group ($M = 3.50$, $SD = 1.80$), high worry ($M = 4.08$, $SD = 1.56$), and non-anxious ($M = 3.33$, $SD = 1.95$) groups were all statistically equivalent ($F(2, 83) = 1.25$, $p > 0.291$) with regard to the number of adaptive coping strategies they reported. The same was true for the maladaptive coping strategies, where no between group differences emerged ($F(2, 83) = 0.14$, $p > 0.87$) between the GAD criteria ($M = 2.90$, $SD = 1.95$), high worry ($M = 2.63$, $SD = 1.91$), and non-anxious ($M = 2.77$, $SD = 1.77$) groups.

Finally, the frequency with which each individual coping strategy was engaged in, with individual cells for each group, was evaluated by employing a series of Chi-square analyses. None of the observed rates of endorsement departed, statistically, from what would be expected by chance alone on any of the individual items. Chi-square values for each item are given in table 4.

Follow Up Period

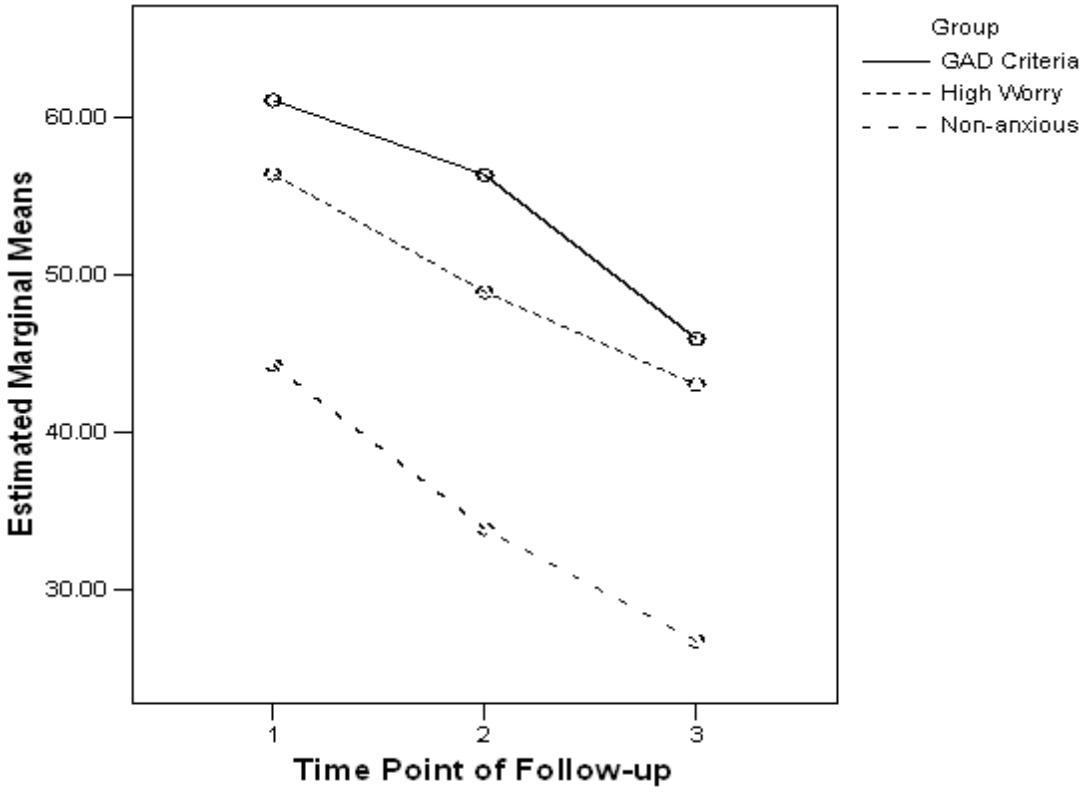
Participants were asked to make ratings of their emotional arousal at three specific time points during the follow up period. These time points were set at 5:00 p.m., 10:00 p.m. (or before going to bed), and upon waking up the next morning before returning the packet. A repeated measures ANOVA was conducted on these three ratings to look at the length of time it took participants to return to baseline levels of arousal. Results suggest a main effect for both

Table 4. *Chi-square Data and Statistics for the Coping Strategy Checklist.*

		Frequency			Chi-Square
Strategy		GAD	HW	Non-Anxious	
Change Environment					χ^2 (2) = 1.19, p > 0.553
	Endorsed	17	11	13	
	Not Endorsed	13	13	17	
Worry					χ^2 (2) = 2.46, p > 0.292
	Endorsed	10	5	5	
	Not Endorsed	20	19	25	
Unrelated Activities					χ^2 (2) = 0.19, p > 0.908
	Endorsed	17	15	18	
	Not Endorsed	13	9	12	
Thought Suppression					χ^2 (2) = 0.97, p > 0.615
	Endorsed	17	12	19	
	Not Endorsed	13	12	11	
Thought Distraction					χ^2 (2) = 0.69, p > 0.710
	Endorsed	15	10	12	
	Not Endorsed	15	14	18	
Opposite Emotions					χ^2 (2) = 3.33, p > 0.189
	Endorsed	4	6	10	
	Not Endorsed	26	18	20	
Thought Stopping					χ^2 (2) = 1.60, p > 0.448
	Endorsed	9	7	13	
	Not Endorsed	21	17	17	
Mindfulness					χ^2 (2) = 1.02, p > 0.600
	Endorsed	13	11	10	
	Not Endorsed	17	13	20	
Sought Support					χ^2 (2) = 0.96, p > 0.618
	Endorsed	8	9	8	
	Not Endorsed	22	15	22	
Nothing					χ^2 (2) = 0.64, p > 0.727
	Endorsed	1	2	2	
	Not Endorsed	29	22	28	
Contacted Target					χ^2 (2) = 1.69, p > 0.430
	Endorsed	16	11	11	
	Not Endorsed	14	13	19	
Ignored Emotion					χ^2 (2) = 0.20, p > 0.903
	Endorsed	7	6	6	
	Not Endorsed	23	18	24	
Reappraisal					χ^2 (2) = 3.98, p > 0.136
	Endorsed	1	5	4	
	Not Endorsed	29	19	26	
Relaxation					χ^2 (2) = 4.01, p > 0.134
	Endorsed	16	19	18	
	Not Endorsed	14	5	12	
Self Soothing					χ^2 (2) = 0.58, p > 0.747
	Endorsed	16	15	16	
	Not Endorsed	14	9	14	
Avoided Thoughts					χ^2 (2) = 1.15, p > 0.563
	Endorsed	10	11	10	
	Not Endorsed	20	13	20	

time ($F (1, 72) = 31.08$, $p < 0.000$), and group ($F (1, 72) = 5.21$, $p < 0.008$), but no group x time interaction ($F (2, 72) = 0.19$, $p < 0.827$). Individual post-hoc comparisons, using a Bonferroni correction, denoted that at the first time point, there was a weak trend for-, but no statistical difference ($F (2, 74) = 2.88$, $p > 0.063$) between the GAD criteria ($M = 61.16$, $SD = 28.52$), high worry ($M = 56.46$, $SD = 21.99$), and non-anxious ($M = 44.31$, $SD = 26.63$) groups. However at the second time point, the GAD criteria group ($M = 56.40$, $SD = 27.40$) and the non-anxious group ($M = 33.88$, $SD = 23.40$) changed enough to observe a statistical difference ($F (2, 74) = 5.18$, $p < 0.008$). Neither group differed from the high worry group ($M = 48.96$, $SD = 25.54$) at this time point. This difference remained at the third time point, indicating that the GAD criteria group's ratings of emotional arousal ($M = 45.96$, $SD = 27.35$), continued to be elevated compared to the non-anxious group ($M = 26.73$, $SD = 24.85$; $F (2, 74) = 4.08$, $p < 0.021$). Again, the high worry group ($M = 43.04$, $SD = 25.48$) landed between the other two groups, but did not differ statistically from either. While the effect size of this difference between the GAD criteria group and the non-anxious group was small ($\eta^2 = 0.14$), it does suggest that the GAD criteria group underwent a slower return to baseline than the non-anxious group. Figure 4 details this graphically.

Figure 4. Return to Baseline of Emotional Arousal During the Follow-up Period.



Discussion

This investigation sought to detail the relationship between generalized anxiety disorder and emotion regulation. Specifically, this study examined differences in emotional reactivity and regulation that exist between individuals meeting GAD criteria, those who report high levels of worry, but that do not meet GAD criteria, and those who are not anxious. In recent years, new models and conceptualizations of GAD have emerged, but have just begun to go through the

process of being investigated as viable accounts of the etiology of- and pathology associated with- GAD.

One model in particular, proposed by Mennin et al. (2002; 2005) proposes that specific emotion regulation impairments may predispose individuals to experience chronic anxiety and be especially susceptible to the development of GAD which results after worry becomes over-learned as a means to mitigate the aversive stimulation created by prolonged anxious arousal.

To test this theory we proposed that individuals meeting GAD criteria would use emotion regulation strategies that suppress emotion more frequently than either a non-anxious or high worry non-GAD comparison group; that participants in the GAD criteria group would have more intense emotional responses than the comparison groups; that the GAD group would rate their emotion regulation strategies as ineffective; that the length of the return to baseline period following a negative mood induction would be the greatest for GAD participants; and that GAD participants would endorse a poorer understanding of emotion, heightened negative reactivity to emotions, and poorer emotion management when compared to the other two groups.

The first hypothesis, that individuals in the GAD criteria group would not only use different, but more suppressive strategies for regulating emotion than the other two groups was partially supported by the results. No differences were observed between the three groups with regard to the number or frequency of coping strategies employed, whether those strategies were adaptive or not, or whether those strategies tended to center on reappraisal or suppression of

emotion. However, we did find that individuals meeting GAD criteria report trying to change their emotional state less often than those who are non-anxious. Further, those meeting GAD criteria engaged in fewer positive, enjoyable behaviors, and are less likely to reframe their thoughts in a less anxiety provoking manner compared to their non-anxious counterparts.

Our second hypothesis, that those individuals meeting GAD criteria would have stronger emotional responses, also received supported from our findings. Not only were those endorsing GAD criteria characterized by a greater degree of impulse strength (emotional reactivity) than those who were not anxious, but they also endorsed an inability to control those emotional impulses. This reaction style is complicated by a lack of emotional clarity, limited access to emotion regulation strategies, higher alexithymia scores, and being less accepting of emotion when compared to those that don't meet GAD criteria including those who are highly anxious. Individuals in the GAD criteria group also report stronger fears of negative emotional experiences including anger, depression, and anxiety.

The third hypothesis, regarding how individuals perceive the effectiveness of their emotion regulation strategies was partially supported. Individuals who met GAD criteria indicated that they were less able than the non-anxious group to produce a change in how they were feeling when asked to actively regulate their emotion. Both the high worry group and the GAD criteria group also scored lower on their ability to make emotional repairs than the non-anxious group. If one is less able to produce a change in their internal experience via typical

emotion regulation behaviors, it would not be surprising if they then resorted to stronger, albeit potentially maladaptive strategies for doing so. Indeed, both the GAD criteria group and the high worry group reported engaging in a wider range of- and more frequent- self harm behavior than the non-anxious group, as well as higher levels of worry and anxiety.

Hypothesis four stated that those in the GAD group would experience a slower return to baseline than the other two groups. The GAD criteria group did indeed show prolonged emotional arousal during a follow-up period (Time 4) compared to the non-anxious group, despite ending the study procedures (Time 3) at a statistically equivalent degree of arousal. This suggests a slower return to baseline is typical of the GAD criteria group. It is possible that, given this trajectory, emotional reactions could compound themselves if triggers were to occur frequently enough, wherein one trigger may begin to affect the individual before the last trigger has had time to dissipate. This process would lead to chronic emotional arousal and increase the likelihood of stronger, but more problematic, forms of coping to be employed.

The final hypothesis concerned several of the specific deficits proposed by Mennin et al. (2002, 2005), and centered on individuals meeting GAD criteria having a poorer understanding of emotion, heightened negative reactivity to emotions, and poorer emotion management. The inclusion of these specific deficits in an emotion regulation model of GAD were supported by our findings which suggest that individuals in the GAD criteria group have more difficulty identifying and describing their emotions and have poorer emotional clarity,

overall, when compared to both the high worry and non-anxious groups. Scores from the ACS and its subscales suggest that while not differing with regard to positive emotional reactions, those with GAD react with more fear to negative emotion. With regard to the management of their emotional states, those meeting GAD criteria have more difficulty engaging in goal directed behavior, and have more difficulty creating change in their emotional state. They are also more likely to get stuck in memories related to the emotional trigger than participants in the other groups.

Given the support we found for the hypotheses of this study, it is clear that the experience and management of emotion differs between those who meet GAD criteria, those who experience high levels of worry, but don't meet GAD criteria, and those who are non-anxious. It also provides some interesting implications for the theory and treatment of GAD.

One noteworthy trend observed throughout the results of this study was that the high worry group consistently landed in between the values of the other two groups regardless of the variable of interest. Often the high worry group would differ from one group or the other, and frequently it did not differ from either. Yet, looking at the mean values alone, it seemed to represent a step, or progression, from the non-anxious toward that of the chronically anxious. in fact, we originally included this group to avoid skewing either the GAD criteria group or the non-anxious group by mislabeling and including a distinct cluster of participants as either non-anxious or 'disordered,' neither of which may have accurately identified this subset of the population. If this high worry, non-GAD

group is truly distinct, as Ruscio (2005) suggests, then measuring them specifically as an independent group of interest allows for a test of whether chronic anxiety and emotion dysregulation are the extreme values of a continuum on which normal function exists at the opposite extreme. It also gives us insight into the minimum criteria necessary for the impairments associated with GAD to develop. With regard to many of the variables we measured in this study, the high worry group was much more similar to the non-anxious group, suggesting that elevated worry, alone, is not a sufficient explanation of link between GAD and emotion dysregulation on those variables. Instead, some other characteristic beyond worry frequency or severity, only captured in the GAD group may be responsible. The results for the Difficulties in Emotion Regulation Scale, where the GAD group truly stood apart as more dysfunctional than the other two groups, is one example of this.

In other cases, the high worry group mirrored the GAD criteria group suggesting that in some instances, worry may very well be the particular factor or proxy, responsible for the observed dysfunction, such as in the emotional repair subscale of the Trait Meta Mood Scale, in which engaging in frequent worry may block, or otherwise prevent, emotion regulation from occurring normally, thus emotion dysregulation may progress continuously, and in parallel with other processes that increase as anxiety and worry increase.

Taken generally, not only does this study replicate and strengthen the work of Mennin and colleagues by lending support and clarification to the specific emotion regulation difficulties proposed by their model, and of Ruscio by

specifically examining a highly worried, but non-diagnostic group of individuals, but it also provides numerous inroads for further study that may eventually aid in the effective treatment of individuals suffering with this chronic and difficult condition. Additionally, this project informs the overarching understanding of the phenomenology of generalized anxiety disorder as well.

Data supporting the idea that individuals meeting GAD criteria experience more fear of their emotional arousal than those who are non-anxious articulates a long missing piece of the nomenclature regarding what stimuli or experiences serve to trigger anxious responding in individuals meeting GAD criteria. The heightened emotional reactivity and overall severity of emotion dysregulation in the sample of those meeting GAD criteria suggest that underlying factors of this condition are not only cognitive, but rather, are also rooted in our basic response to stress, as well as a probable skills deficit that prevents the effective management of those responses. Poor emotional clarity and an inability to change emotional states effectively speaks to the persistent nature of GAD, and the resistance it has shown to treatment.

Cognitive-behavioral models that only superficially address emotion, or which assume that all individuals can innately identify and describe what they are feeling may be insufficient for understanding the emotional features that could be producing or maintaining GAD pathology. The aversive emotional experience reported by participants in the GAD criteria group (as evidenced by the findings related to the trait emotion measures and emotion checklist) may serve as an antecedent variable that affects the reinforcing value of behavioral consequences

such as worry (Michael, 2000). In essence, emotion dysregulation may function as an establishing operation for chronic worry to be negatively reinforced routinely.

Failing to consider emotion factors in the conceptualization of GAD severely truncates our ability to comprehensively understand this clinical presentation. Our findings don't discount current models of GAD, but rather offer points on which to build, strengthen, and reassess key factors such as emotion regulation.

The application of an emotion based model of GAD in treatment also disserves attention. Focusing solely on creating cognitive shifts, or changes in one's external behavioral repertoire alone have proved helpful to most and truly effective for many, but still a significant proportion, 30 to 50 percent, of treatment seeking individuals do not respond to treatment as well as would be hoped for (Borkovec & Costello, 1993; Borkovec & Newman, 1999; Crits-Christoph, Connolly-Gibbons, & Crits-Christoph, 2004; Fisher & Durham, 1999; Ladouceur, Dugas, Freeston, Léger, Gagnon, & Thibodeau, 2000). While traditional CBT interventions are most likely a necessary component of treatment, it is very likely that, alone, they are simply not sufficient. One important consideration from this study is that along side CBT strategies, emotion focused interventions may be an important treatment addition, with specific treatment targets implicated by the results of this investigation.

Given that participants meeting GAD criteria endorsed stronger fears of emotions, exposure to emotional arousal may be a particularly powerful

treatment consideration. If emotional arousal does elicit avoidant coping through worry or any other means, then the phobic stimulus should be experienced independently of the associated avoidant (worry) behavior until habituation occurs. In doing so, the client learns to experience their emotion, positive or negative, without engaging in the avoidant response.

Exposure to emotion also affords the client greater insight into the specific emotional responses they have, their triggers, and the effects that those responses have on their thoughts and behavior. This gives way to a better understanding of how one reacts to emotion, the strength with which they react, whether that degree of reactivity is effective for them or produces further difficulties, and how to affect that reactivity so that a quick return to baseline can be achieved.

Specific skills training and psychoeducation is also of value, and may facilitate adaptive coping through skills rehearsal of emotional repair, self soothing, commitment to positive goals, when and how to accept or change emotion, and how to successfully reframe negative thoughts, which are all potential skill targets that may be absent or deficient in those who have grown to rely on worry instead. Mindfulness training may also be warranted to have the client be able to quickly and purposefully orient themselves to the present moment, since those meeting GAD criteria may have a tendency to not only be future focused, by nature of their worry, but also to be ruminative about memories surrounding emotionally evocative situations from the past.

This focus on emotion is not typical for the anxiety disorders, but it is typical for the treatment of conditions that involve a high degree of emotion dysregulation, most notably borderline personality disorder. What is being advocated here is not a complete turn from 'what works for anxiety,' but instead, to accompany what works with a focus on universal processes and the treatment components that are effective in those situations. Certainly, each DSM-IV diagnostic label or category is not completely independent; there are common ties that exist in the processes of psychopathology which bind these presentations together. Emotion regulation is one such process; a basic, human system for experiencing and managing emotions, which serve a very adaptive and important function for our survival. However, like any other system that requires interaction with the environment, problems can arise and dysregulation can occur. The specific form that that dysregulation takes, or the means used to manage it are going to be highly variable, and as unique as the individual suffering the effects of that dysregulation. It is for that reason that models and treatments of GAD, and many other forms of psychopathology, that don't take functional, common processes into consideration will likely fail to fully address the problem that they are designed to treat. Such a shift in how we think about the processes of psychopathology, or even GAD alone, however, is quite substantial and will take time and further work to more closely examine processes such as emotion regulation.

Turning back to the present study, the results observed point to considerable differences between the GAD criteria group and the other two

(especially the non-anxious) groups. But it may offer information for the anxiety disorders in general as well. The regression analyses we ran suggest that one's ability to regulate their emotion may have a direct effect on their experience of anxiety, independent of worry. While at first this may seem obvious—an inability to manage one's internal experience undoubtedly leads to stronger and more frequent experiences of emotion, including anxiety—further thought suggests that the bigger issue is one of universal features of psychopathology; that dysfunction associated with poor ER ability is not isolated only to worry, but may affect anxiety in general, and thus ER may be an important trans-diagnostic factor within the anxiety disorders, and further study is warranted to explore the notion that difficulties with emotion regulation may have broad implications, and serve as a point for common understanding and common intervention regardless of diagnostic label.

Taking the results that were found in this investigation into consideration, it is surprising that more state differences and interactions were not observed over the course of the study procedures, especially given that participants were all equal on measures that would have been threats to internal validity had participants differed. Further, all participants responded as expected to the imaginal scenario and reported that they indeed followed the instructions of the emotion regulation task as described in the participant instruction packet.

It is possible that the differences observed are wholly trait variables, and are not sensitive to changes in state arousal, whereas the non-anxious and high worry participants may be more reactive in the moment, blurring the boundaries

between the groups on the state measures only. It is also possible that the imaginal scenario was so evocative that all participants hit a ceiling with regard to emotional arousal, and any differences between groups were lost. This is unlikely, however, since ratings of the strength of participant response to the scenario were not maxed out, leaving room for groups to differ. Finally, it may be that the state measures didn't capture the change processes that were indicated from the results of the trait measures, with the exception of the SMMS emotional clarity subscale. However, several state versions of the trait measures were used because we simply could not know ahead of time what trait measures would be essential to track in the moment, and thus may have missed changes in those variables.

Several other limitations presented themselves over the course of this study as well. One such issue is that the high worry, non GAD group included only twenty-four participants, while the other groups each contained thirty. While this naturally decreased the power to detect significant differences for that group, power levels remained acceptable across comparisons. Further, examining the data from the screening phase of the study indicates that of the 1,175 potential participants surveyed, 159 (13.6%) met criteria for the GAD group, 869 (73.9%) met criteria for the non-anxious group, and 147 (12.5%) met criteria for the high worry, non GAD group, suggesting that even if all groups had the same likelihood of agreeing to participate in the study, fewer high worry participants could have been included compared to the other two groups.

Related to this is the issue of gender in the sample, the concern being that men and women may respond differentially to the study procedures, and that having an unequal frequency of each gender may affect the generalizability of the results. There was an obvious difference in the gender in the sample, having enrolled 72 women, and only 12 men, and this translated to the individual groups as well. The GAD criteria group contained 28 women, and only 2 men. The high worry group was made up of 4 men and 20 women. Finally, the non-anxious group contained 6 men and 24 women. A chi-square analysis was conducted to see if the proportion of men to women differed between groups, which it did not, suggesting that any effect attributable to the disproportionate number of women to men in the sample would be exerted equally across groups. However, the concern remains that the results of this study may be more applicable to women who meet GAD criteria then men who meet GAD criteria. Considering that in the general population the number of women meeting criteria for GAD is nearly twice as high as that of men (Kessler et al., 2005), our sample may more accurately model the general population than if the ratio of men to women in our sample had been equal.

Future work related to this line of study should focus on refining what emotion variables are related to the development of GAD, as well as how those variables are affected during periods of extreme emotion. Additionally, investigations examining how to produce change on those variables that are generating GAD symptoms and impairments are warranted as well. However, the most prudent next step would be to sophisticate the methods of the current

investigation to capture more succinctly the moment by moment changes experienced between those who are experiencing emotion dysregulation compared to those who are not with regard to the automatic strategies employed to regulate emotion and repair mood.

This study provides further evidence that the processes of emotion regulation and dysregulation play an important role in the phenomenology of generalized anxiety disorder. When a sample of individuals meeting full GAD criteria are compared to those who did not, we found that individuals meeting criteria for GAD had higher emotional reactivity, higher levels of emotional dysregulation, and had more difficulty identifying and describing their emotions. Further they experienced strong fears about experiencing emotion and were less able to change or repair their emotional state, indicating inflexibility with regard to their internal experience. While those meeting GAD criteria don't differ with regard to their experience of positive emotions, they do show a slower return to baseline after a negative mood induction. Taken as a whole, these findings argue for the consideration of emotion and emotion regulation variables in the models and treatments of generalized anxiety disorder, and for emotion regulation to be recognized as an important trans-diagnostic variable of psychopathology.

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Appendix A: Measures

Affective Control Scale

Williams, Chambless, and Ahrens (1997)

Items by Subscale ((R) indicates a reverse scored item).

Anger subscales

1. I am concerned that I will say things I'll regret when I get angry.
8. I am afraid that I will hurt someone if I get really furious.
11. If people were to find out how angry I sometimes feel, the consequences might be pretty bad.
16. I feel very comfortable in expressing angry feelings. (R)
28. I would be embarrassed to death if I lost my temper in front of other people.
30. When I get angry, I don't particularly worry about losing my temper. (R)
34. I get nervous about being angry because I am afraid I will go too far, and I'll regret it later.
39. I am afraid that letting myself feel really angry about something could lead me into an unending rage.

Positive Emotion Subscales

2. I can get too carried away when I am really happy.
6. Being filled with joy sounds great, but I am concerned that I could lose control over my actions if I get too excited.
10. Having an orgasm is scary for me because I am afraid of losing control.
12. When I feel good, I let myself go and enjoy it to the fullest. (R)
14. When I feel really happy, I go overboard, so I don't like getting overly ecstatic.
18. No matter how happy I become, I keep my feet firmly on the ground. (R)
22. I love feeling excited-it is a great feeling. (R)
23. I worry about losing self-control when I am on cloud nine.
31. Whether I am happy or not, my self-control stays about the same. (R)
32. When I get really excited about something, I worry that my enthusiasm will get out of hand.
36. Getting really ecstatic about something is a problem for me because sometimes being too happy clouds my judgment.
41. I am afraid that I'll do something dumb if I get carried away with happiness.
42. I think my judgment suffers when I get really happy.

Depressed mood subscale

3. Depression could really take me over, so it is important to fight off sad feelings.
4. If I get depressed, I am quite sure that I'll bounce right back. (R)
13. I am afraid that I could go into a depression that would wipe me out.
19. I am afraid that I might try to hurt myself if I get too depressed.
25. When I start feeling "down", I think I might let the sadness go too far.

27. Being depressed is not so bad because I know it will soon pass. (R)
29. When I get “the blues”, I worry that they will pull me down too far.
37. Depression is scary to me-I am afraid that I could get depressed and never recover.

Anxiety subscale

5. I get so rattled when I am nervous that I cannot think clearly.
7. It scares me when I feel “shaky” (trembling).
9. I feel comfortable that I can control my level of anxiety. (R)
15. When I get nervous. I think that I am going to go crazy.
17. I am able to prevent myself from becoming overly anxious. (R)
20. It scares me when I am nervous.
21. Being nervous isn’t pleasant, but I can handle it. (R)
24. There is nothing I can do to stop anxiety once it has started.
26. Once I get nervous, I think that my anxiety might get out of hand.
33. When I get nervous, I feel as if I am going to scream.
35. I am afraid that I will babble or talk funny when I am nervous.
38. I don’t really mind feeling nervous; I know it’s just a passing thing. (R)
40. When I get nervous, I am afraid that I will act foolish.

Items as they appear in the measure

1. I am concerned that I will say things I’ll regret when I get angry.

Not at all						Very
1	2	3	4	5	6	7

2. I can get too carried away when I am really happy.

Not at all						Very
1	2	3	4	5	6	7

3. **Depression could really take me over, so it is important to fight off sad feelings.**

Not at all						Very
1	2	3	4	5	6	7

4. If I get depressed, I am quite sure that I’ll bounce right back.

Not at all						Very
1	2	3	4	5	6	7

5. I get so rattled when I am nervous that I cannot think clearly.

Not at all						Very
1	2	3	4	5	6	7

6. Being filled with joy sounds great, but I am concerned that I could lose control over my actions if I get too excited.

Not at all Very
1 2 3 4 5 6 7

7. It scares me when I feel "shaky" (trembling).

Not at all Very
1 2 3 4 5 6 7

8. I am afraid that I will hurt someone if I get really furious.

Not at all Very
1 2 3 4 5 6 7

9. I feel comfortable that I can control my level of anxiety.

Not at all Very
1 2 3 4 5 6 7

10. Having an orgasm is scary for me because I am afraid of losing control.

Not at all Very
1 2 3 4 5 6 7

11. If people were to find out how angry I sometimes feel, the consequences might be pretty bad.

Not at all Very
1 2 3 4 5 6 7

12. When I feel good, I let myself go and enjoy it to the fullest.

Not at all Very
1 2 3 4 5 6 7

13. I am afraid that I could go into a depression that would wipe me out.

Not at all Very
1 2 3 4 5 6 7

14. When I feel really happy, I go overboard, so I don't like getting overly ecstatic.

Not at all Very
1 2 3 4 5 6 7

15. When I get nervous. I think that I am going to go crazy.

Not at all Very
1 2 3 4 5 6 7

16. I feel very comfortable in expressing angry feelings.

Not at all Very

1 2 3 4 5 6 7

17. I am able to prevent myself from becoming overly anxious.

Not at all Very

1 2 3 4 5 6 7

18. No matter how happy I become, I keep my feet firmly on the ground.

Not at all Very

1 2 3 4 5 6 7

19. I am afraid that I might try to hurt myself if I get too depressed.

Not at all Very

1 2 3 4 5 6 7

20. It scares me when I am nervous.

Not at all Very

1 2 3 4 5 6 7

21. Being nervous isn't pleasant, but I can handle it.

Not at all Very

1 2 3 4 5 6 7

22. I love feeling excited-it is a great feeling.

Not at all Very

1 2 3 4 5 6 7

23. I worry about losing self-control when I am on cloud nine.

Not at all Very

1 2 3 4 5 6 7

24. There is nothing I can do to stop anxiety once it has started.

Not at all Very

1 2 3 4 5 6 7

25. When I start feeling "down", I think I might let the sadness go too far.

Not at all Very

1 2 3 4 5 6 7

26. Once I get nervous, I think that my anxiety might get out of hand.

Not at all Very

1 2 3 4 5 6 7

27. Being depressed is not so bad because I know it will soon pass.

Not at all Very
1 2 3 4 5 6 7

28. I would be embarrassed to death if I lost my temper in front of other people.

Not at all Very
1 2 3 4 5 6 7

29. When I get "the blues", I worry that they will pull me down too far.

Not at all Very
1 2 3 4 5 6 7

30. When I get angry, I don't particularly worry about losing my temper.

Not at all Very
1 2 3 4 5 6 7

31. Whether I am happy or not, my self-control stays about the same.

Not at all Very
1 2 3 4 5 6 7

32. When I get really excited about something, I worry that my enthusiasm will get out of hand.

Not at all Very
1 2 3 4 5 6 7

33. When I get nervous, I feel as if I am going to scream.

Not at all Very
1 2 3 4 5 6 7

34. I get nervous about being angry because I am afraid I will go too far, and I'll regret it later.

Not at all Very
1 2 3 4 5 6 7

35. I am afraid that I will babble or talk funny when I am nervous.

Not at all Very
1 2 3 4 5 6 7

36. Getting really ecstatic about something is a problem for me because sometimes being too happy clouds my judgment.

Not at all Very
1 2 3 4 5 6 7

37. Depression is scary to me-I am afraid that I could get depressed and never recover.

Not at all						Very
1	2	3	4	5	6	7

38. I don't really mind feeling nervous; I know it's just a passing thing.

Not at all						Very
1	2	3	4	5	6	7

39. I am afraid that letting myself feel really angry about something could lead me into an unending rage.

Not at all						Very
1	2	3	4	5	6	7

40. When I get nervous, I am afraid that I will act foolish.

Not at all						Very
1	2	3	4	5	6	7

41. I am afraid that I'll do something dumb if I get carried away with happiness.

Not at all						Very
1	2	3	4	5	6	7

42. I think my judgment suffers when I get really happy.

Not at all						Very
1	2	3	4	5	6	7

Beck Depression Inventory

Beck, Rush, Shaw, & Emery, 1979

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today.** Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (changes in sleeping pattern) or item 18 (changes in appetite).

1. Sadness
   - 0 I do not feel sad.
   - 1 I feel sad much of the time.
   - 2 I am sad all the time.
   - 3 I am so sad or unhappy that I can't stand it.

2. Pessimism
   - 0 I do not feel sad.
   - 1 I feel sad much of the time.
   - 2 I am sad all the time.
   - 3 I am so sad or unhappy that I can't stand it.

3. Past failure
4. Loss of pleasure
5. Guilty feelings
6. Punishment feelings
7. Self-dislike
8. Self-criticalness
9. Suicidal thoughts or wishes
10. Crying
11. Agitation
12. Loss of interest
13. Indecisiveness
14. Worthlessness
15. Loss of energy
16. Changes in sleeping pattern
17. Irritability
18. Changes in appetite
19. Concentration difficulty
20. Tiredness or fatigue
21. Loss of interest in sex

Berkeley Expressivity Questionnaire (BEQ)

Gross and John, 1997

Items by Subscale ((R) indicates a reverse scored item).

Negative Expressivity factor

9. No matter how nervous or upset I am, I tend to keep a calm exterior. (R)
13. Whenever I feel negative emotions, people can easily see exactly what I am feeling.
16. What I'm feeling is written all over my face.
3. People often do not know what I am feeling. (R)
5. It is difficult for me to hide my fear.
8. I've learned it is better to suppress my anger than to show it. (R)

Positive Expressivity factor

6. When I'm happy, my feelings show.
1. Whenever I feel positive emotions, people can easily see exactly what I am feeling.
4. I laugh out loud when someone tells me a joke that I think is funny.
10. I am an emotionally expressive person.

Impulse Strength factor

15. I experience my emotions very strongly.
11. I have strong emotions.
14. There have been times when I have not been able to stop crying even though I tried to stop.
7. My body reacts very strongly to emotional situations.
2. I sometimes cry during sad movies.
12. I am sometimes unable to hide my feelings, even though I would like to.

Items as they appear in the measure

For each statement below, please indicate your agreement or disagreement. Do so by filling in the blank in front of each item with the appropriate number from the following rating scale

1. Whenever I feel positive emotions, people can easily see exactly what I am feeling.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

2. I sometimes cry during sad movies.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

3. People often do not know what I am feeling.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

4. I laugh out loud when someone tells me a joke that I think is funny.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

5. It is difficult for me to hide my fear.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

6. When I'm happy, my feelings show.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

7. My body reacts very strongly to emotional situations.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

8. I've learned it is better to suppress my anger than to show it.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

9. No matter how nervous or upset I am, I tend to keep a calm exterior.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

10. I am an emotionally expressive person.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

11. I have strong emotions.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

12. I am sometimes unable to hide my feelings, even though I would like to.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

13. Whenever I feel negative emotions, people can easily see exactly what I am feeling.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

14. There have been times when I have not been able to stop crying even though I tried to stop.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

15. I experience my emotions very strongly.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

16. What I'm feeling is written all over my face.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

Demographic Information

Please write in or circle your response to each question.

1) **What is your age? _____**

2) **What is your gender (Circle One)?**

   Male Female

3) **What is your ethnic Identification?**

   a. Caucasian
   b. African-American
   c. Asian-American
   d. Hispanic/Latino
   e. Native-American
   f. Other _____

4) **What is your relationship status?**

   a. Single
   b. Married
   c. Co-habitating
   d. Divorced or Separated
   e. Widowed
   f. Other _____

5) **What is your current religious identification?**

   a. Catholic
   b. Jewish
   c. Muslim
   d. Protestant (Any Non-Catholic, Christian Religion)
   e. Other _____
   f. None

6) **How many years of education have you received: _____**

   If you are a freshman in college you would enter 13
   If you are a sophomore in college you would enter 14
   If you are a junior in college you would enter 15
   If you are a senior in college you would enter 16, etc.

Difficulties in Emotion Regulation Scale

Gratz and Roemer, 2004

Items by Subscale ((R) indicates a reverse scored item).

Non-acceptance of Emotional Responses
When I'm upset, I feel guilty for feeling that way.
When I'm upset, I feel ashamed with myself for feeling that way.
When I'm upset, I become embarrassed for feeling that way.
When I'm upset, I become angry with myself for feeling that way.
When I'm upset, I become irritated with myself for feeling that way.
When I'm upset, I feel like I am weak.
Difficulties Engaging in Goal-Directed
When I'm upset, I have difficulty concentrating.
When I'm upset, I have difficulty focusing on other things.
When I'm upset, I have difficulty getting work done.
When I'm upset, I have difficulty thinking about anything else.
When I'm upset, I can still get things done. (r)
Impulse Control Difficulties
When I'm upset, I lose control over my behaviors.
When I'm upset, I have difficulty controlling my behaviors.
When I'm upset, I become out of control.
When I'm upset, I feel out of control.
I experience my emotions as overwhelming and out of control.
When I'm upset, I feel like I can remain in control of my behaviors. (r)
Lack of Emotional Awareness
I am attentive to my feelings. (r)
I pay attention to how I feel. (r)
When I'm upset, I acknowledge my emotions. (r)
When I'm upset, I believe that my feelings are valid and important. (r)
I care about what I am feeling. (r)
When I'm upset, I take time to figure out what I'm really feeling. (r)
Limited Access to Emotion Regulation
When I'm upset, I believe that I'll end up feeling very depressed.
When I'm upset, I believe that I will remain that way for a long time.
When I'm upset, I believe that wallowing in it is all I can do.
When I'm upset, it takes me a long time to feel better.
When I'm upset, I believe that there is nothing I can do to make myself feel better.
When I'm upset, I know that I can find a way to eventually feel better. (r)
When I'm upset, my emotions feel overwhelming.
When I'm upset, I start to feel very bad about myself.
Lack of Emotional Clarity
I have difficulty making sense out of my feelings.

I have no idea how I am feeling.
I am confused about how I feel.
I know exactly how I am feeling. (r)
I am clear about my feelings. (r)

Items as they appear in the measure

Please indicate how often the following statements apply to you, use the following guide to indicate your response.

1 *almost never* (0–10%)
2 is *sometimes* (11–35%)
3 is *about half the time* (36–65%)
4 is *most of the time* (66–90%)
5 is *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 that 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.

Emotion Regulation Questionnaire (ERQ)

Gross & John (2003)

The Emotion Regulation Questionnaire is designed to assess individual differences in the habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression.

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. ____ I keep my emotions to myself.
3. ____ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
4. ____ When I am feeling *positive* emotions, I am careful not to express them.
5. ____ When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
6. ____ I control my emotions by *not expressing them*.
7. ____ When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.
8. ____ I control my emotions by *changing the way I think* about the situation I'm in.
9. ____ When I am feeling *negative* emotions, I make sure not to express them.
10. ____ When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.

Note

Do not change item order, as items 1 and 3 at the beginning of the questionnaire define the terms "positive emotion" and "negative emotion".

Scoring (no reversals)

Reappraisal Items: 1, 3, 5, 7, 8, 10; Suppression Items: 2, 4, 6, 9.

Generalized Anxiety Disorder Questionnaire—IV

Newman, Zuellig, Kachin, Constantino, Przeworski, Erickson, & Cashman-McGrath, 2002

1. Do you experience excessive worry?
Yes_____ No_____

2. Is your worry excessive in intensity, frequency, or amount of distress it causes?
Yes_____ No_____

3. Do you find it difficult to control your worry (or worrying) once it starts?
Yes_____ No_____

4. Do you worry excessively and uncontrollably about <u>minor things</u> such as being late for an appointment, minor repairs, homework, etc.?
Yes_____ No_____

5. Please list the most frequent topics about which you worry excessively and uncontrollably:

a._____b._____

c._____d._____

e._____f._____

6. During the <u>last six months</u>, have you been bothered by excessive and uncontrollable worries more days than not?
Yes_____ No_____

IF YES, CONTINUE. IF NO, SKIP REMAINING QUESTIONS

7. During the past six months, have you been bothered by any of the following symptoms? Place a check next to each symptom that you have more days than not:

__ Restlessness or feeling keyed up or on edge
__Irritability

__Difficulty falling/staying asleep or restless/unsatisfying sleep
__Being easily fatigued
__Difficulty concentrating or mind going blank
__Muscle Tension

8. How much do worry and physical symptoms interfere with your life, work, social activities, family,
etc.? Circle one number:

0	1	2	3	4	5	6	7	8
None		Mildly		Moderately		Severely		Very Severely

9. How much are you bothered by worry and physical symptoms (how much distress does it cause you)?
Circle one number?

0	1	2	3	4	5	6	7	8
No Distress		Mild Distress		Moderate Distress		Severe Distress		Very Severe Distress

Mood and Anxiety Symptom Questionnaire

Watson and Clark, 1991

Feel Afraid

Not at all				Extremely
1	2	3	4	5

Feel Uneasy

Not at all				Extremely
1	2	3	4	5

Feel like something awful is going to happen

Not at all				Extremely
1	2	3	4	5

Feel tense or “high-strung”

Not at all				Extremely
1	2	3	4	5

Feel keyed up, “on edge”

Not at all				Extremely
1	2	3	4	5

Am worried a lot about things

Not at all				Extremely
1	2	3	4	5

Feel nervous

Not at all				Extremely
1	2	3	4	5

Feel irritable

Not at all				Extremely
1	2	3	4	5

Am unable to relax

Not at all				Extremely
1	2	3	4	5

Feel very restless

Not at all				Extremely
1	2	3	4	5

Having trouble concentrating

Not at all				Extremely
1	2	3	4	5

Having trouble paying attention

Not at all				Extremely
1	2	3	4	5

Muscles are tense or sore

Not at all				Extremely
1	2	3	4	5

Feel sluggish or tired

Not at all				Extremely
1	2	3	4	5

Feeling nauseous

Not at all				Extremely
1	2	3	4	5

Penn State Worry Questionnaire

Meyer, Miller, Metzger, & Borkovec, 1990

Directions: Enter the number that best describes how typical or characteristic each item is of you, putting the number next to the item.

1	2	3	4	5
Not at all typical		**Somewhat typical**		**Very typical**

_____ 1. If I don't have enough time to do everything, I don't worry about it.

_____ 2. My worries overwhelm me.

_____ 3. I don't tend to worry about things.

_____ 4. Many situations make me worry.

_____ 5. I know I shouldn't worry about things, but I just can't help it.

_____ 6. When I am under pressure I worry a lot.

_____ 7. I am always worrying about something.

_____ 8. I find it easy to dismiss worrisome thoughts.

_____ 9. As soon as I finish one task, I start to worry about everything else I have to do.

_____ 10. I never worry about anything.

_____ 11. When there is nothing more I can do about a concern, I don't worry about it anymore.

_____ 12. I've been a worrier all my life.

_____ 13. I notice that I have been worrying about things.

_____ 14. Once I start worrying, I can't stop.

_____ 15. I worry all the time.

_____ 16. I worry about projects until they are all done.

Positive Affect Negative Affect Schedule

Watson, Clark, & Tellegan, 1988

Directions:
This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what **extent you feel this way right now, that is, at the present moment**.

1→ Very slightly or not at all
2→ A little
3→ Moderately
4→ Quite a bit
5→ Extremely

____Interested	____Irritable
____Distressed	____Alert
____Excited	____Ashamed
____Upset	____Inspired
____Strong	____Nervous
____Guilty	____Determined
____Scared	____Attentive
____Hostile	____Jittery
____Enthusiastic	____Active
____Proud	____Afraid

QMI page 1

Please try to form an imagine each of the following things in your mind, and rate the vividness of each using the following scale.

Not vivid at all **Perfectly clear and vivid**
1 2 3 4 5 6 7

____Seeing the exact contour of the face, head, shoulders, and body of a relative or friend.

____The sound of hands clapping in applause.

____The sensation of hunger.

____The sound of a train whistle.

____The feeling or warmth of a tepid bath.

____The sensation of a sore throat.

____The meowing of a cat.

____The smell of fresh paint.

____Seeing the colors worn in a familiar clothing outfit when you see a relative or friend.

____The feel of sand.

____The smell of new leather.

____The taste of oranges.

____The feel of fur.

____The feel of a pin prick.

____The taste of white sugar.

____Running up a set of stairs.

____Jumping across a ditch.

____Seeing the length of step, gait, or other aspects of a relative or friend’s walking style.

____The sensation of drowsiness.

____Drawing a circle on paper.

____The smell of cooking cabbage.

____Reaching up to get something off of a high shelf.

____Kicking something out of your way.

____The taste of salt.

____Seeing the characteristic poses of the head, attitude or body of a friend or relative.

____The taste of jelly.

____The sound of an automobile honk.

____The sensation of being full after a meal.

____The taste of your favorite soup.

____The sound of escaping steam.

____The smell of a poorly ventilated room.

____The image of the sun as it is sinking below the horizon.

____The smell of roast beef.

____The feel of linen.

____The sensation of fatigue.

State Level of Emotional Arousal

On a scale from 0 to 100 where 0 is no emotion at all, and 100 is the most emotion you've ever felt, how much emotion are you feeling right now?

Enter a number from 0 to 100: _____

State Meta-Mood Scale (Meta Evaluation)

Mayer and Stevens, 1994

1. **My thinking hasn't changed.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

2. **It has altered my outlook.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

3. **It's changed my beliefs and opinions.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

4. **My beliefs and opinions are unchanged by this mood.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

5. **It's changed how I think.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

6. **It is coloring everything I look at.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

7. **It hasn't altered my outlook.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

8. **It has no influence on how I view the world.**

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

9. I shouldn't feel this way.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

10. I know this feeling is wrong.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

11. I'm ashamed of it.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

12. There's nothing wrong with it.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

13. I'm scared by it.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

14. I'm not ashamed of my mood.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

15. There's no need to change it.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

16. It's a normal way to feel.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

17. I know exactly how I'm feeling.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

18. It's hard to tell what it is.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

19. It's hard to describe.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

20. I know why I feel this mood.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

21. It's clear.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

22. I don't know why I feel it.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

23. I can describe my mood.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

24. My mood is confusing.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

25. I feel this mood often.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

26. It's very typical for me.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

27. This mood too shall pass.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

28. This mood will never change.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

29. This mood will change soon.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

30. It's as if it will last forever.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

31. I almost never feel like this.

Definitely does not describe my mood				Definitely does describe my mood
1	2	3	4	5

State Trait Anxiety Inventory-State

Marteau & Bekker, 1992

DIRECTIONS: A number of statements that people used to describe themselves are given below. Read each statement and then circle the appropriate number below the statement to indicate HOW YOU FEEL RIGHT NOW, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

1. I feel calm.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

2. I feel tense.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

3. I feel upset.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

4. I feel relaxed.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

5. I feel content.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

6. I am worried.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

State Trait Anxiety Inventory-Trait

Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983

DIRECTIONS: A number of statements that people used to describe themselves are given below. Read each statement and then circle the appropriate number below the statement to indicate HOW YOU GENERALLY FEEL. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer that seems to describe how you generally feel.

1. I feel pleasant.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

2. I feel nervous and restless.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

3. I feel satisfied with myself.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

4. I wish I could be as happy as others seem to be.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

5. I feel like a failure.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

6. I feel rested.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

7. I am calm, cool, and collected.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

8. I feel that difficulties are pilling up so that I cannot overcome them.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

9. I worry too much over something that really doesn't matter.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

10. I am happy.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

11. I have disturbing thoughts.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

12. I lack self-confidence.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

13. I feel secure.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

14. I make decisions easily.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

15. I feel inadequate.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

16. I am content.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

17. Some unimportant thought runs through my mind and bothers me.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

18. I take disappointments so keenly that I can't put them out of my mind.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

19. I am a steady person.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

20. I get in a state of tension or turmoil as I think over my recent concerns and interests.

Not at all	Somewhat	Moderately	Very much so
1	2	3	4

Toronto Alexithymia Scale-20 item

Bagby, Parker, and Taylor (1994)

Items by Subscale ((R) indicates a reverse scored item).

Difficulty Identifying Feelings
1. I am often confused about what emotion I am feeling.
3. I have physical sensations that even doctors don't understand.
6. When I am upset, I don't k now if I am sad, frightened, or angry.
7. I am often puzzled by sensations in my body.
9. I have feelings that I can't quite identify.
13. I don't know what's going on inside me.
14. I often don't know why I am angry.

Difficulty Describing Feelings
2. It is difficult for me to find the right words for my feelings.
4. I am able to describe my feelings easily. (R)
11. I find it hard to describe how I feel about people.
12. People tell me to describe my feelings more.
17. It is difficult for me to reveal my innermost feelings, even to close friends.

Externally Oriented Thinking
5. I prefer to analyze problems rather than just describe them. (R)
8. I prefer to just let things happen rather than to understand why they turned out that way.
10. Being in touch with emotions is essential. (R)
15. I prefer talking to people about their daily activities rather than their feelings.
16. I prefer to watch "light" entertainment shows rather than psychological dramas.
18. I can feel close to someone, even in moments of silence. (R)
19. I find examination of my feelings useful in solving personal problems. (R)
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

Items as they appear in the measure.

1. I am often confused about what emotion I am feeling.

Strongly Disagree				Strongly Agree
1	2	3	4	5

2. It is difficult for me to find the right words for my feelings.

Strongly Disagree				Strongly Agree
1	2	3	4	5

3. I have physical sensations that even doctors don't understand.

Strongly Disagree Strongly Agree

1 2 3 4 5

4. I am able to describe my feelings easily.

Strongly Disagree Strongly Agree

1 2 3 4 5

5. I prefer to analyze problems rather than just describe them.

Strongly Disagree Strongly Agree

1 2 3 4 5

6. When I am upset, I don't k now if I am sad, frightened, or angry.

Strongly Disagree Strongly Agree

1 2 3 4 5

7. I am often puzzled by sensations in my body.

Strongly Disagree Strongly Agree

1 2 3 4 5

8. I prefer to just let things happen rather than to understand why they turned out way.

Strongly Disagree Strongly Agree

1 2 3 4 5

9. I have feelings that I can't quite identify.

Strongly Disagree Strongly Agree

1 2 3 4 5

10. Being in touch with emotions is essential.

Strongly Disagree Strongly Agree

1 2 3 4 5

11. I find it hard to describe how I feel about people.

Strongly Disagree Strongly Agree

1 2 3 4 5

12. People tell me to describe my feelings more.

Strongly Disagree Strongly Agree

1 2 3 4 5

13. I don't know what's going on inside me.

Strongly Disagree Strongly Agree

1 2 3 4 5

14. I often don't know why I am angry.

Strongly Disagree Strongly Agree

1 2 3 4 5

15. I prefer talking to people about their daily activities rather than their feelings.

Strongly Disagree Strongly Agree

1 2 3 4 5

16. I prefer to watch "light" entertainment shows rather than psychological dramas.

Strongly Disagree Strongly Agree

1 2 3 4 5

17. It is difficult for me to reveal my innermost feelings, even to close friends.

Strongly Disagree Strongly Agree

1 2 3 4 5

18. I can feel close to someone, even in moments of silence.

Strongly Disagree Strongly Agree

1 2 3 4 5

19. I find examination of my feelings useful in solving personal problems.

Strongly Disagree Strongly Agree

1 2 3 4 5

20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

Strongly Disagree Strongly Agree

1 2 3 4 5

Trait Meta-Mood Scale

Salovey, Mayer, Goldman, Turvey, and Palfai, (1995)

Instructions: Please read each statement and decide whether or not you agree with it. Place a number in the blank line next to each statement using the following scale:

5= Strongly Agree
4= Somewhat Agree
3= Neither Agree Nor Disagree
2= Somewhat Disagree
1= Strongly Disagree

1. ____The variety of human feelings makes life more interesting.
2. ____I try to think good thoughts no matter how badly I feel.
3. ____I don't have much energy when I am happy.
4. ____People would be better off if they felt less and thought more. (R)
5. ____I usually don't have much energy when I'm sad.
6. ____When I'm angry, I usually let myself feel that way.
7. ____I don't think it's worth paying attention to your emotions or moods. (R)
8. ____I don't usually care much about what I'm feeling (R)
9. ____Sometimes I can't tell what my feelings are. (R)
10. ____If I find myself getting mad, I try to calm myself down.
11. ____I have lots of energy when I feel sad.
12. ____I am rarely confused about how I feel.
13. ____I think about my mood constantly.
14. ____I don't let my feelings interfere with what I am thinking.
15. ____Feelings give direction to my life.
16. ____Although I am sometimes sad, I have a mostly optimistic outlook
17. ____When I am upset I realize that the "good things in life" are illusions. (R)
18. ____I believe in acting from the heart.
19. ____I can never tell how I feel. (R)
20. ____When I am happy I realize how foolish most of my worries are.
21. ____I believe it's healthy to feel whatever emotion you feel.
22. ____The best way to me to handle my feelings is to experiences them to the fullest.
23. ____When I become upset I remind myself of all the pleasures in life.
24. ____My belief and opinions always seem to change depending on how I feel. (R)

25. ____I usually have lots of energy when I'm happy.
26. ____I am often aware of my feelings on a matter.
27. ____When I'm depressed, I can't help but think of bad thoughts
28. ____I am usually confused about how I feel. (R)
29. ____One should never be guided by emotions. (R)
30. ____If I'm in too good a mood, I remind myself of reality to bring myself down.
31. ____I never give into my emotions. (R)
32. ____Although I am sometimes happy, I have a mostly pessimistic outlook. (R)
33. ____I feel at ease about my emotions.
34. ____It's important to block out some feelings in order to preserve your sanity.
35. ____I pay a lot of attention to how I feel.
36. ____When I'm in a good mood, I'm optimistic about the future.
37. ____I can't make sense out of my feelings. (R)
38. ____I don't pay much attention to my feelings. (R)
39. ____Whenever I'm in a bad mood, I'm pessimistic about the future.
40. ____I never worry about being in too good a mood.
41. ____I often think about my feelings.
42. ____I am usually very clear about my feelings.
43. ____No matter how badly I feel, I try to think about pleasant things.
44. ____Feelings are a weakness humans have. (R)
45. ____I usually know my feelings about a matter.
46. ____It is usually a waste of time to think about your emotions. (R)
47. ____When I am happy I sometimes remind myself of everything that could go wrong.
48. ____I almost always know exactly how I am feeling.

Appendix B: Mood Induction Scenario

Participants listen to scenario via standardized tape recorded message:

"A few minutes ago you were asked to talk with the experimenter about someone in your family that you feel very close to. With that person in mind, please listen as closely as possible to the following scenario. The purpose of this activity is to create feelings of sadness, grief, and loss. As you listen, try to imagine the scenario in as much detail as possible. Close your eyes, relax, and try to use all of your senses to imagine the scenes that will be described—sounds, sights, smells, textures, and temperature, as well as thoughts and feelings. Try to imagine, in as much detail as possible, that the events being described are happening right now. Take a few slow deep breaths, and let's begin."

"Imagine that it's a weekday afternoon, you've just stepped outside of your class and can see that the sun is already starting to set on the horizon. As you exit the building, you hear your cell phone ring unexpectedly in your school bag. You dig around in your bag, shifting texts and notebooks around, and find your phone just before it stops ringing. You answer the call and hear a familiar voice. But they don't sound quite like their normal self. You find a quiet place to sit. The tension in the person's voice causes you to feel some apprehension and suddenly you become very aware of your surroundings…the phone feels cold in your hand. Their voice trembles as they inform you that the person that you cared for the most in your life has been found dead after being killed in a terrible accident. The person on the phone immediately begins to cry uncontrollably and you can hear the audible sobs. It's obvious how much this person meant to you both. Your mind starts to race as you desperately try to make sense of this information and you hear those words over and over again in your head…They've died."

"Imagine now that you are at the funeral held for this person whom you cared for so much. The room is full of people and you recognize many faces…all sad…all solemn, all dressed in dark somber colors. The family has decided to hold a viewing. You join the slow procession of people grieving as they slowly amble to the front of the room to pay their respects and say their last good bye. Behind you, you can hear those that have taken their seats shuffling around trying to get settled and talking in low voices to one another, but above all that, you hear the unmistakable sound of people crying…quiet tears of loss. After what seems like an eternity, you approach the casket. You notice that your feet feel sluggish and heavy against the thick carpet of the room. In a moment of sudden recognition, you see the profile of the deceased's face, but it's no longer the face that you knew, it's different, absent of the life that characterized this person. As you draw closer still, you can smell the sweet scent of flowers that those ahead of you left resting on the coffin. Silently, you look upon that person's face…in your mind you realize that this is the last time you will be able see them. You take a moment to remember what that person meant to you. Slowly you turn away to return to your seat amongst those that, like you, are trying to face the reality that this person has passed."

Appendix C: Neutral Imagery Scenario

Source: Craske, 1999, pg. 315

"You walk into a square, blue room. The walls and ceiling are all a deep blue. On the floor is a blue carpet. The carpet is soft under your feet. There is nothing in the room except for a plain wooden table in the middle. On the table is a clear glass pitcher filled with water and a tall, clear glass. You are thirsty, and you are glad to see the water. Your mouth is very dry. You walk over to the table and pick up the pitcher in one hand and the glass in the other. You fill the glass with water. Your hand holding the glass feels cool as the glass fills with water. You put the pitcher back down on the table, swallow some water, and then drink some more."

Appendix D: Coping Strategy List

Instructions: During the last few minutes you were asked to engage in whatever activities, mental or physical, that you would normally do in response to the thoughts and feelings that were evoked while listening to the funeral scene. Below is a list of common coping strategies, please indicate which one(s) you used, by circling them below. Only indicate the strategies you used during or following the funeral scene.

I tried to change how I was feeling by changing aspects of my environment.

I worried about things in general.

I chose to engage in an activity that was unrelated to the scenario.

I pushed thoughts related to the scenario out of my head.

I chose to mentally focus on a topic that was unrelated to the scenario.

I tried to produce thoughts and feelings that were opposite of the ones I felt while listening to the scenario.

I told myself to not think about the scenario.

I focused all of my attention on my present surroundings.

I sought out support from others.

I didn't do anything.

I contacted the person (via cell phone, text message, etc.) that I imagined dying during the scenario.

I tried to ignore how I was feeling.

I tried to imagine the scenario from a different, less distressing perspective.

I tried to relax.

I engaged in behavior that was calming or soothing to me.

I avoided thinking about the scenario.

I worried about the person, their safety, or their current activity.

Other (please describe):

Emotion Checklist

Below are a number of feelings and emotions that you may or may not have experienced while imagining the scenario you just listened to. Please circle how intensely you felt each of these emotions. **If you did not feel a particular emotion, circle "1."**

Emotion Name	**Intensity**									
	None									**Extremely**
Sadness	1	2	3	4	5	6	7	8	9	10
Fear	1	2	3	4	5	6	7	8	9	10
Anger	1	2	3	4	5	6	7	8	9	10
Frustration	1	2	3	4	5	6	7	8	9	10
Loss	1	2	3	4	5	6	7	8	9	10
Worry	1	2	3	4	5	6	7	8	9	10
Love	1	2	3	4	5	6	7	8	9	10
Grief	1	2	3	4	5	6	7	8	9	10
Anxiety	1	2	3	4	5	6	7	8	9	10
Remorse	1	2	3	4	5	6	7	8	9	10

Emotion Regulation Task Assessment

Concerning the past 15 minutes in which you asked to do whatever works to calm down:

Were you able to actively change how you were feeling?

Not at all *Very much so*
1 2 3 4 5 6 7 8 9 10

How strongly did you feel you were able to engage with this task?

Disconnected *Very Engaged*
1 2 3 4 5 6 7 8 9 10

Were you able to stay focused throughout the task?

Was not able to focus *Very Focused*
1 2 3 4 5 6 7 8 9 10

Were you able to complete the task as it was described in the instructions?

Not able *Followed all Instructions*
1 2 3 4 5 6 7 8 9 10

How difficult was it to follow the instructions for the task?

Very Difficult *Very Easy*
1 2 3 4 5 6 7 8 9 10

P-ER

If you were faced with the death of this person in real life, and not as part of a research experiment, how likely is it that you would do each of the following? Please circle all of the things that you would do in real life.

- **Seek support from others.**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Try to avoid thinking about it.**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Use a substance to change how I was feeling.**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Deliberately harm (scratch, cut, burn, bruise) myself to change how I was feeling.**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Find some way to soothe how I was feeling (please describe: _____)**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Try to find something positive to do.**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Try to reframe how I was thinking about the situation.**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

- **Nothing**

  Very Unlikely Very Likely
  1 2 3 4 5 6 7 8 9 10

Appendix E: Coping list from homework packet

Instructions: Concerning the person you said you felt most connected to in your life, did you take any action after leaving the study with regard to them? Please circle any statements below that relate to your behavior.

I called, e-mailed, or texted them to see how they were doing.

I worried about them.

I sought out support form this person.

I focused on memories of that person.

I didn't do anything.

I spent time thinking about them, and what they mean to me.

I worried about things in general.

I physically went to see them.

I sought out support from others besides this person.