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# Preventing Generalized Anxiety Disorder in an At-risk Sample of College Students: A Brief Cognitive-behavioral Approach

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## CHAPTER ONE:

### Introduction

Generalized anxiety disorder (GAD) is a pervasive, chronic disorder affecting approximately 5% of the general population over the course of the lifespan (Wittchen, Zhao, Kessler, & Eaton, 1994). The impairment associated with GAD is as severe as that of depression with respect to work productivity, social functioning, and healthcare utilization (Wittchen & Hoyer, 2001). Given its high prevalence and cost to society, GAD is a mental health problem that warrants investigation of etiology, treatment, and prevention models.

Despite several revisions in diagnostic criteria (American Psychiatric Association [APA], 1980, 1987, 2000) controversy exists regarding the status of GAD as a distinct disorder (Kessler, Keller, & Wittchen, 2001). It is highly comorbid with other anxiety and mood disorders and has been considered by some to be a prodrome of another disorder (Brown, Campbell, Lehman, Grisham, & Mancill, 2001). However, it appears that the main feature of GAD, worry, is integral to defining GAD as a separate disorder (Borkovec, 1994). Thus, worry has become a primary focus of etiological and theoretical models (e.g., Borkovec, Alcaine, & Behar, 2004; Hudson & Rapee, 2004) as well as treatment protocols for GAD (e.g., Borkovec & Costello, 1993; Ladouceur, et al., 2000).

To date, cognitive-behavioral treatments have demonstrated the most evidence of efficacy among various psychotherapies applied to treat GAD (e.g., Borkovec & Costello, 1993; Ladouceur et al., 2000). However, the success rates are not as promising as those found for other anxiety disorders (e.g., Panic Disorder). The high

prevalence rate associated with GAD and the alleviation symptoms produced by cognitive-behavioral treatments indicates that alternative approaches (e.g., prevention) to ameliorating the effects of this disorder may be warranted. For example, recent research suggests that providing individuals at risk for developing certain mental health problems with cognitive-behavioral techniques can reduce the risk for future development of these problems (e.g., Gardenswartz & Craske, 2001; Seligman, Schulman, DeRubeis, & Hollon, 1999). Despite this surge of interest in prevention of mental illness, there have been no empirical studies examining preventative interventions for GAD.

The present study investigated the efficacy of a preventative intervention for GAD. Because there have been no prevention protocols previously developed to target this disorder, a protocol was developed and modified over the course of two pilot studies. The pilot studies were conducted for the purpose of examining the utility of a secondary prevention program for GAD. The protocol includes cognitive-behavioral techniques commonly used in the treatment of GAD (e.g., description of anxiety and worry, cognitive restructuring, relaxation techniques, worry exposure, problem orientation and problem solving) presented in a brief, two-session workshop format. Both pilot studies yielded promising results in that state anxiety and worry symptoms were reduced following the intervention and these reductions were maintained for several weeks or months.

The present study used the aforementioned prevention program in first-year college students determined to be at-risk for developing GAD based upon self-reported symptoms of worry. Participants were randomly assigned to either a

workshop or a control condition and were compared on several measures of anxiety and depression. The study employed a longitudinal design in which participants in both conditions were assessed on measures of worry, GAD symptomatology, depression, state anxiety, intolerance of uncertainty, and experiential avoidance on three occasions over the course of 12 months. It was hypothesized that individuals who participated in the preventative intervention, in contrast with control participants, would be less likely to develop GAD and would demonstrate a reduction in worry, depression, state anxiety, intolerance of uncertainty, and experiential avoidance that would be maintained for 12 months.

#### *Generalized Anxiety Disorder*

Since its inception, the diagnosis of GAD has undergone substantial change. GAD was first introduced as a unique anxiety disorder in the Diagnostic and Statistical Manual of Mental Disorders in 1980 ([DSM-III], APA, 1980). Prior to this version of the DSM, GAD was considered to be one of two core components of anxiety neurosis (Kessler, Keller, & Wittchen, 2001). The next revision of the DSM (DSM-III-R, APA, 1987) defined worry as the central characteristic of GAD. This change in the definition of GAD is important because it is one of the first instances in which the field of psychiatry has agreed about the existence of a disorder whose most prominent feature is a psychological process (Borkovec, 1994). The primary feature of worry in GAD has been retained with a subsequent version of the DSM (DSM-IV-TR, APA, 2000) and is the focus of cognitive-behavioral treatments for GAD.

### *Descriptive Psychopathology*

GAD is perhaps the most commonly diagnosed anxiety disorder. However, because its core features overlap with those of other disorders, GAD may be frequently misdiagnosed (Wittchen & Hoyer, 2001). A diagnosis of GAD is warranted when an individual has experienced excessive, uncontrollable worry and anxiety about a number of topics for a period of at least 6 months, in addition to 3 or more of the following symptoms: restlessness, becoming easily fatigued, difficulty concentrating, irritability, muscle tension, and sleep disturbance (APA, 2000).

Generally, the anxiety and worry experienced by individuals with GAD exceeds the actual probability that the anxiety-provoking event will occur (APA, 2000). Individuals with GAD have difficulty controlling their worry and their anxiety and worry often interferes with attention needed to perform tasks. In addition, worries associated with GAD in adults often center on common life circumstances, including minor matters (e.g., punctuality, household chores), finances, health (self or others), career, and community and world affairs (APA, 2000).

Similar to depression, patients with GAD commonly present to primary care physicians for treatment, perhaps because they are most likely to present with symptoms of somatic and sleeping problems, rather than complaints of anxiety (Wittchen & Hoyer, 2001). Studies using DSM-III-R criteria report that current and lifetime prevalence rates of GAD are 3.1% and 5.1%, respectively (Kessler et al., 1994). More recently, a report of the lifetime prevalence rate for GAD in the general

population using DSM-IV criteria indicates that it remains at approximately 5% (Wittchen & Hoyer, 2001).

Prevalence rates for GAD are relatively low among adolescents and young adults, but increase dramatically with age (Wittchen & Hoyer, 2001). GAD appears to develop in the late teenage years or early adulthood, with an average age of onset of 20.6 years (Brown, Campbell, Lehman, Grisham, & Mancill, 2001). Incidence of GAD is also fairly high among older adults (Wittchen et al., 1994). Thus, it appears that GAD may have a bimodal age of onset, with some reporting onset late in life, precipitated by a stressful life event, and others reporting earlier onset with a more chronic course (Stanley & Beck, 2000). In addition to genetic influences and stress (Yonkers, Warshaw, Massion & Keller, 1996), some risk factors have been identified that may contribute to the onset of GAD. These include being previously married, older than age 24, unemployment, identifying oneself as a homemaker, and living in the northeastern geographic region of the United States (Wittchen et al., 1994).

Epidemiological studies using community samples (e.g., Wittchen et al., 1994) as well as clinical samples (Yonkers et al., 1996) report that females are twice as likely as males to be diagnosed with GAD, but this finding may be culture-specific. A study of GAD in rural South Africa found higher rates among men than women (Bhagwangee, Parekh, Petersen, & Subedar as cited in Roemer, Orsillo, & Barlow, 2002).

The course of the disorder is chronic and tends to worsen during stressful periods. The average reported length of the illness is 20 years, with most individuals reporting a stable pattern of symptoms (Yonkers et al., 1996). Approximately 38% of

individuals diagnosed with GAD are considered to be in full remission after five years (Kessler et al., 2001). The impairment caused by GAD is equivalent to depression in magnitude in terms of work productivity and social functioning impairment and is also associated with an increase in use of the health care system (Wittchen & Hoyer, 2001). In a prospective, naturalistic, longitudinal study, Yonkers and colleagues (1996) examined the phenomenology and course of GAD in participants with DSM-III-R defined anxiety disorders. These researchers found that 90% of their sample had a lifetime history of another disorder and 83% had a diagnosis of another anxiety disorder at the outset of the study. More than 1/3 of participants with GAD also had diagnoses of depression (Yonkers et al, 1996).

#### *Diagnostic Issues*

The worry and anxiety associated with GAD can be distinguished from non-pathological worry and anxiety (APA, 2000). Worry associated with GAD, in contrast with non-pathological worry, is not easily controlled and generally interferes with functioning. Worries related to GAD are more prominent, persistent, and upsetting. A diagnosis of GAD is more likely to be given when there is an increased number of life circumstances about which an individual worries. In addition, non-pathological worry is less likely to be associated with the physiological symptoms that generally accompany GAD (APA, 2000).

There is high comorbidity among anxiety disorders and with other disorders (Brown & Barlow, 1992). Specifically, GAD as a principal diagnosis (when using DSM-III-R criteria) is associated with some of the highest comorbidity rates and is also frequently given as an additional diagnosis (Brown & Barlow, 1992). Findings

of high comorbidity may reflect overlap in definitional criteria or other artifacts (e.g., high base rates of some disorders; Brown, et al., 2001). Thus, questions have been raised regarding the diagnostic validity of standard criteria, actual prevalence in the general population, and the meaning and implications of comorbid anxiety and depressive disorders.

In a large-scale study of comorbidity using DSM-IV criteria, Brown and colleagues (2001) found that 57% of participants with principal anxiety or mood disorders had at least one additional Axis I diagnosis. In the aforementioned study, comorbidity rates were examined both with and without the hierarchy rule for diagnosing GAD, wherein a diagnosis cannot be made if symptoms occur during the course of a mood disorder (Brown et al., 2001). Inclusion of this hierarchy rule indicated that with a principal diagnosis of major depressive disorder (MDD) or dysthymia, GAD co-occurred in only 5% of cases. However, when ignoring the hierarchy rule, comorbidity rates for GAD and MDD were 67% and 90% for dysthymia (Brown et al., 2001). This latter finding represents a drastic difference in comorbidity based solely on use (or lack thereof) of the hierarchy diagnostic criterion for GAD. When examining current comorbidity rates, 65% of individuals with a principal diagnosis of GAD had a comorbid diagnosis of another anxiety or mood disorder, 36% of whom reported comorbid social phobia, and 26% of whom reported comorbid major depressive disorder. Lifetime comorbidity rates for individuals with GAD as the index diagnosis indicate a 94% comorbidity rate with another anxiety or mood disorder, a 47% rate of co-occurring panic disorder, 46% comorbid social phobia, and 67% comorbid major depressive disorder (Brown et al., 2001).



Due to its poor diagnostic reliability (Brown & Barlow, 1992) and high comorbidity rates with other disorders (Brown et al., 2001), it has been suggested that GAD should not be considered an independent disorder. However, considerable evidence exists that counters the argument that GAD is better conceived as a prodrome, residual, or severity marker of another disorder (Kessler et al., 2001). For example, in the community, GAD does not have a higher prevalence rate than other anxiety or mood disorders. Onset of GAD occurred an average of seven years before onset of a major depressive disorder (Brown et al., 2001). In addition, the environmental determinants of GAD appear to differ from those of depression (Brown et al., 2001). The overall comorbidity rate for GAD did not differ significantly from that of other disorders. This latter finding suggests that arguments to remove GAD as a formal diagnostic category from DSM-IV due to high comorbidity rates were not supported by Brown et al.'s (2001) study. Studies investigating the temporal order of comorbid anxiety and depressive disorders have found that anxiety disorders are more likely to precede rather than follow depressive disorders (e.g., Brown et al., 2001). The aforementioned finding may support theories that conceptualize anxiety and depression as similar constructs falling on different points of a helplessness-hopelessness continuum (Brown & Barlow, 1992). Comorbidity of certain disorders (e.g., GAD) represents an issue that may have implications for both treatment and prevention efforts. For example, treatment protocols may need to be adjusted to account for comorbid disorders in order to achieve symptom reduction of the disorder targeted in treatment (Brown & Barlow, 1992).

## *Worry and Its Relation to GAD*

### *The Nature of Worry*

Worry has been described as playing a central role in the development and maintenance of GAD. Investigations of worry have also led researchers to deduce that worry may be a significant contributor to anxiety, not only for GAD, but perhaps for all other anxiety disorders (Borkovec, 1994). Worry can be defined as an “unwanted, uncontrollable, aversive cognitive activity associated with negative thoughts and some sense of emotional discomfort” (Davey, 1994, p. 36). According to Borkovec and colleagues (Borkovec & Inz, 1990), one of the essential features of worry is that it is a verbal-linguistic activity (i.e., involving thinking) rather than a process involving imagery.

In contrast with other anxiety disorders, GAD appears to be characterized by cognitive, experiential forms of avoidance, rather than by behavioral avoidance. Worriers perceive worry as a method of problem solving that aids in determining actions that might prevent the occurrence of a feared event (Borkovec, 1994). The perception of worry as assisting with the prevention of a feared event may be understandable if one considers what an individual must confront during a worrisome episode. Threat cues that warn of a potential catastrophe are detected. These cues generate a “fight or flight” response. The threat in this instance refers to a future event that is nonexistent or that cannot be controlled, thus there is no one to fight and nowhere to flee. However, the threat still exists in an individual’s mind and therefore the person believes that it must be avoided (Borkovec, Ray, & Stober, 1998).

Individuals diagnosed with GAD experience worry that is more frequent, excessive, and uncontrollable than that of individuals who do not exhibit pathological worry. In addition, worriers and nonworriers cannot necessarily be distinguished by reported topics of worry (Roemer et al., 2002). However, worriers (i.e., those with GAD) may report more uncategorized worries (about miscellaneous topics such as daily annoyances) than nonworriers (Roemer et al., 2002). With respect to cultural differences in worry, one study examining differences between Japanese American and European American individuals found no differences in worry content (Watari & Brodbeck, 2000).

#### *Function of Worry*

Investigations have revealed that worry serves many functions (or perceived functions) for worriers. Worriers exhibit a tendency to focus their attention on threatening stimuli or situations and often view ambiguous situations as threatening (Roemer et al., 2002). Worry can be perceived as an attempt to avoid future negative events and may be reinforced by the nonoccurrence of these feared events (Borkovec & Inz, 1990). Data have also shown that worry may function as a means to avoid anxious emotional experiences (Borkovec & Inz, 1990). For example, worriers often believe that worry can function to help them effectively solve problems, or to avoid the negative events that they fear (Borkovec & Roemer, 1995).

In his model, Borkovec (1994) describes worry as being associated with cognitive avoidance, which contributes to the maintenance of anxiety. The worry process is maintained through negative reinforcement resulting from a lack of expected aversive outcomes and reductions in somatic arousal. He proposes that

worry is negatively reinforcing in that it allows an individual to avoid or escape threatening imagery and distressing somatic activation. Through avoidance, worry provides short-term relief from anxiety and in the long term, worry may inhibit emotional processing and maintain anxiety-producing cognitions. For example, one study suggests that worriers may worry as a means of avoiding more emotionally distressing situations (Borkovec & Roemer, 1995). According to Borkovec and colleagues (Borkovec, Hazlett-Stevens, & Diaz, 1999), the nature of worry is avoidant simply because it is focused on the future, rather than on the present moment.

Because worry promotes avoidance, effective problem-solving may be hindered (Borkovec, 1994). For example, the content of an individual's worry often jumps from topic to topic, without resolution of any one concern. Although worriers appear to lack confidence in their ability to solve problems, they do not necessarily demonstrate deficits in problem-solving ability (Ladouceur et al., 1999). Due to the uncontrollable nature of worry and its tendency to suppress emotional processing, worriers may experience heightened negative affect as well as subsequent cognitive intrusions (Brown, O'Leary, & Barlow, 2001). In a nonclinical sample, Dugas, Freeston, and Ladouceur (1997) found that poor emotional problem orientation (i.e., low level of confidence in problem-solving ability and poor sense of personal control) and intolerance of uncertainty significantly predicted levels of worry in university students.

### *Theoretical Models of GAD*

GAD has been considered the “basic” anxiety disorder (e.g., Roemer et al., 2002). To understand the origin of GAD, including its status as the “basic” anxiety disorder, several theoretical models have been proposed. In an attempt to explain the manifestation of this disorder, each model emphasizes a unique aspect of the nature of GAD. It is important to understand the development of GAD because, while most individuals experience worry and anxiety, these processes do not become pathological in everyone.

Although there is little empirical research investigating etiological factors in GAD, Hudson and Rapee (2004) have proposed an etiological model of GAD that examines several factors that may contribute to the development of the disorder. Of foremost importance is the genetic component that has been identified in GAD. According to the authors, these genetic factors may contribute to anxious vulnerability in an individual that is characterized by temperamental variables (e.g., anxiety sensitivity, emotionality, increased physiological responses to threat). This anxious vulnerability may lead to an avoidant coping style, which in turn may be reinforced by environmental factors (e.g., parents, peers, social situations). In addition, parents who exhibit increased anxiety may reinforce a child’s anxious responses and avoidant coping by modeling anxiety and relating their own cognitive biases regarding threat. According to this model, parents of anxious children may also become overinvolved with their child and contribute to increasing the child’s ability to perceive threat in the environment. Finally, Hudson and Rapee (2004)

suggest that an uncontrollable external environmental stressor combined with anxious vulnerability may produce the onset of GAD.

Barlow (2000) describes a model of anxiety (including the origin of GAD) that is derived from emotion theory. In discussing his model, Barlow suggests a more accurate term for anxiety, specifically, “anxious apprehension.” This term encompasses the idea that anxiety is a mood-state that is future-oriented and involves preparation to cope with impending aversive events. The model of anxious apprehension includes the following components discussed in order of occurrence: the individual encounters a variety of cues associated with negative affect that create a feeling of anxious apprehension; the individual’s attention then shifts to a negative evaluation of his or her ability to cope with impending threat; this self-focused shift of attention increases arousal and negative affect, forming a small, positive-feedback loop; and the individual’s attention next narrows to sources of threat wherein he or she becomes hypervigilant to stimuli associated with sources of the anxious apprehension. According to Barlow’s model, the previously described process of anxiety rarely becomes pathological until it occurs in a chronic manner. When the process becomes chronic, one of two outcomes occur as a reaction to negative affect (1) the individual develops a tendency to avoid entering a state of anxious apprehension, or (2) the individual experiences worry, which is difficult to control at high levels of intensity (Barlow, 2000).

Within his model, Barlow (2000) specifically addresses the origin of various anxiety disorders. He proposes that there is an interacting set of three diatheses involved in the development of anxiety and related disorders. The first diathesis

represents a generalized biological vulnerability composed of genetic influences and genetic traits (e.g., nervousness or emotionality), and other characteristics (e.g., neuroticism and negative affect). The second diathesis is a generalized psychological vulnerability, which is composed of early life experiences encountered under certain conditions that contribute to the vulnerability to experience anxiety and negative affect. It is these first two vulnerabilities that Barlow (2000) describes as sufficient to account for the development of GAD. The third diathesis represents the specific psychological vulnerability, which is composed of vicarious learning of potential threat. According to Barlow (2000), the combination of all three vulnerabilities is necessary for the development of other anxiety disorders such as panic disorder.

Borkovec and colleagues (2004) have proposed an avoidance model of worry that suggests that individuals worry in order to process emotion-laden topics in abstract, conceptual terms, which allows them to avoid aversive images, somatic arousal, and negative emotions. In this model, cognitive activity contributes to the process of effective problem solving; however, worry can be considered an effort to solve a problem related to an anticipated negative event. According to the authors, worry is thus an avoidant process that is frequently negatively reinforced. Within this model, worry is construed as an “internal avoidance response” (Borkovec et al., 2004, p. 77).

Evidence that supports the hypothesis that worry represents a predominantly verbal-linguistic process provides support for the theory of worry as an avoidance response (Borkovec et al., 2004). If worry is generally characterized by verbal-linguistic, rather than imaginal activity, when worrisome images do enter

consciousness, they are likely to be construed as less vivid and therefore, less emotionally disturbing. According to Borkovec and colleagues, worry may be both an attempt to suppress anxiety-provoking images as well as symptoms of somatic anxiety. In this model, verbal descriptions of feared situations elicit little cardiovascular response, whereas images produce strong somatic responses.

Therefore, the researchers propose that worry acts to suppress negative images and their associated somatic responses (Borkovec et al., 2004). According to the authors, worry may also represent a direct attempt to avoid negative emotion, or more indirectly, because there is a strong focus on thought activity in worry, worriers may be less attuned to their emotional experiences (Borkovec et al., 2004).

In a study investigating perceived functions of worry among individuals with GAD, worriers reported that worry functions to help them avoid future negative events and is associated with positive beliefs such as aiding in problem-solving and superstitiously avoiding feared situations (Borkovec & Roemer, 1995). However, Borkovec and colleagues (2004) propose that the idea that worry helps to avoid anticipated catastrophe is frequently negatively reinforced by the nonoccurrence of the feared events, thus preventing the process of extinction.

In a cognitive model of worry, Wells (2004) proposes that worrying is used to cope with anticipated threat. Worry is also linked to the activation of metacognitions that promote the worry process. In individuals with GAD, these metacognitive beliefs support the use of worrying as a coping strategy. Within this model, two types of worry occur. Type 1 worry functions to allow the individual to appraise and cope with a situation. Type 2 worry occurs when an individual negatively evaluates



the worry process itself, thus activating “meta-worry”. These worry processes affect behavioral responses to situations and perpetuate the individual’s sense of loss of control over his/her thoughts, or worries (Wells, 2004).

Finally, worry may represent an attempt to avoid more emotion-laden topics (e.g., past trauma, early childhood relationships, current dysfunctional interpersonal relationships) (Borkovec et al., 2004). Despite its ability to induce processing of emotional material in an abstract manner in the short term, worry does not permit the individual to ultimately relieve the emotional distress. In addition, these researchers propose that the individual is continually confronted with distressing emotional topics, experiences more intense anxiety, and consequently engages in worry to reduce the anxiety (Borkovec et al., 2004).

More recently, other researchers have expanded upon Borkovec’s (Borkovec et al., 2004) avoidance theory to include an emotion dysregulation component (Mennin, Heimberg, Turk, & Fresco, 2002). Specifically, these researchers argue that GAD is best understood as a multi-component disorder involving both poor self-regulation of emotion and poor use of emotion (i.e., individuals with GAD often attempt to control or suppress emotion). Mennin and colleagues (2002) suggest that individuals with GAD may have more intense emotional experiences and may consequently describe these experiences as more aversive. Therefore, individuals with GAD would experience emotions as overwhelming and dangerous, which would impact behavior and perceived self-efficacy. Within this model, worry serves to avoid intense emotion, which diminishes an individual’s ability to focus attention on affective experience. Despite a diminished emotional experience, the worrier

continues to focus on anxiety-provoking topics but does not use important emotion-laden information because it is overwhelming. Rigid attempts at problem-solving may result from the aforementioned process. In summary, Menin and colleagues' model proposes that avoidance of distressing emotions may cause previously ignored emotions to intensify, contributing to the individual's experience of emotion as increasingly aversive, and subsequently leading to perpetuated attempts to control the emotion through worry (Mennin et al., 2002).

In a series of studies designed to investigate the role of emotion regulation in GAD, Mennin et al. (2002) found support for the presence of emotion dysregulation in GAD. Within these studies, participants with GAD reported greater intensity of emotional experience. GAD participants also demonstrated difficulty identifying, describing, and accepting emotional experiences, as well as demonstrating deficits in an ability to self-soothe when experiencing negative emotion. These emotion regulation deficits were found to be a significant predictor of a diagnosis of GAD (Mennin et al., 2002).

To date, a number of models have been proposed to explain the etiology and course of GAD. However, these models have yet to definitively identify causal and maintenance factors associated with this disorder. Nonetheless, these models have successfully informed the development of various treatment protocols for GAD.

#### *Cognitive-Behavioral Treatments for GAD*

Cognitive-behavioral treatments have demonstrated the most evidence of efficacy among various psychotherapies applied to treat this GAD (e.g., Borkovec &

Costello, 1993; Ladouceur, et al., 2000). However, the success rates are not as promising as those found for other anxiety disorders (e.g., Panic Disorder).

Within a cognitive-behavioral model, excessive, uncontrollable worry is frequently addressed through some form of cognitive therapy. Physiological symptoms that are associated with GAD are sometimes addressed through relaxation treatment and exposure-based paradigms have been recognized as potentially effective for targeting worry behaviors. Three cognitive-behavioral treatment protocols will be described in detail, including the similarities and differences in their components.

#### *Treatment Protocols*

Barlow and colleagues (Brown et al., 2001) outline a treatment model for GAD that addresses three systems of anxiety: (1) physiological, (2) cognitive, and (3) behavioral. Self-monitoring represents an integral part of the treatment program. The treatment model can be divided into five elements: rationale, cognitive therapy, worry exposure, relaxation training, and worry behavior prevention and problem solving. During the rationale component, clients are presented with a description of the three systems of anxiety, the rationale and treatment components are described, and clients are shown how to use the self-monitoring forms. The cognitive therapy component consists of a discussion of the nature of anxiogenic cognitions, including automatic thoughts and an explanation of why cognitive distortions that contribute to anxiety continue to be problematic over time (Brown et al., 2001). The therapist describes two types of cognitive distortions for the client. One type of cognitive distortion is probability overestimation in which the individual estimates the likelihood that an

aversive event will occur. Another form of cognitive distortion is catastrophic thinking, during which there is a tendency to view an event as impossible for the individual to cope with successfully when the event is actually less disastrous than it may appear (Brown et al., 2001).

In Barlow and colleagues' treatment package, worry exposure begins with identification and recording of the client's two or three most prominent topics of worry, which are arranged hierarchically (Brown et al., 2001). The client begins by imagining the worst possible outcome to the first worry topic on the hierarchy. In doing so, the client will create a vivid imaginal scene that might accompany this outcome. After some time has lapsed (often at least 30 minutes), the client attempts to generate as many possible alternatives to the worst possible outcome (Brown et al., 2001).

The next component of the treatment protocol designed by Barlow and colleagues (Brown et al., 2001) is relaxation training. During this phase of the treatment, clients initially learn progressive muscle relaxation (PMR) with discrimination training, which teaches the client to discriminate between sensations of muscle tension and relaxation. The use of PMR ultimately quickly provides the client with a technique for invoking a state of relaxation. The final component of the treatment model addresses three areas: worry behavior prevention, time management, and problem solving skills (Brown et al., 2001).

Borkovec and Costello's (1993) cognitive-behavioral therapy for GAD contains many of the same components as that of Barlow and colleagues (Brown et al., 2001); however, the focus of Borkovec and Costello's (1993) model is slightly

different. Borkovec and Costello (1993) stress the importance of self-observation in recognizing the beginning of the anxiety process. Chains of worrisome thinking are considered to be one of the most critical cues for coping strategies. Emphasis is also placed on relaxation training including relaxation techniques that address different response-system levels. This treatment protocol contains four components: rationale, applied relaxation, self-control desensitization, and cognitive therapy. The rationale and cognitive therapy phases are similar to those described by Barlow and colleagues (Brown et al., 2001) (Borkovec & Costello, 1993).

During the applied relaxation phase, anxiety is described as “a habitual spiral process where threat detection leads to interacting anxious reactions that include thoughts (worry), images, somatic reactions, affect, and avoidance” (Borkovec & Costello, 1993, p. 613). Clients learn to self-monitor reactions and learn to detect the anxiety “spiral” earlier. Clients are told that relaxation responses that are invoked early in the anxiety process can disrupt the anxiety cycle. Clients learn to focus their attention on the present, rather than on thoughts and images of past or future negative events. Specific relaxation techniques used during this phase include cue-controlled relaxation, differential relaxation, and imagery techniques (Borkovec & Costello, 1993). Finally, the self-control desensitization component is analogous to Barlow’s worry exposure. The client is presented with anxiety cues and imagines the situation while simultaneously imagining that he or she is using the relaxation skills previously learned in that situation until anxious feelings subside (Borkovec & Costello, 1993).

Based on a study conducted to identify the factors that distinguish individuals with GAD with a non-clinical population (Dugas, Gagnon, Ladouceur, & Freeston,

1998), Ladouceur and colleagues (2000) developed a treatment protocol that targets the factors highlighted in the study that identify those with GAD. The researchers emphasize such factors as intolerance of uncertainty (GAD patients have a decreased ability to tolerate uncertainty), erroneous beliefs about worry (pathological worriers believe that worry has positive effects such as prevention of future aversive events), poor problem orientation (levels of worry are related to the individual's cognitive set when faced with a problem rather than skills used in the problem-solving process), and cognitive avoidance. The researchers also include a unique feature in their therapy. The worries are categorized as one of two types: worries that are amenable to problem solving and worries about situations that are not amenable to problem-solving. According to the authors, this latter feature of the treatment may be important because attempting to solve problems that have no solution may contribute to increased worry (Ladouceur et al., 2000).

The rationale component of Ladouceur et al.'s (2000) treatment describes the role of uncertainty in the onset and maintenance of worry and anxiety. Clients are also told that the goal of treatment is not to eliminate uncertainty, but to assist clients in recognizing it, accepting it, and creating effective coping strategies to use when they encounter uncertainty (Ladouceur et al., 2000). Clients also engage in "awareness training," which is essentially analogous to self-monitoring described in Barlow's (Brown et al., 2001) treatment protocol. In the correction of erroneous beliefs about worry phase, clients recognize and describe beliefs about worry and list advantages and disadvantages of perpetuating these beliefs. The therapist helps clients reevaluate the utility of worry and discusses the idea that correcting erroneous

beliefs about worry can improve tolerance of uncertainty by increasing one's ability to cope with the uncertainty of future events rather than worrying as an attempt to control them (Ladouceur et al., 2000).

Finally, the problem-orientation training portion of Ladouceur and colleagues' (2000) treatment model is directed toward worries that are determined to be amenable to problem solving. The therapist assists clients with remaining focused on the problem situation and its key elements while paying little attention to minor details. Ladouceur and colleagues (2000) used a unique method for implementing cognitive exposure. This part of the treatment targets worries that are not amenable to problem solving. Clients first describe the worry-provoking event, which is recorded on a looped tape to facilitate repeated exposure. The exposure is delivered through a Walkman while the client uses covert response prevention techniques (Ladouceur et al., 2000).

#### *Outcome Research*

The three aforementioned treatment protocols have several components in common. They all include a description of rationale, some form of self-monitoring, and cognitive therapy. However, unlike the other two models, Ladouceur et al.'s (2000) model does not include relaxation training and Borkovec and Costello's (1993) model does not target problem solving. Several studies have investigated the efficacy of cognitive-behavioral treatments for GAD. The treatments in these studies contain some or all of the components addressed in Barlow et al.'s (Brown et al., 2001), Borkovec and Costello's (1993) and Ladouceur et al.'s (2000) treatment protocols.

Research supporting the use of Barlow's (Brown et al., 2001) treatment protocol examined the efficacy of the individual components of the model. Barlow, Rapee, and Brown (1992) compared relaxation, cognitive therapy, and relaxation plus cognitive therapy to a wait-list control group in participants diagnosed with GAD. Results indicated that participants in each of the three treatment groups showed significant improvement in GAD symptoms (e.g., worry) as compared to the wait-list control group. However, no differences were found among the three treatment groups at post-treatment. The treatment gains were maintained across a two-year follow-up period. A significant decrease in anxiolytic medication use was also observed. Despite the effectiveness of the behavioral treatment components in relieving GAD symptoms, Barlow et al. (1992) noted that most of the participants reported lingering anxiety post-treatment, suggesting that a more specific treatment model for GAD may be warranted (Barlow et al., 1992).

In a well-controlled efficacy study, Borkovec and Costello (1993) examined the efficacy of their treatment protocol. Participants diagnosed with GAD were randomly assigned to either nondirective therapy (ND), applied relaxation (AR), or cognitive-behavioral therapy groups (CBT). In the ND group, clients were informed that therapy would consist of an exploration of personal life experiences in a calm, relaxed setting. In the AR group, clients were informed that therapy would entail learning coping strategies for managing symptoms of anxiety and worry. In the CBT group, AR techniques were used, in addition to self-control desensitization and cognitive therapy. Results demonstrated that, overall, AR and CBT were superior to ND at post-treatment. There was a tendency for AR at post-assessment to produce



the greatest degree of clinically significant change, but this shifted to favor CBT at 12 month follow-up. In addition, significantly fewer of the CBT and AR clients requested additional treatment than ND clients (Borkovec & Costello, 1993). These results imply that applied relaxation and cognitive behavioral techniques may contain components that are effective in the treatment of GAD.

Ladouceur et al. (2000) conducted a controlled efficacy study in which they compared CBT as defined in their treatment protocol to a wait-list control group. At post-treatment, 77% of participants no longer met criteria for GAD. This percentage of improvement remained unchanged at one-year follow-up. Despite the absence of a relaxation component, the researchers found that their version of CBT lead to statistically and clinically significant change in somatic symptoms, implying that it may not be necessary to include relaxation techniques in a treatment model for GAD. This is the first study to obtain clinical and statistical change similar to that found for disorders for which CBT is traditionally more effective (e.g., Panic Disorder) (Ladouceur et al., 2000).

A study examining the efficacy of applied relaxation compared to cognitive therapy found no significant differences between the applied relaxation and cognitive therapy groups (Ost & Breitholz, 2000). Results demonstrated that at post-treatment, 53% of participants in the applied relaxation group and 62% of participants in the cognitive therapy group demonstrated clinically significant improvement, as measured by mean Hamilton Anxiety Scale scores falling within 2 standard deviations of the mean scores for the comparison group. At one-year follow-up, 67% of applied relaxation and 56% of cognitive therapy participants were clinically

significantly improved. Both applied relaxation and cognitive therapy appeared to be useful treatments for GAD, but they need to be further refined to increase efficacy to the level of improvement demonstrated in cognitive-behavioral treatments for other anxiety disorders (Ost & Breitholz, 2000).

In a sample of individuals diagnosed with moderately severe GAD, Butler, Fennell, Robson, and Gelder (1991) compared behavior therapy (BT), cognitive-behavioral therapy (CBT), and a wait-list control group (WL). In this study, BT was distinguished from CBT by inclusion of relaxation techniques and worry exposure, and the absence of cognitive techniques. Results demonstrated a superiority of CBT over BT at both post-treatment and 6-month follow-up. The participants in both the BT and CBT groups improved significantly on several measures of anxiety, whereas those in the WL group did not show significant improvement (Butler et al., 1991). Based on the results of this study, a tentative conclusion can be drawn that suggests that cognitive techniques may offer relief from GAD symptoms without the inclusion of such behavioral techniques as relaxation and exposure.

Fisher and Durham (1999) examined six outcome treatment studies for GAD conducted between 1990 and 1999, all of which used the State Trait Anxiety Inventory (STAI-T) as an outcome measure. The following treatments for GAD were included in the analysis: applied relaxation (AR), cognitive-behavioral therapy (CBT), non-directive therapy (ND), behavior therapy (BT), group CBT, group BT, and analytical psychotherapy. Results of the analysis of clinically significant change in these six studies demonstrated that, at post-treatment, individual AR (63%) and individual CBT were far superior to the other treatment conditions. At six-month

follow-up, individual CBT and AR did relatively well, with 50-60% recovery rates. A recovery rate of 40% was found for the sample as a whole, implying that psychotherapies can effectively treat GAD (Fisher & Durham, 1999).

An analysis of symptom change, medication usage, and attitudes toward treatment was conducted on one-year follow-up results of a randomized clinical trial comparing cognitive therapy (CT), analytic psychotherapy (AP) and anxiety management training (AMT) (Durham et al., 1999). At one-year follow-up, there were significantly better ratings for symptom improvement for CT than for AMT or AP as reported by participants. Participants in the CT group reported a larger decrease in medication usage than participants in the AMT or AP groups. Participants in the CT group also rated their attitude toward treatment more positively than those in the AP group. The results of this study point to the utility of CT for treating GAD and provide little support for an insight-oriented approach for this disorder (Durham et al., 1999).

In a meta-analysis of controlled trials for GAD that were conducted between 1974 and 1996, Gould, Otto, Pollack, and Yap (1997) examined differences in the efficacy of CBT and pharmacotherapy interventions. Despite the inclusion of studies with low statistical power and with a variety of outcome measures, Gould et al. (1997) concluded that both types of treatment provided improvement in symptoms for participants. On measures of anxiety severity, the overall effect size (ES) for CBT was .70 and the overall ES for pharmacological interventions was .60; the differences in these ESs was not statistically significant. However, CBT was associated with

greater maintenance of treatment gains compared to pharmacotherapy (Gould et al., 1997).

Studies of nonpharmacologic treatments for GAD have examined the efficacy of several forms of therapy, including CBT, cognitive therapy, anxiety management, nondirective therapy, analytic therapy, and applied relaxation (Falsetti & Davis, 2001). Examination of research investigating these components suggests that CBT and cognitive therapy are superior to other forms of therapy when considering low drop-out rates and high end-state functioning. However, with improvement rates of between 30% and 60%, it is evident that many individuals do not respond to these treatments. Thus, more research is needed to develop more refined and effective treatments, as well as dismantling studies to discern the necessary components for treating GAD (Falsetti & Davis, 1999).

A pilot study of large group therapy for GAD examined the effectiveness of a “stress control” treatment provided to participants with GAD over the course of six, two-hour weekly sessions (White & Keenan, 1990). The workshop-based treatment was based on cognitive-behavioral techniques including progressive muscle relaxation, identifying negative self-statements, and graded exposure. Results provide evidence for overall improvement in terms of self-reported anxiety ratings, dysfunctional attitudes, and general health symptoms for the participants. This suggests that a large group didactic therapy model may be effective in treating GAD (White & Keenan, 1990).

A recent study based on Ladouceur and colleagues’ (2000) cognitive-behavioral treatment protocol examined the efficacy of group CBT for GAD and

included a long-term follow-up (Dugas et al., 2003). In this study, groups of 4-6 participants were provided 14 weekly sessions of CBT and were compared to participants assigned to a wait-list control group. Results suggested that participants receiving the group therapy demonstrated greater improvement at post-test than control participants and maintained these gains through 24-month follow-up. In fact, although many of the participants were receiving anxiety medication, group therapy participants continued to show significant decreases in worry and intolerance of uncertainty throughout the follow-up period. There was also a steady decrease in number of participants meeting DSM-IV criteria for GAD from posttreatment through follow-up (i.e., 60% no longer met criteria at posttreatment, 88% at 6-month follow-up, 83% at one-year follow-up, and 95% no longer met diagnostic criteria at 2-year follow-up) (Dugas et al., 2003).

Cognitive-behavioral treatments for GAD can be effectively delivered in both individual and group formats. For example, when comparing several types of treatments for GAD, Falsetti and Davis (2001) found the strongest support for individual CBT when considering high-endstate functioning. In addition, White and Keenan (1990) and Dugas et al. (2003) have demonstrated that a treatment based on cognitive-behavioral techniques presented in a group format may be effective in treating GAD.

GAD is characterized by excessive uncontrollable worry that serves cognitive, somatic, and emotional avoidance functions (Borkovec et al., 2004). In addition, the maladaptive thinking (e.g., positive beliefs about the functions of worry, catastrophizing, intolerance of uncertainty) that accompanies worry and the worry

process indicate that cognitive-behavioral treatment models are applicable to treatment of this disorder. Outcome studies investigating cognitive-behavioral treatments for GAD suggest that these treatments are superior to other forms of therapy (Falsetti & Davis, 2001) and superior in maintenance of treatment gains to pharmacological interventions (Gould et al., 1997). Recent research (e.g., Ladouceur et al., 2000) suggests that success rates for CBT packages are approaching those found in other anxiety disorders (e.g., panic disorder). Given the efficacy of CBT techniques for treating GAD, it appears that these techniques may be suitable for inclusion in preventative interventions for this disorder.

## CHAPTER 2:

### Prevention and Mental Health

Currently, there are models of anxiety and depressive disorders as well as treatment protocols that show promising results for alleviating symptoms associated with anxiety and mood disorders (although success rates for treating various disorders vary). Given existing etiological models and the demonstrated effectiveness of established treatments, it seems logical to focus efforts on preventing anxiety and depression. However, despite psychology and psychiatry's ability to treat the acute phases of these disorders, relatively little empirical attention has been paid to the prevention of anxiety and depression. This latter observation may be attributable in part to insufficient understanding of risk factors and vulnerability for these problems (Dozois & Dobson, 2004).

#### *Models of Prevention*

There are two prevailing models of prevention described in the literature (Dozois & Dobson, 2004). One widely adopted model was first proposed in the 1950s and can be considered a "classic model" of prevention (Dozois & Dobson, 2004). This model (Commission on Chronic Illness, 1957) distinguishes among primary, secondary, and tertiary levels of prevention. Primary prevention refers to efforts to prevent an illness in the general population without targeting specific individuals. Secondary prevention, on the other hand, involves identifying groups of individuals determined to be at risk for or demonstrating early signs or symptoms of a particular illness. Tertiary prevention entails the use of maintenance techniques to prevent relapse of a given disorder (Dozois & Dobson, 2004).

Another model, proposed by the Institute of Medicine (IOM, 1994), includes intervention strategies composed of prevention, treatment, and maintenance. The prevention category is subdivided into efforts described as “universal,” which targets the general population without consideration for vulnerability, “selected,” which focuses on groups of individuals at higher risk for developing a disorder than the general population, and “indicated,” which is directed at individuals demonstrating early signs and symptoms of an illness. Relapse prevention is addressed in the maintenance phase (Dozois & Dobson, 2004).

Each of the models highlighted in the previous discussion has limitations. The classic model fails to distinguish between selective and indicated prevention, which is targeted by the IOM model (Dozois & Dobson, 2004). However, the IOM model fails to account for relapse prevention, instead focusing on preventing initial episodes of a disease or disorder. For chronic disorders such as depression and anxiety, consideration of relapse prevention is important (Dozois & Dobson, 2004). Therefore, the present discussion will adopt the “classic model” of prevention.

#### *Prevention of Anxiety and Depression*

Anxiety and depression are highly prevalent and are characterized by chronic courses, with a tendency for relapse (Dozois & Westra, 2004). Several features of these common problems indicate a need for prevention efforts. Because onset of many anxiety and depressive disorders often occurs in childhood and history of mental health problems in childhood is a predictor of poor mental health in adulthood, early detection and prevention of these problems is paramount. In addition, subclinical levels of symptomatology may foreshadow the development of anxiety



and mood disorders. Consequently, recognition of these early warning signs may aid prevention efforts. Identification of other risk factors such as biological factors, developmental factors, life stressors, and cognitive factors may also enhance the development of effective preventative interventions for emotional disorders (Dozois & Westra, 2004). A discussion of prevention efforts at all three levels proposed in the “classic model” as well as identified risk factors for both depression and anxiety follows.

### *Primary Prevention*

Primary prevention is designed to promote general health for the population as a whole, rather than focusing on individuals with specific disorders. Primary prevention efforts in mental health are often designed to target children and adolescents (Essau, 2004). There are some advantages of primary prevention efforts over secondary or tertiary prevention. For example, primary prevention targets a general population, reducing stigma associated with mental health interventions. Some disadvantages for primary preventative interventions are that they are often costly and time-consuming (Hudson, Flannery-Schroeder, & Kendall, 2004). Primary prevention efforts for anxiety and depression have traditionally been somewhat sparse, as researchers preferred to focus prevention efforts on more “serious” problems such as school violence and obesity (Hudson et al., 2004). However, with recent research investigating risk factors for certain anxiety and depressive disorders, primary prevention efforts have begun to focus on particular disorders or categories of a disorder (Hudson et al, 2004).

Identified risk factors for anxiety include individual characteristics (e.g., cognitive vulnerability), peer influences, parental influences (e.g., parental anxiety), and trauma and stressful life events (Hudson et al., 2004). Although factors have been examined that appear to increase risk for developing anxiety disorders, some protective factors have also been identified which may buffer the effects of these risk factors. For example, it has been suggested that adequate social support may reduce the incidence of all anxiety disorders (e.g., Barlow, 2001). Coping style (i.e., problem-focused coping) may also help reduce the likelihood than an individual will develop an anxiety disorder (e.g., Hudson et al., 2004).

With these risk and protective factors in mind, a handful of studies have implemented primary prevention programs that target anxiety. In a study investigating the prevention of anxiety disorders in children, Barrett and Turner (2001) employed the *Friends for Children* (FRIENDS) program, which is a brief cognitive-behavioral intervention for children and adolescents with anxiety difficulties, with sixth-grade children. This study included three conditions, a teacher-led intervention, a psychologist-led intervention, and a monitoring-only control condition. Results indicated a significant reduction in self-reported anxiety symptoms in both intervention groups (Barrett & Turner, 2004). Lowery-Webster, Barrett, and Dadds (2001) conducted a similar study that also utilized the FRIENDS program in a teacher-delivered format (versus wait-list control group) with children ages 10 through 13. Children in the intervention group demonstrated significant changes on one self-report measure of anxiety but not another (Lowery-Webster et al., 2001). In contrast to the two previously-discussed studies, a third study

(Craddock, Cotler, & Jason, 1978) demonstrated less promising results. In this study, the researchers aspired to prevent public-speaking anxiety in ninth-grade students who were assigned to either a gradual-exposure group, a cognitive-rehearsal group, or a control group. There were no reported reductions in anxiety as indicated by behavioral measures of anxiety for any group; however, children in the cognitive-rehearsal group reported increased confidence following the preventative intervention (Craddock et al., 1978). The results of these studies suggest that primary preventative interventions for reducing anxiety may be beneficial (Hudson et al., 2004).

Other, distinct risk factors have been identified for depression. Characteristics such as family factors (e.g., parental psychopathology), negative life events and chronic stressors, cognitive factors (e.g., low self-esteem), and individual factors (e.g., poor social skills) may all contribute to the onset of depression, however, these factors are not necessarily specific to depression alone (Essau, 2004). Recognition of these risk factors have led to the development of primary preventative interventions for depression, most of which are based on cognitive-behavioral therapy techniques (e.g., pleasant events scheduling, social skills training, cognitive restructuring) used in the treatment of depression (Essau, 2004).

Two primary prevention interventions for depression have been developed and implemented in the school setting. The Resourceful Adolescent Program-Adolescents (RAP-A; Shochet, Holland, & Whitefield, 1997) is a structured 11-week program that is based on CBT techniques for depression. The RAP program also has a 3-session group parent component (RAP-F). Two independent studies have evaluated the efficacy of this program for preventing depression. In the first of these

studies, adolescents were assigned to either the RAP-A group as part of the school curriculum, the RAP-F group, or an Adolescent Watch (AW) comparison group (Shochet, Holland, Whitefield, Harnett, & Osgarby, 2001). Participants in both RAP groups reported significant decreases in depressive symptoms and hopelessness at the post-intervention and 12-month follow-up assessments compared to those in the AW condition. Adolescents who reported subclinical levels of depression at pretest demonstrated the greatest improvement following the intervention (Shochet et al., 2001). A second study examining the efficacy of this program for ninth-grade students compared RAP groups lead by teachers and mental health professionals and a comparison group (Shochet, Montague, & Dadds, in press, as cited in Essau, 2004). Participants of both genders reported positive effects after participating in the RAP intervention but girls who had participated in the RAP intervention reported fewer depressive symptoms at post-intervention and six-month follow-up. Teachers and mental health professionals did not differ in terms of effectiveness in reducing depression, perceived benefits of the intervention, and likeability, suggesting that teachers may be useful in delivering CBT-based prevention programs (Shochet et al., in press).

The Problem Solving for Life Program (Spence, Sheffield, Donovan, & Price, 1997) is designed to improve coping skills, positive thinking styles, and problem-solving skills in children and adolescents. It focuses on describing the relationship among thoughts, feelings, and behaviors, as well as on teaching effective problem-solving skills. Although still under investigation, preliminary results of a study examining the efficacy of this program in Australian schools (Spence &

Sheffield, P2000) indicate that adolescents who participate in the program demonstrate reduced depressive symptoms and improved problem-solving skills at post-intervention, compared to adolescents in no-treatment control conditions (Spence & Sheffield, 2000).

The results of the three aforementioned studies suggest that primary prevention programs may be efficacious for preventing depression. Other strategies for target in primary preventative interventions for depression have also been identified (Essau, 2004). Strategies such as promoting physical health, teaching positive parenting skills to parents of children at risk for developing depression, encouraging the use of daycare and after-school programs, and teaching positive coping skills to children may help prevent the onset of depression in at-risk children (Essau, 2004).

### *Secondary Prevention*

Secondary prevention involves implementing interventions with individuals who demonstrate risk factors for particular disorders but do not currently meet diagnostic criteria. Early signs or subclinical symptoms often constitute risk factors, although these risk factors may be more general in nature. Secondary prevention research must consider risk factors identified in childhood as well, but it is important to note that not all children who exhibit symptoms of anxiety and mood disorders develop specific disorders in adulthood (Story, Zucker, & Craske, 2004). In addition to more specific risk factors, it is important to consider general vulnerability factors for anxiety (Story et al., 2004). Data generally indicate that children and adolescents may benefit most from preventative interventions; however it would be premature to

dismiss the notion of prevention for at-risk adults (Ingram, Odom, & Mitchusson, 2004).

Some risk factors have been identified that are common to anxiety disorders in general, although each anxiety disorder appears to have more specific risk factors as well. For example, epidemiology studies have pointed to gender as a potential risk factor for developing anxiety disorders. Specifically, females are nearly twice as likely to develop anxiety disorders as males (Kessler et al., 1994). Other general risk factors include neuroticism, inhibited temperament, biological factors (e.g., hyperactive HPA axis, increases in secretion of corticotropin-releasing factor), parental psychopathology, particularly anxiety, and unexpected life transitions (e.g., parental divorce) (Story et al., 2004).

Based on these vulnerabilities for anxiety disorders, a few studies have examined the efficacy of prevention programs designed for children. LaFreniere and Capuano (1997) administered a preventative intervention to mothers of anxious-withdrawn preschoolers. The aim of the intervention was to increase parenting competency, discuss the developmental needs of the children, reduce parental stress, and provide social support. Results of this study indicated improvement in the children's social competence and problem-solving skills (LaFreniere & Capuano, 1997).

The Queensland Early Intervention and Prevention of Anxiety Project (Dadds et al., 1997; 1999) employed a prevention program referred to as the Coping Koala, which is based on the Coping Cat (Kendall & Treadwell, 1996) but also included a parent-training component. At six-month follow-up, 54% of children in the control

group compared to only 16% of children in the treatment group developed an anxiety disorder. At 12-month follow-up, similar numbers of children in the treatment (37%) and control (42%) groups met diagnostic criteria for an anxiety disorder. However, at the two-year follow-up assessment period, the treatment group participants demonstrated significantly fewer diagnoses of anxiety disorders than did control participants (20% versus 39%, respectively; Dadds et al., 1999).

The aforementioned research studies indicate efficacy for secondary prevention of anxiety disorders and highlight the importance of intervening during childhood. In general, research investigating prevention efforts for anxiety disorders is limited (e.g., Story et al., 2004). Risk factors and secondary prevention efforts for specific anxiety disorders will be discussed in depth in an upcoming section.

Similar to that of anxiety disorders, research investigating preventative interventions for depression is lacking. There are a large number of risk factors that have been suggested for depression, however, some factors have been identified that are amenable to consideration as targets for prevention research (e.g., Ingram et al., 2004). Such factors include negative cognition, parental depression (within this factor, genetics, dysfunctional cognition, and marital discord may predict increased risk for depression in children of depressed mothers), and history of depression or subclinical depression (Ingram et al., 2004).

Secondary preventative interventions for depression have employed a number of different models. For example, Clark et al. (2001) targeted children of depressed parents. This study aimed to prevent depression in a sample of adolescents ages 13 through 18 who were assigned to either a treatment condition consisting of a

cognitive-based intervention or a usual care-condition. Adolescents who participated in the cognitive intervention group reported fewer depressive symptoms and improved global functioning and were less likely to experience depressive onset at 15-month follow-up. However, at two-year follow-up the two conditions demonstrated similar results on assessments of depression, suggesting that the intervention did not provide long-term effects (Clark, G. et al., 2001).

A study focusing on children who exhibited early symptoms of depression (Jaycox, Reivich, Gillham, & Seligman, 1994) developed a treatment protocol that emphasized the distinction between cognitive distortions and cognitive deficiencies and taught children social problem-solving skills to address these issues. The results of this study demonstrated a decrease in depressive symptoms and acting-out behaviors. Participants continued to exhibit fewer depressive symptoms at the six-month and two-year follow-up assessments (Gillham, Reivich, Jaycox, & Seligman, 1995).

Other secondary prevention efforts for depression have utilized intervention-based approaches and have focused on reducing factors typically associated with development of GAD such as negative cognition. For example, Seligman and colleagues (1999) designed a study that aimed to prevent depression in college students. Participants were selected for this study on the basis of risk for depression as defined by presence of a pessimistic explanatory style. The experimental group participated in a workshop consisting of eight 2-hour sessions based on cognitive therapy techniques for depression. Compared to control participants, the intervention participants reported less depressive and anxiety symptomatology as well as fewer



diagnoses of GAD at 3-year follow-up. In addition, workshop participants demonstrated improvement in hopelessness, explanatory style, and dysfunctional attitudes, all of which mediated prevention of depressive symptomatology. However, results of this study did not demonstrate fewer diagnoses of depression, as originally predicted (Seligman et al., 1999).

Like secondary prevention efforts for anxiety disorders, there is a dearth of studies examining the efficacy of secondary preventative interventions for depression. Those that have been conducted have generally targeted children, adolescents, and young adults.

#### *Tertiary Prevention*

Tertiary prevention efforts target individuals who currently meet diagnostic criteria for a disorder or who are in remission. Because these individuals meet diagnostic criteria at the time that they are enrolled in a preventative intervention, some controversy exists over whether tertiary prevention efforts are fundamentally different from treatment efforts (Dugas, Radomsky, & Brillon, 2004). However, one important distinction to make between tertiary interventions and treatment interventions is that treatment aims to alleviate symptoms whereas tertiary prevention aims to prevent relapse of a given disorder (Dugas et al., 2004). Although many treatment studies are not necessarily designed to specifically target relapse prevention, it is useful to examine the long-term effects of various treatments because the long-term effectiveness of a treatment may speak to its utility in the realm of tertiary prevention.

Because of the chronic nature of anxiety disorders and their serious impact on the individual and society, development of interventions with long-term efficacy and relapse prevention strategies for these disorders is of utmost importance (e.g., Dugas et al., 2004). Although there have been a number of interventions designed to treat various anxiety disorders, in many cases, their long-term effects on anxiety have yet to be determined (Dugas et al., 2004). The following discussion will briefly highlight some tertiary prevention efforts and long-term effects of treatments for GAD.

Relatively few studies have collected data investigating the prevention of relapse following treatment for individuals with GAD. In one such study (Power, Simpson, Swanson, & Wallace, 1990) participants with GAD were assigned to a cognitive-behavioral therapy (CBT), medication (diazepam), placebo, CBT plus medication, or a CBT plus placebo group. Results indicated that participants in all of the CBT conditions (particularly the CBT plus medication and CBT alone groups) showed greater improvement than those in the other groups at post-treatment and six-month follow-up (Power et al., 1990). Another, more recent study conducted by Dugas and colleagues (2003) adapted the treatment protocol developed by Ladouceur et al. (2000) to a group format for treatment of GAD and compared the treatment group to a wait-list control group. The group CBT treatment was superior to the wait-list control group on all measures at post-treatment. Treatment gains were maintained over a two-year follow-up period (Dugas et al., 2003).

The effects of recurrent depression can also be devastating in terms of health care utilization and individual distress and impairment of functioning (Dobson & Ottenbriet, 2004). Some intervention studies for depression have focused on treating

residual symptoms and providing maintenance of treatment gains. In one recent study (Fava, Rafanelli, Grandi, Conti, & Belluardo, 1998), patients who had received pharmacotherapy for depression and were in remission but experiencing residual symptoms were assigned to a CBT or clinical management condition. Results indicated that at two-year follow-up, the relapse rate for CBT was 25% as opposed to 80% for the clinical management condition (Fava et al., 1998). This suggests that the CBT intervention had a relapse prevention effect for patients with residual symptoms of depression.

Research regarding relapse prevention for depression is slightly more advanced than for anxiety due to the creation of interventions specifically targeting prevention of relapse. For example, Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002) embodies the notion that altering individuals' emotional processing can reduce the likelihood of depressive relapse. In one outcome study examining this intervention (Teasdale et al., 2000), recovered depressed participants were randomly assigned to either treatment as usual or treatment as usual plus MBCT condition. The treatment containing the addition of the MBCT component contributed to a significantly lower rate of relapse (40%) compared to the treatment as usual condition (66%) at 60-week follow-up. In summary, it appears that behavioral and cognitive-behavioral therapies can be effective for tertiary prevention of anxiety and depressive disorders (Dugas et al., 2004).

### *Special Issues for Consideration*

Several issues must be considered when designing and implementing preventative interventions, both at the research and practical levels. Psychosocial

preventative intervention models have only recently received attention in the mental health literature. Bieling, McCabe, and Antony (2004) and Clark (2004) have discussed issues related to measurement and design in prevention research respectively. The issues highlighted by these authors are summarized below, with special attention paid to those relevant to secondary prevention.

### *Measurement*

One important consideration in conducting prevention research and in applying preventative interventions is assessment (Bieling et al., 2004). Issues within assessment center on obtaining and using reliable and valid instruments to determine populations to target as well as to measure symptomatology levels across time. Adequate assessment measures for prevention efforts are not as readily available as those used for other forms of psychopathology research. Specifically, the model of prevention subscribed to and the level of prevention to be targeted each influence the choice of measures; as a result, a single measure or set of measures to be used for all types of prevention research does not exist. In addition, because research has so recently begun to focus on prevention of mental health disorders, few existing measures address the unique problems faced in prevention (Bieling et al., 2004).

The unique problems for measurement of prevention efforts have both practical and conceptual implications (Bieling et al., 2004). Prevention research generally involves a longitudinal design, requiring multiple measures across many assessment periods. Many existing measures of anxiety and depression are short-term focused (e.g., measures of depressive symptoms often ask about symptoms experienced during the two weeks prior to completion of the measure). These

measures are not ideal for repeated administrations across the lifespan. There is a need for new tools to be developed for use with prevention as research in this area expands (Bieling et al., 2004).

Measures used for prevention must have a few important features: they must be able to accurately and reliably assess the symptoms associated with the targeted disorder (for screening as well as for outcome assessment) and they must be able to measure the effectiveness of the intervention (Bieling et al., 2004). Adequate assessment of symptoms is particularly important in secondary prevention, as subclinical levels of anxiety and depression have been discussed as risk factors for these problems and are therefore important to measure accurately (Bieling et al., 2004).

Several issues are relevant to primary prevention research. The first issue, which is also relevant to secondary and tertiary prevention, is adherence to the intervention protocol. Ability to measure compliance (i.e., through the use of multiple assessors) has important implications for discerning the validity of the preventative intervention (Bieling et al., 2004). Also important is an ability to assess whether a preventative intervention actually decreases incidence of the targeted disorder (Bieling et al., 2004). A third issue with respect to measurement and primary prevention involves the use of large sample sizes in primary prevention research. Assessment measures that are efficient with respect to both time and cost (e.g., self-report measures) are likely to be most useful in conducting research at this level of prevention (Bieling et al., 2004). Finally, primary preventative interventions often target children or adolescents. Developmentally appropriate assessment tools

are necessary to implement these interventions. In addition, primary prevention research is likely to involve multiple assessments across various developmental stages, indicating a need for instruments that can be used for assessing both children and adults and that allow for comparison amongst those assessment points (Bieling et al., 2004).

Secondary prevention involves identifying and screening individuals to determine those “at risk” (i.e., those with certain risk factors or vulnerabilities) for developing a particular disorder. As such, a number of concerns must be addressed with respect to assessment in secondary prevention efforts. The United States Preventative Services Task Force (USPS, 1996) asserts that an instrument used for screening purposes must be accurate enough to identify the disorder of interest without producing high numbers of false positive or false negative results. The intervention must also result in reduction of symptoms and incidence of a disorder in those who are screened compared to those who are not screened (USPS, 1996). As with primary prevention, the same issues of measurement of treatment compliance, symptom reduction, and diagnostic status are also relevant for secondary prevention (Bieling et al., 2004).

Unique to secondary prevention efforts is the identification of risk or vulnerability factors (e.g., biological, psychological, or sociological; Bieling et al., 2004). Vulnerability measures are evaluated by their specificity and sensitivity for making predictions about a given population (Bieling et al., 2004). Specificity refers to the proportion of individuals who are not likely to develop the disorder of interest and who, when screened, produce “true negative” scores (i.e., they test negative for

associated symptomatology when screened). Sensitivity concerns individuals who eventually develop the targeted condition and who produce “true positive” results when screened (i.e., they report symptoms associated with the targeted disorder). The sensitivity and specificity of many existing measures for predicting vulnerability to a condition is currently unknown. It is also important to consider base rate of a disorder in the population because of its influence on the predictive value of a given instrument. Finally, normative data are also related to sensitivity and specificity. Currently, there appears to be a lack of norms with respect to vulnerability factors for anxiety and depression, making it difficult to determine individuals at risk for developing an anxiety or mood disorder (Bieling et al., 2004).

Outcomes of tertiary prevention efforts are likely to focus not only on diagnostic change and symptom reduction as seen with primary and secondary prevention, but also on increase in functioning and life satisfaction (Bieling et al., 2004). Although it is useful to assess symptoms and diagnosis, tertiary prevention also requires the measurement of the consequences of a given disorder, such as an individual’s functioning (i.e., physical and psychological health) and quality of life (Bieling et al., 2004).

### *Design*

Clark (2004) has discussed several issues pertinent to the design of preventative interventions. When designing interventions at all levels of prevention, there are multiple considerations to be taken into account. The first issue concerns defining prevention, as distinct from intervention, in mental health (Clark, D. 2004). There is considerable disagreement over the boundary that exists (or does not exist)

between prevention and treatment. Because there is adequate research addressing psychopathology and treatment of various disorders, but little understanding of prevention, researchers frequently extend their knowledge of treatment and psychopathology to the development of preventative interventions (Clark, D., 2004).

Prior to implementation of a preventative intervention, accurate diagnosis of the disorder of interest is essential. Once this is accomplished, identification of risk factors must be tackled. For anxiety and depressive disorders, the abovementioned necessities prove to be particularly challenging (Clark, D., 2004).

Base rates of a given disorder impact the outcome of treatment and prevention interventions. High base rates of a disorder in the population are likely to increase the effectiveness of a preventative intervention. However, particular problems exist in attempting to conduct prevention research with disorders with low base rates (Clark, D., 2004). Many individuals who participate in preventative interventions (particularly those interventions designed for unselected samples) for disorders with low base rates will not benefit from the intervention because they would not have been likely to develop the disorder from the outset. In addition, follow-up assessments would need to be conducted over a period of several years to measure differences in rate of onset (Clark, D., 2004). Because GAD has a relatively low base rate in the general population, secondary prevention may be more relevant than a primary preventative intervention. Targeting individuals with identified risk factors and subclinical symptoms of the disorder may help increase the effectiveness of a secondary preventative intervention because these individuals are those that are more likely to benefit from the intervention.



Evidence exists that anxiety and depressive disorders may fall along a continuum marked by milder symptoms at one end and severe forms of anxiety and/or affective disorders at the other end (e.g., Ruscio & Ruscio, 2000). Alternatively, the DSM-IV (APA, 2000), which outlines distinct criteria for determining the presence of a disorder, suggests that anxiety and depression are qualitatively different disorders and also differ significantly from individuals with anxious or depressed symptoms who do not meet diagnostic criteria. If the nature of anxiety and depression is truly dimensional, it could be argued that accurate diagnosis is arbitrary (Clark, D., 2004). This latter assertion, along with evidence of subclinical anxiety and depression in the general population can create difficulty in determining whether an individual should be considered symptomatic versus asymptomatic. This may contribute to misidentification of individuals who are deemed appropriate for preventative interventions (Clark, D., 2004).

Another issue relevant to the development of preventative interventions concerns risk factors associated with the disorder of interest. Currently, there is a paucity of knowledge regarding risk factors, vulnerabilities, and protective factors for mental illnesses (Clark, D., 2004). The level of prevention for which a given intervention has been developed will provide direction for the type of risk factors to target (Clark, D., 2004). For example, general, broadly defined risk factors (e.g., socio-economic status, gender) would not be as appropriate for secondary preventative interventions because a large proportion of the population can be characterized by these risk factors, but are not necessarily vulnerable to developing the disorder of interest. In addition to level of prevention, conceptual and practical

specificity (i.e., the extent to which a particular risk factor is relevant for predicting onset of a given disorder) as well as the causal nature of the factor must also be accounted for when identifying risk factors (Clark, D., 2004).

When discussing the concept of vulnerability for psychopathology from a diathesis-stress framework, special issues arise with respect to prevention efforts. Within this model, the onset of a disorder is marked by the occurrence of a significant life event (i.e., a stressor) in an individual who possesses an underlying vulnerability (e.g., biological or psychological characteristics) for a disorder (i.e., the diathesis; Clark, D., 2004). This model assumes that the vulnerability cannot necessarily be directly measured, creating difficulty for researchers who wish to identify individuals with a particular diathesis. In addition, it may be difficult to convince individuals to participate in a preventative intervention if they cannot recognize the need to address the targeted factor (Clark, D., 2004).

Stress factors also present challenges to prevention research that is conducted within the diathesis-stress framework (Clark, D., 2004). Stressors do not affect individuals equally; some individuals require a significant stressor (in conjunction with the vulnerability) to trigger the onset of a disorder, whereas other individuals may be more resistant to the effects of a given stressor (Clark, D., 2004). Varying relationships between diatheses and stressors and their impact on the onset of disorders should be considered when designing preventative interventions.

Overall, there are a number of issues concerning the development and implementation of preventative interventions that are also relevant for the present study. As discussed previously, identifying risk factors associated with a given

disorder is particularly challenging. In designing a preventative intervention, it can be useful to borrow from intervention programs that are utilized in the treatment of the disorder of interest; however, knowledge of how these treatments work is often overshadowed by demonstrated effectiveness of the treatments. Thus, it may be difficult to determine which treatment components are most effective within a particular protocol and which components should receive the most focus in a preventative intervention (Clark, D., 2004). Researchers may also want to consider the characteristics of the sample to receive the intervention (e.g., inclusion of individuals from varying socio-economic and ethnic backgrounds, of different ages, and various comorbid conditions, etc.) and the setting in which the program is disseminated (Clark, D., 2004). Finally, practical issues such as length of the intervention and follow-up assessment period, cost-benefit analysis, attrition rates and promotion of compliance with the program, and, perhaps most importantly, motivating individuals to participate in a prevention program for a disorder that has not yet manifested are all concerns that warrant consideration (Clark, D., 2004).

### *Prevention and Generalized Anxiety Disorder*

#### *Secondary Prevention of Anxiety Disorders*

In addition to general vulnerabilities that have been identified as contributing to the development of pathological anxiety, more specific risk factors have also been shown to contribute to the onset of individual anxiety disorders. These risk factors have led to the investigation of secondary prevention for certain anxiety disorders. A number of recent empirical studies have examined preventative interventions for specific anxiety disorders, which will be discussed below.

Specific phobias generally develop during childhood and may be attributed in part to experiences with aversive stimuli that result in conditioned responses to the stimuli; however, not everyone exposed to negative stimuli develop phobias (Story et al., 2004). Identification of risk factors for specific phobias such as latent learning and physiological responses (e.g., individuals with blood/injection phobias exhibit a physiological characteristic that contributes to fainting in the presence of the feared stimulus) have led to the development of secondary preventative interventions such as one designed to prevent fears of medical procedures in children (Story et al., 2004). Jay, Elliott, Katz, and Siegel (1987) assigned children ages 3-13 years with leukemia who were soon to undergo a bone marrow aspiration to a cognitive-behavioral therapy (CBT), medication (i.e., Valium), or no-treatment control group. Participants in the CBT group reported significantly less behavioral distress, heart rate, and pain than those in the other two groups. Participants in the pharmacotherapy group demonstrated lower blood pressure and anticipatory distress before but not during the procedure (Jay et al., 1987).

Fear of the physiological symptoms commonly experienced during anxiety and arousal has been postulated to be a vulnerability for onset of panic disorder (Story et al., 2004). More specifically, high anxiety sensitivity has been identified as a risk factor for panic disorder as has history of panic attacks. To date, there have only been two prevention studies targeting panic disorder. One of these studies conducted by Gardenswartz and Craske (2001) examined the efficacy of a workshop based on a cognitive-behavioral treatment protocol for panic disorder in college students who reported moderate or higher anxiety sensitivity and at least one panic attack in the

previous year. Results of this study indicated that fewer workshop participants (2%) than controls (14%) developed panic disorder by 6-month follow-up. In addition, reported workshop satisfaction significantly predicted outcome (Gardenswartz & Craske, 2001). Swinson, Soulios, Cox, and Kuch (1992) targeted individuals who had visited an emergency room for treatment for panic attacks and provided them with psychoeducation about the nature of panic attacks and exposure principles for managing future panic attacks (these individuals comprised the exposure group). Other individuals (i.e., the control group) who had experienced a panic attack were simply told that they had had a harmless panic attack (Swinson et al., 1992). Within one week of the intervention, those in the exposure group demonstrated a significant decrease in panic attack frequency while those in the control group experienced more panic attacks. At the three and six-month follow-up assessments, the exposure group maintained improvement on measures of anxiety and panic (Swinson et al., 1992). One issue with this latter study is that many of the participants met diagnostic criteria for panic disorder prior to admission into the study, raising the question of whether this can be considered prevention or whether it is more representative of a brief treatment intervention (Story et al., 2004).

Although risk factors for social anxiety and obsessive-compulsive disorder have been tentatively identified, there are currently no published secondary prevention studies designed specifically to target these disorders (Story et al., 2004). Post-traumatic stress disorder also has identifiable risk factors, but studies investigating these vulnerabilities have failed to yield significant findings (Story et al., 2004). Given that a number of anxiety disorders do not have research

investigating secondary prevention efforts, it is clear that more research must be conducted. Identified risk factors may help inform design and implementation of preventative interventions for specific anxiety disorders.

### *Preventing GAD*

GAD has received relatively less empirical attention than other anxiety disorders. Because of this paucity of literature, risk factors for GAD have tentatively been identified (Story et al., 2004). Risk factors previously noted for anxiety in general such as neuroticism and dysfunctional parenting style in addition to maladaptive worry may be risk factors for the development of GAD (Story et al., 2004). Other factors such as parental control and anxious childrearing (Muris & Merckelbach, 1998), use of worry to avoid emotion-laden topics (Borkovec & Roemer, 1995), and metabeliefs about worry (Wells, 1995) have been suggested to be risk factors for GAD and thus important considerations in prevention research for this disorder (Story et al., 2004).

There have been no published prevention studies for GAD; however, two studies addressing GAD secondary to the principal purpose of the study or correlates of GAD such as stress and anxiety may inform future prevention research for this disorder (Story et al., 2004). Timmerman, Emmelkamp, and Sanderman (1998) targeted individuals in the community who were determined to be at-risk for onset of serious mental health problems. Risk factors in this study included social anxiety, poor coping skills, poor social support, stressful life events in the previous year, and high neuroticism. Some participants received weekly stress management sessions (2 ½ hours each) for eight weeks, whereas other participants served as control subjects

and received no treatment. Those who had received the stress management reported less distress, less trait anxiety, increased assertiveness, and improved satisfaction with social support at both post-treatment and 6-month follow-up compared to control participants (Timmerman et al., 1998). Despite these encouraging results, this study lacked diagnostic assessments and random assignment of subjects to the two conditions in the experiment, thus limiting the interpretation of the findings.

In a previously discussed study focusing on prevention of depression, researchers also assessed for presence/development of GAD due to its high comorbidity with depression (Seligman et al., 1999). The intervention used in this study consisted of a workshop based on cognitive therapy techniques for depression. Compared to control participants, the intervention participants reported less depressive and anxiety symptomatology as well as fewer diagnoses of GAD at 3-year follow-up (Seligman et al., 1999).

Although these studies provide a basis for secondary prevention research for GAD, they have some significant limitations. Foremost, neither of the two previously described studies aimed to specifically prevent onset of GAD. Therefore, these studies employed interventions that were not based on established cognitive-behavioral treatments for GAD. In addition, these studies did not recruit participants based upon identified risk factors (e.g., maladaptive worry) for GAD.

In response to the absence of preventative interventions for GAD, two pilot studies were carried out prior to the present study to determine the feasibility of conducting secondary prevention research for GAD. The first pilot study included 15 non-selected college students who were randomly assigned to either an immediate-

treatment or a delayed treatment condition. Those in the immediate-treatment group participated in the workshop sessions at the beginning of the study, whereas those in the delayed-treatment group participated in the workshop one month after the study commenced. This delayed-treatment design was employed to provide a control condition. Both groups were assessed one month following the workshops.

The workshop consisted of two, two-hour sessions. The psychoeducational workshop was based on cognitive-behavioral interventions that have been shown to be effective in the treatment of GAD (e.g., Borkovec & Costello, 1993; Ladouceur et al., 2000). These interventions were modified and combined to be appropriate for a brief prevention program. Participants were provided with instruction in the following topics: psychological models of anxiety and worry, cognitive distortions, cognitive therapy techniques, relaxation training, worry exposure, problem-solving and problem orientation. Assessment measures addressed worry, trait anxiety, experiential avoidance, intolerance of uncertainty, presence of GAD diagnostic criteria, state anxiety, and depression. Results demonstrated a significant reduction in state anxiety for participants post-intervention, which suggests that the prevention workshop aided in reducing anxiety for participants who completed the workshop. This reduction in anxiety was maintained through one-month follow-up. Limitations of this study included failure to recruit participants who were at-risk for developing GAD and small sample size.

Following the encouraging results of the abovementioned pilot study, a second pilot study was designed to address some of the limitations of the first study. In the latter study, participants included 42 college students who were screened prior



to participation in the study and determined to be at-risk for developing GAD (defined as self-reported clinical levels of worry). Participants were randomly assigned to either a workshop or a no-treatment control condition. The workshop in this study was essentially the same as that utilized in the first pilot study. The outcome measures were also similar, with the addition of a measure of workshop satisfaction. Participants in the workshop condition were assessed pre- and post-workshop as well as at one-month follow-up. Those in the control condition were assessed at the beginning of the study and at one-month follow-up. Results indicated that the brief prevention workshop resulted in a significant reduction in PSWQ (targeting worry, the main feature of GAD) scores through one-month follow-up, whereas control participants did not demonstrate significant change on this measure. The reduction was also demonstrated at the six-month follow-up assessment for workshop participants. One major limitation of the second pilot study was the large attrition rate (50%).

#### *Overview*

Several studies (e.g., Borkovec & Constello, 1993; Ladouceur et al., 2000) suggest that cognitive-behavioral therapies are effective for treating GAD; however, prevention efforts for this problem have been minimal to date. Speculative research has identified some factors that may be linked to onset of GAD such as parental control and anxious childrearing (Muris & Merckelbach, 1998), use of worry to avoid emotion-laden topics (Borkovec & Roemer, 1995), and metabeliefs about worry (Wells, 1995), all of which may help inform future prevention research for GAD. Although there have been no studies published to date whose primary purpose was to

prevent GAD, research suggests that providing individuals with various cognitive and behavioral skills may reduce distress and incidence of GAD (e.g., Seligman et al., 1999; Timmerman et al., 1998). Lack of established research investigating preventative interventions for this disorder suggests a pressing need for such empirical study. To address this issue, data from two recently conducted pilot studies provides initial support for the feasibility of implementing a secondary preventative intervention for GAD. As a result of promising findings from the two pilot studies, the present study was designed and conducted to expand upon and address limitations of the pilot studies.

#### *Statement of Purpose*

Generalized anxiety disorder (GAD) is perhaps the most commonly diagnosed anxiety disorder. Cognitive-behavioral treatments have demonstrated the most evidence of efficacy among various psychotherapies applied to treat this disorder (e.g., Borkovec & Costello, 1993; Ladouceur, Dugas, Freeston, Leger, Gagnon, & Thibodeau, 2000). However, the success rates are not as promising as those found for other anxiety disorders (e.g., Panic Disorder).

Recent research suggests that providing individuals at-risk for developing certain mental health problems with cognitive-behavioral techniques can impede future development of these problems (e.g., Gardenswartz & Craske, 2001; Seligman, Schulman, DeRubeis, & Hollon, 1999). One issue that has been highlighted for consideration in designing preventative interventions is the identification of risk factors for the disorder of interest. Because GAD has received relatively less empirical attention than other disorders, the vulnerabilities for this disorder are not

readily apparent. Speculative research has suggested that factors such as parental control, anxious childrearing, and maladaptive worry may increase an individual's risk of developing GAD.

Although there has been a recent surge of interest in secondary prevention of mental health problems, this interest has not been extended beyond a few psychological disorders. Considering its prevalence rate and relatively poor response to treatment, it is surprising that there have not been any prevention programs developed for GAD. Those that have addressed GAD as a secondary research consideration (e.g., Seligman et al., 1999; Timmerman et al., 1998) have yielded promising results.

The purpose of the present study was to investigate the efficacy of a secondary preventative intervention for GAD in individuals who are considered at-risk for developing the disorder. Pathological worry comprised the risk factor used to determine eligibility for the study. The brief preventative intervention consisted of a psychoeducational workshop that combines cognitive-behavioral techniques from two distinct protocols used to treat GAD (e.g., Borkovec & Costello, 1993; Ladouceur et al., 2000). Individuals participating in the workshop were compared to control participants. Because long-term follow-up is an integral component when considering the preventative effect of a program, a longitudinal design was employed, with assessments spanning one year.

*Research Hypotheses*

1. Workshop participation will reduce self-reported worry. Control participants will not demonstrate a reduction in worry.
2. Workshop participation will decrease reported symptoms of GAD. Control participants will not demonstrate a similar reduction in symptoms of GAD.
3. Participants in the Workshop condition will demonstrate a reduction in depressive symptoms after completing the workshop.
4. Individuals in the Workshop condition will report fewer symptoms of state anxiety than individuals in the Control condition.
5. Self-reported levels of intolerance of uncertainty will be reduced in Workshop participants, but not in Control participants.
6. Workshop participation will decrease reported experiential avoidance. Control subjects will not demonstrate a reduction in experiential avoidance.
7. Reported workshop satisfaction for the present study will be one of the predictors of outcome.
8. Individuals at risk for GAD will be less likely to develop GAD after participating in a cognitive-behavioral workshop designed to prevent incidence of GAD compared to at-risk individuals who do not participate in the workshop.

## CHAPTER 3

### Method

#### *Study criteria*

Participants were screened prior to enrollment in the study. To qualify for the present study, participants had to report a moderate to high level of worry (the main feature of GAD), but ideally would not meet all of the diagnostic criteria for GAD. As such, participants were those who manifested subclinical levels of GAD symptoms. The criteria for subclinical levels of GAD were determined based on published receiver operating characteristic analyses for the Penn State Worry Questionnaire (PSWQ) for an analog clinical sample of college students (Behar, Alcaine, Zuellig, & Borkovec, 2003). These data suggest that a cutoff score of 62 achieved high specificity (0.86) and sensitivity (0.75) for predicting diagnosis of GAD in an analogue sample. The mean score for the GAD group in the aforementioned study was 68.04 (SD = 9.53; Behar et al., 2003). In the present study, individuals with subclinical GAD symptomatology were of interest. Therefore, a range of PWSQ scores including the cutoff score of 62 and scores two standard deviations below this cutoff score (i.e., 43) were used to define the subclinical population in the present study. Participants were excluded if they had been treated for an anxiety disorder in the previous twelve months and if they were older than 19 years of age. Students beginning college represent an appropriate population for this study because epidemiologic studies (e.g., Brown et al., 2001; Yonkers, Warshaw, Massion, & Keller, 1996) indicate that, for many individuals, onset of GAD occurs at approximately 20 years of age. Research (APA, 2000) also suggests that in some

individuals, onset of GAD may be precipitated by a stressful event (e.g., a major life transition, such as beginning college). Participants who experience subclinical symptoms of GAD and simultaneously endure a stressful life event may be at increased risk for developing GAD.

### *Participants*

For the present study, 89 participants who were age 17 or older were recruited. However, 7 participants were excluded because they were older than 19 years of age and 4 additional participants were excluded because they indicated that they had been treated for an anxiety disorder in the previous 12 months. The final sample whose data were included in analyses consisted of 78 participants (25 males and 53 females; 95% Caucasian). After excluding the aforementioned 11 participants, 38 participants were included in the Workshop condition and 40 participants were included in the Control condition. Power analyses, based on results of the pilot studies described in the previous section, were conducted using a web-based statistical power analysis calculator ([http:// calculators.stat.ucla.edu/](http://calculators.stat.ucla.edu/)) and indicated that to obtain an estimated power level of .80, 28 participants per condition were required. To allow for expected attrition, additional participants were recruited. All participants were recruited from the Department of Psychology Subject Pool and received four research credits for completion of the initial phase of the study (workshop/control assessment and one-month follow-up assessment). They received \$10 for participation in the six-month follow-up assessment as well as \$10 for completion of the one-year follow-up assessment measures.

### *Research Therapists*

Research therapists for the present study were 3 clinical psychology graduate student volunteers who are enrolled in the doctoral training program in clinical psychology at the University of Maine, in addition to the principal investigator. All research therapists received training in clinical psychology, including coursework and supervision in ethics and professional standards in clinical practice and research. Research therapists were provided with detailed intervention protocols (see Appendices H and I) and were trained to lead the group interventions by the principal investigator.

### *Dependent Measures*

#### *Demographic Questions*

Participants in both conditions were asked to respond to several demographic questions including sex, age, date of birth, and race/ethnicity. Questions regarding stressful life events were also included. In addition, participants were asked to complete questions addressing prior DSM anxiety disorder diagnoses (e.g., have you been diagnosed with an anxiety disorder in the past year?) and treatments (e.g., have you taken medication or received therapy/counseling for an anxiety-related problem in the past 12 months?).

#### *Penn State Worry Questionnaire(PSWQ)*

The Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990) is a 16-item self-report measure designed to assess a trait-like tendency to engage in excessive worry (see Appendix A). Each item on the measure presents a statement that is followed by a 5-point Likert-type scale that requires the respondent to indicate the

extent to which the statement is typical of him/her. Scores range from 16-80, with higher scores representing increased levels of worry.

The PSWQ is associated with good to very good internal consistency (coefficient alphas range from .91 to .95 in college samples; Meyer et al., 1990). The PSWQ has also demonstrated stable test-retest reliability over time (e.g.,  $r = .92$  for an 8-10 week interval; Meyer et al., 1990). With respect to validity, the PSWQ is moderately correlated with two other measures of worry, the Worry Domains Questionnaire ( $r = .67$ ) and the Student Worry Scale ( $r = .59$ ), both of which assess domains of worry (Davey, 1993).

#### *Generalized Anxiety Disorder Questionnaire-IV (GADQ-IV)*

The Generalized Anxiety Disorder Questionnaire-IV (GADQ-IV; Newman et al., 2002) is a 10 item self-report measure designed to assess DSM-IV criteria for GAD (see Appendix B). The measure specifically assesses worry, its duration, uncontrollability and excessiveness, the presence of six additional symptoms, and topics about which an individual worries. It also assesses interference and distress caused by the worry (rated on nine-point Likert-type scales). This measure can be scored continuously (with a maximum possible score of 33) or dichotomously, the latter yielding an indication of presence or absence of a diagnosis of GAD.

The GADQ-IV has demonstrated good test-retest reliability in a college sample over a two-week assessment period (with respect to GAD diagnosis classification, 92% of the sample showed stability across time; Newman et al., 2002). The convergent and discriminant validity of the GADQ-IV have also been investigated and have shown that the GADQ-IV is more highly correlated with the



PSWQ ( $r = .66$ ; demonstrating convergent validity) than with the PTSD Checklist ( $r = .45$ ) or the Social Interaction Anxiety Scale ( $r = .34$ ), both of which are assumed to measure discriminant variables (Newman et al., 2002). Kappa agreement with the ADIS-IV was demonstrated to be 0.67 (Newman et al., 2002).

### *Beck Anxiety Inventory (BAI)*

The Beck Anxiety Inventory (BAI; Beck & Steer, 1993) is a 21-item questionnaire that assesses severity of state anxiety symptoms (during the previous week) in adolescents and adults (see The Psychological Corporation). This self-report measure contains descriptive statements of cognitive, affective, and somatic symptoms of anxiety that are rated on a four-point scale. The scale is rated as follows: “not at all” (zero points), “mildly; it did not bother me much” (1 point), “moderately; it was very unpleasant” (2 points), and “severely; I could barely stand it” (3 points).

The maximum score for this measure is 63 points. Total scores within the 0 to 7 range indicate a minimal level of anxiety; scores of 8-15 denote mild anxiety; total scores falling within the 16-25 point range indicate moderate anxiety; and scores of 26-63 suggest severe anxiety. In a mixed psychiatric sample, the BAI demonstrated excellent internal consistency ( $\alpha = .92$ ) and moderate one-week test-retest reliability ( $r = .75$ ; Beck, Brown, Epstein, & Steer, 1988). With respect to validity, the BAI was significantly more highly correlated with a measure of anxiety ( $r = .48$ ) than a measure of depression ( $r = .25$ ; Beck et al., 1988).

### *Beck Depression Inventory-II (BDI-II)*

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure assessing depressive symptoms consistent with DSM-IV diagnostic criteria for adolescents and adults. Respondents are asked to rate severity of items (on a 0 to 3 scale, with 0 representing neutrality and 3 indicating maximum severity) based on symptoms experienced during the previous two weeks.

Respondents' total score on the BDI-II can be classified according to the following suggested cutoff guidelines: scores within the 0 to 7 range are indicative of minimal depressive symptoms, scores between 14 and 19 indicate mild depressive symptoms, scores of 20 to 28 denote moderate depressive symptoms, and scores falling in the 29-63 range indicate severe depressive symptoms (Beck et al., 1996). The BDI-II has demonstrated excellent internal consistency ( $r = .92$  for an outpatient sample) and excellent one-week test-retest reliability ( $r = .93$ ; Beck et al., 1996). Finally, the BDI-II has also demonstrated convergent validity (Beck et al., 1996).

### *Acceptance and Action Questionnaire (AAQ)*

The Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004) is a 16-item self-report measure assessing experiential avoidance (see Appendix C). Items on the AAQ target a number of domains, including negative evaluations of internal experience, cognitive entanglement, negative self-references, inability to act when faced with inhibitory thoughts and feelings, and increased need for emotional and cognitive control. Individuals are asked to rate the extent to which a statement on the measure is true for them on a 7-point Likert scale (1 = "never true"; 7 = "always true").

Higher scores on the AAQ are reflective of greater avoidance and lower scores are indicative of acceptance/action. In clinical samples, females tend to score higher on the AAQ than males; however, gender differences were not found in nonclinical samples. Examination of the construct validity of the AAQ revealed that items load onto two continuous factors: “willingness to experience internal events” and “ability to take action, even in the face of unwanted events” (Hayes et al., 2004). In both clinical and nonclinical samples, the AAQ has demonstrated adequate internal consistency (Cronbach’s  $\alpha \geq .70$ ).

*The Intolerance of Uncertainty Scale (IUS)*

The Intolerance of Uncertainty Scale (IUS; Freeston, Rheume, Letarte, Dugas, & Ladouceur, 1994) is a 27-item self-report questionnaire that was originally developed in French, but has been translated to and validated in English (see Appendix D). This measure assesses a number of different aspects of intolerance of uncertainty, including emotional and behavioral consequences of uncertainty, the impact of uncertainty on an individual’s character, the expectation that the future is predictable, attempts to control the future, and all-or-nothing responses in uncertain situations. Respondents indicate how true each statement is of them on a 5-point Likert scale.

In college samples, the English version of the IUS demonstrates excellent internal consistency (Cronbach’s  $\alpha = .95$ ; Buhr & Dugas, 2000) and adequate test-retest reliability ( $r = .74$ ; Buhr & Dugas, 2000). The IUS is significantly correlated with measures of worry ( $r_s = .57$  and  $.63$ ), and trait anxiety ( $r = .57$ ), thus demonstrating convergent validity.

### *Workshop Satisfaction Questionnaire (WSQ)*

The Workshop Satisfaction Questionnaire (WSQ; see Appendix E) is a 7-item self-report questionnaire assessing satisfaction with the workshop intervention, its presentation, and the contents of the workshop. This measure was created by the principal investigator based upon existing empirical evidence suggesting that prevention studies using a workshop intervention (e.g., Gardenswartz & Craske, 2001) found that workshop satisfaction significantly predicted outcome. Examples of questions contained in this measure include Likert-type ratings (scale of 1-5, with 1 representing “not at all” and 5 representing “very much”) such as “how much do you think the tools that you learned in these workshops will help you manage your anxiety and worry now and in the future?”; “how interesting did you find the workshop information and activities?”; and “overall, how satisfied were you with the workshops?”

### *Preventative Intervention*

The preventative intervention consisted of two, approximately two-hour long workshop sessions that address techniques commonly included in cognitive-behavioral treatments for GAD (e.g., Borkovec & Costello, 1993; Ladouceur et al., 2000). Techniques were presented through didactic discussion as well as through group activities that encourage the participation of individuals attending the workshop sessions. In addition, a Microsoft Powerpoint presentation was used to present information and to illustrate techniques targeted in the workshop (see Appendix M). The preventative intervention techniques are based on those outlined in the client workbook, *Mastery of Your Anxiety and Worry* (Craske, Barlow, & O’Leary, 1992).

Intervention protocols were developed by the principal investigator, along with Elizabeth Ranslow (doctoral student) and Jeffrey Hecker, Ph.D. (Professor) at the University of Maine. A detailed description of the preventative intervention is contained in Appendices F and G.

### *Workshop Session 1*

The first session of the workshop (see Appendix F) includes a description of anxiety, a detailed explanation of the function of worry, as well as a rationale for treatment, which includes a description of the components that will be addressed in both sessions of the workshop. Participants learned to monitor their worries through instruction in self-monitoring using forms provided by the research therapist. Finally, participants engaged in a modified progressive-muscle relaxation exercise (using eight muscle groups as opposed to 16) led by the research therapist. The first session ended with a discussion of the “homework” to be completed before the next session. The homework consisted of instructions to practice the relaxation exercise and to self-monitor worry and anxiety on three occasions per day until the second workshop session.

### *Workshop Session 2*

The second workshop session (see Appendix G for a detailed description of components) consists of a psychoeducational discussion of cognitive therapy techniques. Such techniques include a description of maladaptive thinking (e.g., probability overestimation, the tendency to catastrophize, intolerance of uncertainty, controllability of the future) and group exercises designed to help participants challenge automatic thoughts and worries. A worry exposure exercise was also

conducted in which participants vividly imagine a situation related to one of their worries for five minutes, after which they wrote down alternative outcomes to their feared situation. After the worry exposure exercise, participants again engaged in progressive muscle relaxation to alleviate any distress that may have been caused during the worry exposure component. Finally, participants were also provided with a discussion of problem orientation and instruction in problem solving techniques.

### *Procedure*

Participants ( $n = 667$ ) enrolled in the Department of Psychology Subject Pool read and signed a consent form detailing the screening process and benefits/risks of participation in the screening (see Appendix H). Individuals who wished to participate were asked to complete the PSWQ, a few screening questions (e.g., addressing GAD diagnostic criteria, age, year in school), and to provide contact information if they wished to be considered for the study.

Participants who met study criteria (as discussed previously) were contacted (i.e., either by telephone or email, depending upon indicated preference) by undergraduate research assistants and invited to join the study. Those enrolled in the study were randomly assigned to either a Workshop or Control condition.

Participants in the Control group were asked to come to the laboratory at the beginning of the Fall semester to sign a consent form (see Appendix I) and to complete assessment measures for the baseline assessment (i.e., demographic questions, PSWQ, GADQ-IV, BDI-II, BAI, AAQ, IUS). They were contacted one month later to complete one-month follow-up assessment measures (i.e., PSWQ, GADQ-IV, BDI-II, BAI, AAQ, IUS), after which they were given four research

credits for participation. Control participants were also contacted at six months and again twelve months after the baseline assessment to complete the same measures for these follow-up periods. They were compensated \$10 for completing six-month follow-up assessments and another \$10 for participating in the twelve-month follow-up.

Workshop participants were contacted and provided with several choices of dates and times when workshops would be held at the beginning of the Fall semester. They were next asked to come to a designated space in which the workshop was conducted (i.e., Psychological Services Center at the University of Maine, Orono, ME) and were asked to read and sign a consent form (see Appendix J). At the beginning of the first workshop session, participants completed baseline assessment measures (i.e., demographic questions, PSWQ, GADQ-IV, BDI-II, BAI, AAQ, IUS). Participants were provided with handouts for this session (see Appendix K), which facilitated participation in individual and group activities and provided them with instructions and summaries of various techniques. Participants were asked to complete homework (i.e., self-monitoring forms) at the end of the first workshop session and to bring the homework to the second session, which was held two days after the first session in order to allow for homework completion and for participants to practice self-monitoring and relaxation techniques.

For the second workshop session, participants were again provided with a packet of handouts (see Appendix L) that corresponded to intervention components that were addressed in this session. At the end of the second workshop, participants completed post-intervention assessments (i.e., PSWQ, GADQ-IV, BDI-II, BAI,

AAQ, IUS, WSQ). Similar to the Control participants, Workshop participants were contacted one month after baseline to complete one-month follow-up assessment measures (i.e., PSWQ, GADQ-IV, BDI-II, BAI, AAQ, IUS), after which they received four research credits for participation. Workshop participants were also contacted at six months and again twelve months after the baseline assessment to complete the same measures for these follow-up periods. They were compensated \$10 for completing six-month follow-up assessments and another \$10 for participating in the twelve-month follow-up.



## CHAPTER 4

### Results

#### *Data Analysis Strategy*

Analyses were conducted using the SPSS 11.0 statistical software package. Independent variables consisted of condition (i.e., Workshop, Control) as a between-subjects factor and time (baseline, one-month follow-up, six-month follow-up, 12-month follow-up) served as a within-subjects factor. Dependent variables included PSWQ, GADQ-IV, BDI-II, BAI, IUS, and AAQ scores.

To address *a priori* hypotheses, repeated measures univariate analyses of variance (ANOVA) were employed. To examine the main effect of time for participants in each treatment condition, separate univariate analyses of variance (ANOVAs) were conducted on PSWQ, GADQ-IV, BDI-II, BAI, IUS, and AAQ scores to compare participants in each experimental condition across time. To determine if there were post-intervention effects, repeated measures ANOVAs were conducted on all dependent variables for baseline and post-intervention assessments for the Workshop condition. Tests of simple effects (e.g., t-tests and univariate ANOVAs) were conducted to examine the nature of significant interaction effects. Repeated measures multivariate analyses of variance (MANOVA) were also conducted to determine whether the best multivariate composite of the outcome variables discriminates between the Workshop and Control conditions. Measures of effect size (eta squared;  $\eta^2$ ) were also calculated. Magnitude of effects is classified as follows:  $\eta^2 = .01$ , small effect;  $\eta^2 = .06$ , medium effect;  $\eta^2 = .14$ , large effect (Cohen, 1988).

Linear regression analyses were conducted to examine the hypothesis that workshop satisfaction (Workshop condition only) would predict outcome. Specifically, greater satisfaction with the workshop was expected to predict lower self-reported worry, as assessed by PSWQ scores. In addition, greater workshop satisfaction was also expected to predict lower incidence of GAD, as measured by presence of diagnostic criteria on the GADQ-IV.

It was hypothesized that participants who participate in the preventative intervention would be less likely to develop GAD at twelve-month follow-up compared to Control participants. In addition to a scoring method that yields a continuous score, the GADQ –IV can also be scored to yield a dichotomous score that denotes whether or not a participant meets diagnostic criteria for GAD. In order to examine presence of GAD across assessments, qualitative examination of the data was conducted for each experimental group.

To best capture the effect of the preventative intervention on the dependent variables included in the present study and to minimize the impact of attrition at the 6- and 12-month follow-up assessment points, data will be presented separately according to differences in scores from baseline to each follow-up assessment point (i.e., one-month, six-month, and twelve-month).

#### *Missing Values and Non-Normal Distributions*

Prior to analysis, dependent variables were examined to determine accuracy of data entry, missing values, and fit between their distributions and the assumptions of univariate and multivariate analysis. Variables were examined separately for Control and Workshop conditions.

Missing values were solely accounted for by participant attrition across time. At 12-month follow-up, the attrition rate for the Control condition was 35% and 34% for the Workshop condition, with an overall attrition rate of 35%. With respect to non-normal distributions of scores, for the Control condition, examination of histograms demonstrated positive skewness in 3 variables (BAI at 1-month follow-up, BAI at 6-month follow-up, and BDI at 12-month follow-up). For the Workshop condition, 6 variables demonstrated positive skewness upon examination of histograms (BDI-II at baseline, BDI-II at 1-month follow-up, BAI at 1-month follow-up, BDI-II at 6-month follow-up, BAI at 6-month follow-up, and BDI-II at 12-month follow-up). These skewed distributions indicate reports of minimal symptoms of anxiety and depression by participants. Data were not transformed on the basis of Tabachnick and Fidell's (1989, p. 74) suggestion that "in a large sample a variable with significant skewness or kurtosis often does not deviate enough from normality to make a realistic difference in the analysis."

#### *Participant Characteristics*

An ANOVA was conducted to explore differences in age between participants in the Workshop and Control conditions. Results demonstrated no significant differences in age between conditions,  $F(1, 76) = 0.387, ns$ . Mean age for the entire sample was 18.2 ( $SD = 0.44$ ). In the Control condition, the mean age of participants was 18.18 ( $SD = 0.38$ ). The mean age of Workshop participants was 18.24 ( $SD = 0.49$ ). Approximately 95% of the sample was Caucasian, while the remaining participants described themselves as Asian (2.6%), African American (1.3%), and Other (1.3%). Table 1 presents frequencies and percentages for race/ethnicity for

each condition. Approximately 87% of participants were first-year college students and approximately 13% of participants were college sophomores. Table 2 presents frequencies and percentages for education status for each condition.

Table 1.

*Frequencies and Percentages for Race/Ethnicity Status of Participants*

<i>Race</i>	<i>Control</i>	<i>Workshop</i>
Caucasian	38 (95%)	36 (94.7%)
African American	1 (2.5%)	0 (0%)
Asian	0 (0%)	2 (5.3%)
Other	1 (2.5%)	0 (0%)

Table 2.

*Frequencies and Percentages for Education Status of Participants*

<i>Year in School</i>	<i>Control</i>	<i>Workshop</i>
Freshman	35 (87.5%)	33 (86.8%)
Sophomore	5 (12.5%)	5 (13.2%)

In the Control condition, 2 participants reported that they had been diagnosed with an anxiety disorder in the previous 12 months. For the Workshop condition, zero participants had been previously diagnosed with an anxiety disorder. Participants

were also asked to report stressors that they had experienced in the previous 12 months. Approximately 30% of participants indicated that they had experienced a death in the family in the previous 12 months, approximately 4% reported parental divorce as a stressor, 83% reported beginning college as a recent stressor, 36% reported financial difficulties, 41% reported moving as a stressor, 39% reported relationship problems with a significant other, and 15.4% reported other stressors. Table 3 presents frequencies and percentages of stressors according to condition.

Table 3.

*Frequencies and Percentages for Stressors Experienced by Participants in the Previous 12 Months*

<i>Stressor</i>	<i>Control</i>	<i>Workshop</i>
Death in the Family	15 (37.5%)	8 (21.1%)
Parental Divorce	1 (2.5%)	2 (5.3%)
Beginning College	32 (80%)	33 (86.8%)
Financial Difficulties	12 (30%)	16 (42.1%)
Moving	15 (37.5%)	17 (44.7%)
Relationship Difficulties	14 (35%)	16 (42.1%)
Other	7 (17.5%)	5 (13.2%)

*Note.* Participants frequently reported experiencing more than one stressor in the previous 12 months.

### *Analyses*

To discuss the hypotheses that workshop participation was expected to reduce reported worry, depressive symptoms, symptoms of GAD, state anxiety, intolerance of uncertainty, and experiential avoidance, relative to Control participants, results will be discussed according to change in dependent variables from baseline for each follow-up assessment point.

#### *Baseline to Post-Intervention Assessment*

A repeated-measures MANOVA was conducted to determine whether there were changes in Workshop participants' ( $n = 33$ ) reported worry, GAD symptoms, state anxiety, depression, intolerance of uncertainty, and experiential avoidance from baseline assessment to post-intervention. Wilks'  $\Lambda$  revealed a significant Time effect,  $F(6, 27) = 3.99, p < .01, \eta^2 = .47$ . Repeated-measures univariate analyses were subsequently examined. Results indicated significant Time effects for PSWQ scores,  $F(1, 32) = 5.29, p < .03, \eta^2 = .14$ , BDI-II scores,  $F(1, 32) = 11.47, p < .01, \eta^2 = .26$ , and GADQ-IV scores,  $F(1, 32) = 6.71, p < .01, \eta^2 = .17$ . These significant Time effects were in the expected direction, with Workshop participants improving from baseline to immediately post-intervention. There was a univariate trend toward significance for a Time effect for AAQ scores,  $F(1, 32) = 3.22, p = .08, \eta^2 = .09$ . Nonsignificant effects were found for IUS scores,  $F(1, 32) = 1.32, ns$ , and BAI scores,  $F(1, 32) = 1.00, ns$ .

#### *Baseline to One-Month Follow-up Assessment*

To examine whether participants in the Workshop condition ( $n = 33$ ) were more likely to experience reduced anxiety following workshop participation as

compared to Control participants ( $n = 39$ ) and to maintain the reduction over a one-month follow-up period, a repeated-measures MANOVA was conducted to examine within-subjects and between-subjects changes on outcome measures assessing worry, state anxiety, presence of GAD, intolerance of uncertainty, depression, and experiential avoidance ( $N=72$ ). Means and standard deviations are presented in Table 4. Wilks'  $\Lambda$  revealed a significant Time (baseline, one-month follow-up) X Condition (Workshop, Control) interaction effect,  $F(6, 65) = 2.19, p < .05, \eta^2 = .17$ . Repeated-measures univariate analyses were also examined. Results indicated significant Time X Condition effects for PSWQ scores,  $F(1, 70) = 9.75, p < .01, \eta^2 = .12$  see (Figure 1), BDI-II scores,  $F(1, 70) = 6.03, p < .02, \eta^2 = .08$  (see Figure 2), IUS scores,  $F(1, 70) = 6.37, p < .01, \eta^2 = .08$  (see Figure 3), and AAQ scores  $F(1, 70) = 6.18, p < .02$  (see Figure 4). There were univariate trends toward significance for a Time X Condition effect for GADQ-IV scores,  $F(1, 70) = 3.03, p = .09, \eta^2 = .04$ , and BAI scores,  $F(1, 70) = 3.04, p = .09, \eta^2 = .04$ .

To further examine significant interaction effects, tests of simple effects were conducted. Pairwise comparison were conducted to determine which variables participants in each condition reported significant change on between baseline and one-month follow-up. For the Workshop condition, results of paired-samples t-tests indicated that participants reported significant change in PSWQ scores,  $t(32) = 3.23, p < .01$ , GADQ-IV scores,  $t(32) = 3.35, p < .01$ , BDI-II scores,  $t(32) = 3.19, p < .01$ , and BAI scores,  $t(32) = 3.31, p < .01$ . For the Control condition, results of paired-samples t-tests indicated that participants reported significant change in AAQ scores,  $t(38) = -2.06, p = .05$  and a trend toward significance for IUS scores,  $t(38) = -1.92$ ,

$p=.06$ . These results suggest that participants' scores on these measures increase over time.

The presence of significant or marginally-significant Condition X Time interactions for each of the outcome variables qualifies the interpretation of significant Time main effects. Wilks'  $\Lambda F(6, 65) = 3.54, p < .01, \eta^2 = .25$  revealed a significant multivariate effect for Time (baseline, one-month follow-up). Repeated-measures univariate analyses were subsequently examined. However, results indicated significant Time effects for 4 of the 6 outcome variables, PSWQ,  $F(1, 70) = 4.13, p < .05, \eta^2 = .06$ , GADQ-IV,  $F(1, 70) = 13.26, p < .01, \eta^2 = .16$ , BDI-II,  $F(1, 70) = 8.95, p < .01, \eta^2 = .11$ , and BAI,  $F(1, 70) = 3.79, p = .05, \eta^2 = .05$ . Time main effects were not observed for IUS,  $F(1, 70) = 0.12, ns$ , or AAQ,  $F(1, 70) = 0.06, ns$ .

Table 4.

*Means and Standard Deviations for Dependent Variables from Baseline to One-Month Follow-up*

	<i>Baseline</i>		<i>Post-treatment</i>	<i>1-Month Follow-up</i>	
	<i>Workshop</i>	<i>Control</i>	<i>Workshop</i>	<i>Workshop</i>	<i>Control</i>
PSWQ	53.64(8.20)	50.21(9.11)	51.15(9.47)	49.88(9.21)	51.00(10.25)
GADQ	15.24(5.54)	13.64(6.30)	14.36(5.03)	12.85(5.48)	12.79(6.67)
BDI	12.52(6.92)	12.28(8.07)	9.73 (5.94)	9.39(7.65)	11.97(7.70)
BAI	10.70(6.93)	10.87(7.41)	10.15 (6.79)	7.91(6.01)	10.72(9.15)
IUS	66.33(15.68)	54.54(16.35)	64.88 (15.15)	63.24(14.50)	56.87(16.64)
AAQ	61.70(10.18)	59.51(11.41)	59.58 (9.85)	59.94(9.81)	61.64(11.57)



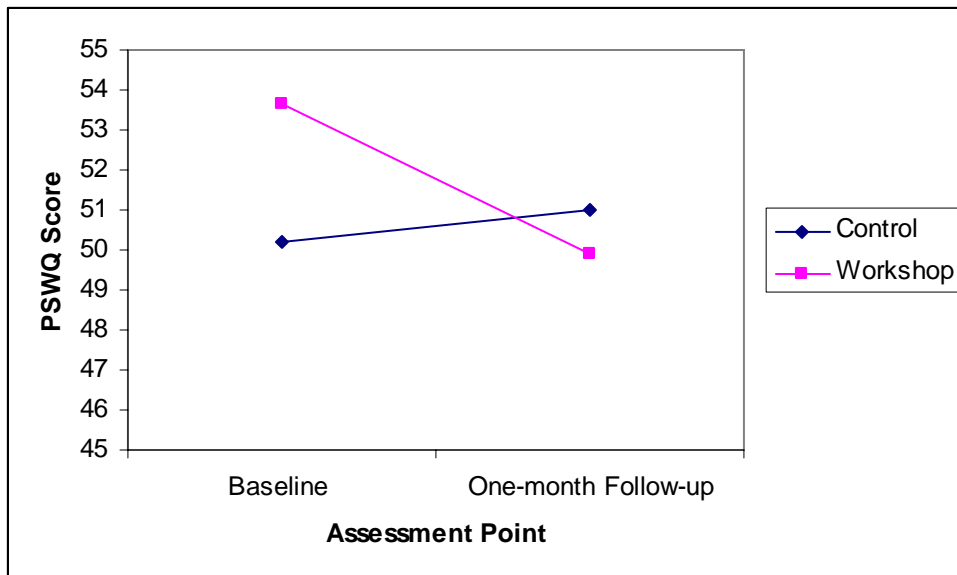


Figure 1. Change in PSWQ scores from baseline to one-month follow-up assessment for Workshop and Control participants.

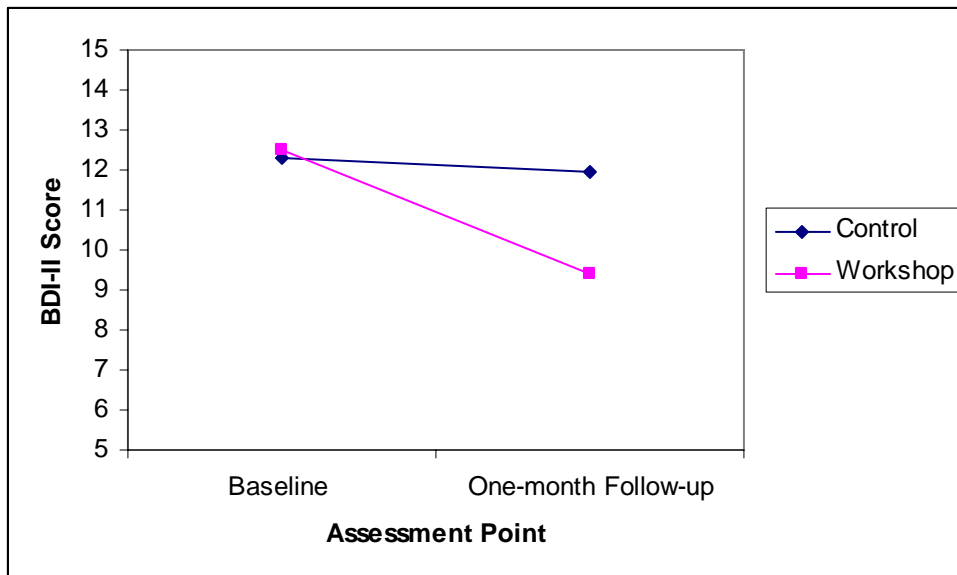


Figure 2. Change in BDI-II scores from baseline to one-month follow-up assessment for Workshop and Control participants.

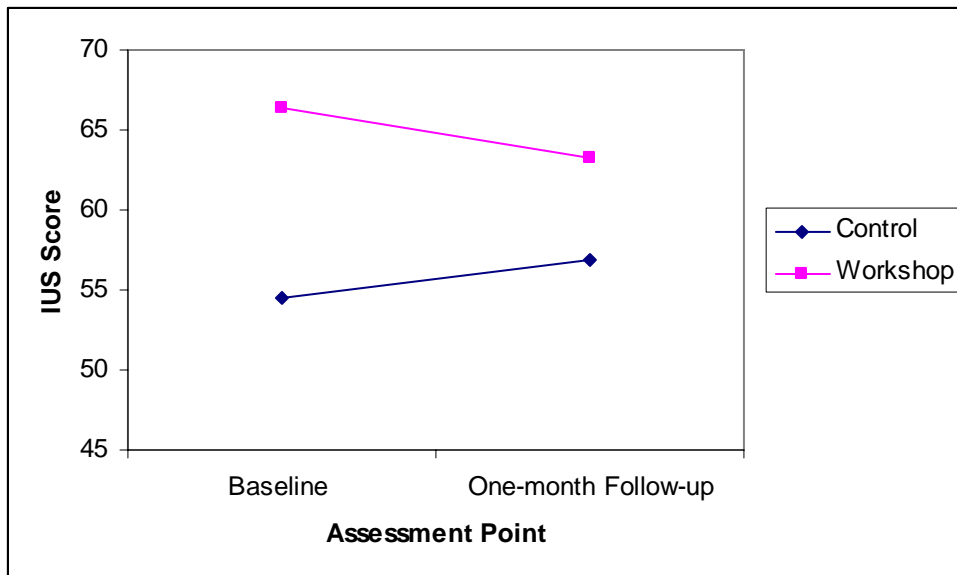


Figure 3. Change in IUS scores from baseline to one-month follow-up assessment for Workshop and Control participants.

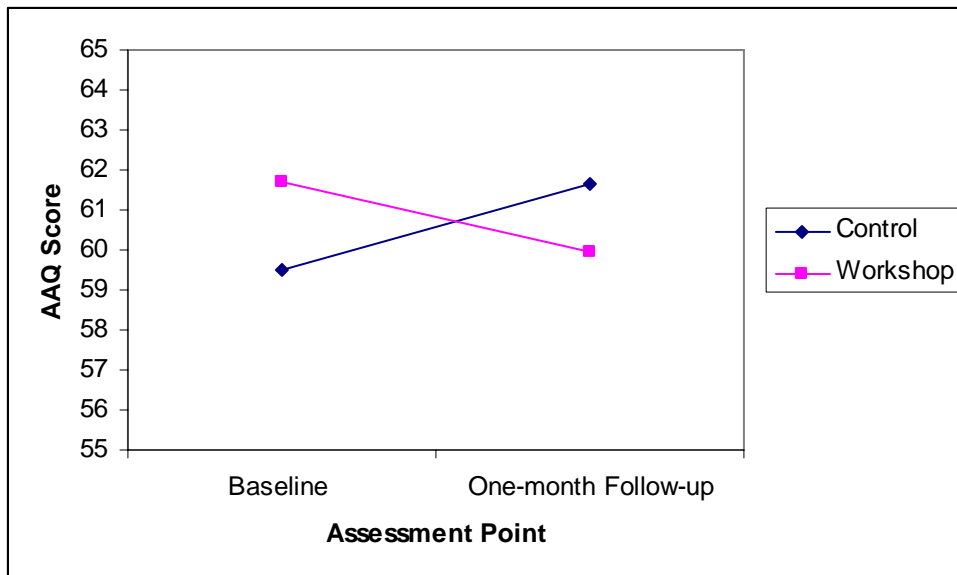


Figure 4. Change in AAQ scores from baseline to one-month follow-up assessment for Workshop and Control participants.

*Baseline to Six-Month Follow-up Assessment*

To examine whether participants in the Workshop condition ( $n = 25$ ) were more likely to experience reduced anxiety following workshop participation as compared to Control participants ( $n = 32$ ) and to maintain the reduction over a six-month follow-up period, a repeated-measures MANOVA was again conducted to examine within-subjects and between-subjects changes on outcome measures assessing worry, state anxiety, presence of GAD, intolerance of uncertainty, depression, and experiential avoidance ( $N=57$ ). Means and standard deviations are presented in Table 5. Wilks'  $\Lambda$  revealed a nonsignificant Time (baseline, one-month follow-up, six-month follow-up) X Condition (Workshop, Control) interaction effect,  $F(12, 44) = 1.59, ns$ . Results of ANOVAs demonstrated significant univariate interaction effects for PSWQ scores,  $F(2, 110) = 3.22, p < .05, \eta^2 = .06$  and there was a statistical trend toward significance for IUS scores,  $F(2, 110) = 3.02, p = .06, \eta^2 = .06$ , suggesting group differences at baseline, one-month, and six-month assessments, with Workshop participants demonstrating reductions in scores on these two measures. Results were nonsignificant for univariate interaction effects for GADQ-IV scores,  $F(2, 110) = 2.19, ns$ , BDI-II scores,  $F(2, 110) = 1.96, ns$ , BAI scores,  $F(2, 110) = 1.89, ns$  and AAQ scores  $F(2, 110) = 1.96, ns$ .

To further examine significant interaction effects and interaction effects with trends toward significance, tests of simple effects were conducted for PSWQ and IUS scores. Separate repeated-measures ANOVAs were conducted for PSWQ scores across time for the Workshop condition and Control condition. Results for the Workshop condition indicated a nonsignificant effect for Time through six-month

follow-up,  $F(2, 48) = 1.77, ns$ . For the Control condition, the results of the ANOVA were nonsignificant,  $F(2, 62) = 1.23, ns$ . Separate repeated-measures ANOVAs were also conducted for IUS scores across time for the Workshop condition and Control condition. Results for the Workshop condition were nonsignificant,  $F(3, 60) = 1.82, ns$ . For the Control condition, the results of the ANOVA were also nonsignificant,  $F(3, 72) = 0.61, ns$ .

There was a significant multivariate Time effect, Wilks'  $\Lambda F(12, 44) = 2.19, p < .03, \eta^2 = .37$ . Univariate analyses also revealed significant main effects for Time for PSWQ scores,  $F(2, 110) = 4.76, p < .05, \eta^2 = .08$ , GADQ-IV scores,  $F(2, 110) = 8.19, p < .01, \eta^2 = .13$ , BAI scores,  $F(2, 110) = 5.84, p < .01, \eta^2 = .10$ , and AAQ scores,  $F(2, 110) = 4.70, p < .05, \eta^2 = .08$ .

Table 5.

*Means and Standard Deviations for Dependent Variables from Baseline to 6-Month Follow-up*

	<i>Baseline</i>		<i>1-Month Follow-up</i>		<i>6-Month Follow-up</i>	
	<i>Workshop</i>	<i>Control</i>	<i>Workshop</i>	<i>Control</i>	<i>Workshop</i>	<i>Control</i>
PSWQ	53.44(8.53)	49.84(9.05)	49.12(9.48)	50.47(10.22)	49.72(7.59)	47.50(10.42)
GADQ	14.92(5.91)	12.81(5.97)	11.96(5.53)	12.47(6.75)	11.86(5.95)	11.06(6.98)
BDI	12.04(7.44)	11.88(8.27)	9.08(7.95)	12.00(7.86)	10.04(9.70)	11.66(9.75)
BAI	10.44(6.20)	10.31(7.57)	7.04(4.33)	9.59(8.47)	7.84(5.62)	7.56(6.84)
IUS	64.28(15.75)	52.25(15.06)	62.08(15.06)	54.38(14.77)	60.04(13.20)	54.69(13.75)
AAQ	61.56(10.98)	59.13(11.54)	59.36(10.36)	61.16(12.02)	57.80(13.51)	57.09(13.36)

### *Baseline to Twelve-Month Follow-up Assessment*

To examine whether participants in the Workshop condition ( $n = 21$ ) were more likely to experience reduced anxiety following workshop participation as compared to Control participants ( $n = 25$ ) and to maintain the reduction over a twelve-month follow-up period, a repeated-measures 2 (experimental group: Control, Workshop) X 4 (time: baseline, one-month follow-up, six-month follow-up, twelve-month follow-up) MANOVA was conducted to examine within-subjects and between-subjects changes on outcome measures assessing worry, state anxiety, presence of GAD, intolerance of uncertainty, depression, and experiential avoidance ( $N=46$ ). Means and standard deviations are presented in Table 6. Wilks'  $\Lambda$  revealed a nonsignificant Time X Condition interaction effect,  $F(18, 27) = 1.47, ns$ . Similar to results found in the analyses through six-month follow-up, results of repeated-measures ANOVAs indicated trends toward significant Time X Condition interaction effects for PSWQ scores,  $F(3, 132) = 2.30, p=.06, \eta^2 = .06$  (see Figure 5), and for IUS scores,  $F(3, 132) = 2.66, p = .09, \eta^2 = .05$  (see Figure 6). Results were nonsignificant for univariate interactions for GADQ-IV scores,  $F(3, 132) = 1.00, ns$ , BDI-II scores,  $F(3, 132) = 1.04, ns$ , BAI scores,  $F(3, 132) = 0.66, ns$ , and AAQ scores  $F(3, 132) = 1.13, ns$ .

To further examine interaction effects with trends toward significance, tests of simple effects were conducted for PSWQ and IUS scores. Separate repeated-measures ANOVAs were conducted for PSWQ scores across time for the Workshop condition and Control condition. Results for the Workshop condition indicated a significant effect for Time through twelve-month follow-up,  $F(3, 60) = 3.04 p=.05$ ,

$\eta^2 = .13$ . To determine at which assessment points significant reductions in PSWQ scores occurred, pairwise comparisons were conducted. Results of the pairwise comparisons indicated that there was a significant change from baseline to one-month follow-up for the Workshop condition,  $t(32) = 3.23, p < .01$ , and from baseline to six-month follow-up,  $t(26) = 2.45, p = .02$ . There were no significant differences demonstrated on the PSWQ for comparisons of baseline to twelve-month follow-up, one-month to six-month follow-up, one-month to twelve-month follow-up, or six-month to twelve-month follow-up for Workshop participants. For the Control condition, the results of the ANOVA were nonsignificant,  $F(3, 60) = 2.42, ns$ . Separate repeated-measures ANOVAs were also conducted for IUS scores across time for the Workshop condition and Control condition. Results for the Workshop condition were nonsignificant,  $F(3, 60) = 1.82, ns$ . For the Control condition, the results of the ANOVA were also nonsignificant,  $F(3, 72) = 0.61, ns$ .

There was a statistical trend toward significance for a Time effect, Wilk's  $\Lambda F(18, 27) = 1.78, p = .08, \eta^2 = .54$ . Also similar to results through six-month follow-up, univariate ANOVAs revealed significant main effects for Time (baseline, one-month, six-month, and twelve-month follow-up) for PSWQ scores,  $F(3, 132) = 3.09, p < .05, \eta^2 = .07$ , GADQ-IV scores,  $F(3, 132) = 5.14, p < .01, \eta^2 = .11$ , BAI scores,  $F(3, 132) = 3.48, p < .05, \eta^2 = .07$ , and AAQ scores,  $F(3, 132) = 4.76, p < .01, \eta^2 = .10$ .



Table 6.

*Means and Standard Deviations for Dependent Variables from Baseline to 12-Month Follow-up*

	<i>Baseline</i>		<i>1-Month Follow-up</i>		<i>6-Month Follow-up</i>		<i>12-Month Follow-up</i>	
	<i>Workshop</i>	<i>Control</i>	<i>Workshop</i>	<i>Control</i>	<i>Workshop</i>	<i>Control</i>	<i>Workshop</i>	<i>Control</i>
PSWQ	54.29 (7.80)	49.56 (9.53)	49.00 (9.31)	50.56 (11.39)	50.00 (7.35)	46.84 (10.86)	51.00 (8.49)	48.12 (11.76)
GADQ	15.19 (6.39)	12.68 (6.23)	11.95 (5.85)	11.88 (6.64)	11.62 (6.26)	10.56 (6.54)	13.48 (6.30)	11.56 (6.66)
BDI	12.14 (8.05)	11.40 (8.93)	9.19 (8.56)	11.16 (7.88)	10.62 (10.08)	10.52 (8.06)	10.38 (8.86)	11.76 (9.92)
BAI	10.71 (6.48)	9.88 (7.32)	7.62 (4.34)	8.44 (7.78)	8.48 (5.76)	7.12 (6.36)	8.57 (5.24)	8.76 (6.82)
IUS	64.90 (16.78)	50.32 (14.64)	60.76 (15.97)	52.40 (14.57)	59.48 (14.19)	52.08 (12.81)	60.62 (15.86)	52.35 (15.07)
AAQ	61.33 (11.77)	58.56 (11.14)	59.29 (10.92)	60.28 (11.66)	56.33 (13.99)	55.28 (12.30)	59.29 (11.10)	56.08 (15.36)

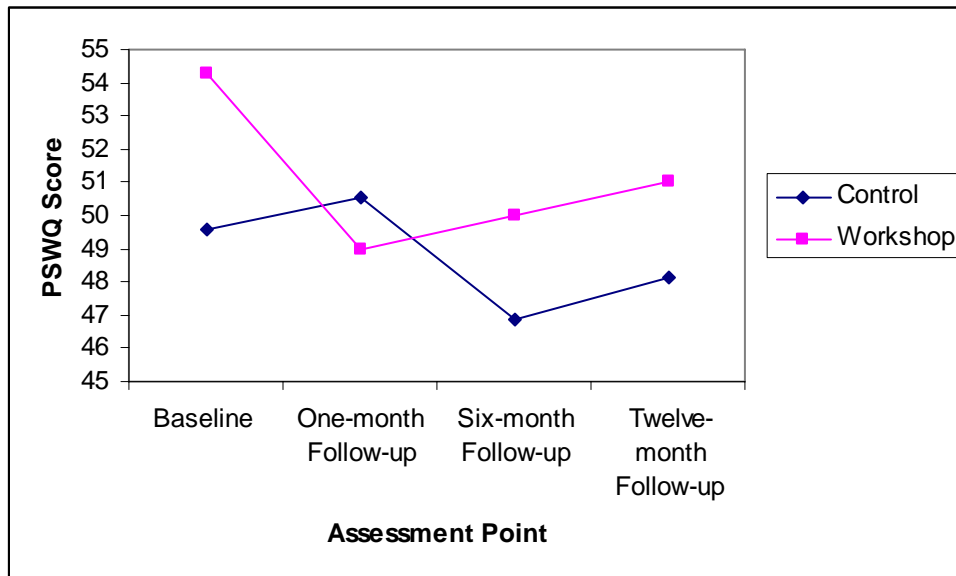


Figure 5. Change in PSWQ scores from baseline to twelve-month follow-up assessment for Workshop and Control participants.

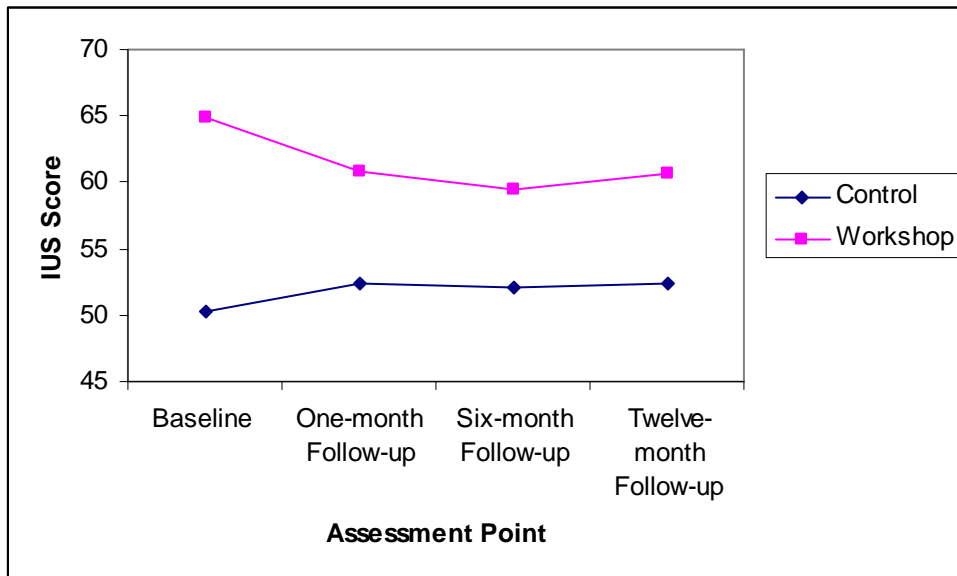


Figure 6. Change in IUS scores from baseline to twelve-month follow-up assessment for Workshop and Control participants.

### *Workshop Satisfaction as a Predictor of Outcome*

Workshop satisfaction was computed based on a mean score of each participant's response to items on the questionnaire, thus creating an overall "workshop satisfaction" variable. Mean score across participants ( $N = 33$ ) for workshop satisfaction was 4.0 ( $SD = 0.47$ ) on a scale of 1-5, indicating participants were, on average, "somewhat satisfied" with the workshop. To determine if workshop satisfaction would predict outcome, a linear regression analysis was computed based on participants' workshop satisfaction score and their PSWQ score at six-month follow-up and also at 12-month follow-up. Results did not support the hypothesis that workshop satisfaction would predict outcome. The correlation between workshop satisfaction and reported worry at 6 months post-intervention was  $r = 0.26$ ,  $F(1, 23) = 1.70$ , *ns*. Reported workshop satisfaction at the six-month follow-up assessment was associated with only 7.0% of the variance of reported worry. The correlation between workshop satisfaction and reported worry at 12 months post-intervention was  $r = 0.06$ ,  $F(1, 20) = 0.08$ , *ns*. Reported workshop satisfaction was associated with only 0.4% of the variance of reported worry.

### *Prevention and Treatment of GAD: An Examination of GAD Diagnosis*

In addition to producing a continuous value representing GAD symptomatology, the GADQ-IV also provides dichotomous data regarding presence or absence of a diagnosis of GAD. These latter data allow for examination of presence of GAD diagnosis across assessment points, as well as allowing for investigation of the hypothesis that workshop participation will prevent new onset of

GAD in intervention participants but not in control participants. Results of GAD diagnoses by condition for each assessment point are presented in Table 4. Of the Control participants who did not meet GAD diagnostic criteria at baseline assessment, five additional Control participants met GAD criteria at later assessment points (three new cases at one-month follow-up and two new cases at six-month follow-up), although 2 of these five participants dropped out of the study by twelve-month follow-up. For Workshop participants, only one participant not initially meeting criteria for GAD reported clinically-significant GAD symptoms at six-month follow-up and continued to meet criteria at twelve-month follow-up.

An equal number of participants in each condition ( $n=3$ ) met criteria for GAD at baseline. In the Workshop condition, participants meeting diagnostic criteria for GAD decreased and remained at 2 participants at one-month follow-up. Only one Workshop participant who met GAD criteria at baseline met criteria at six-month follow-up but that same participant no longer met criteria at twelve months post-intervention. Thus, all three participants in the Workshop condition who met diagnostic criteria for GAD at baseline assessment reported fewer GAD symptoms and no longer met criteria by twelve-month follow-up, suggesting that the workshop may have served as a treatment for these individuals. Further review of participants who met criteria for GAD at each assessment point indicated that reduction in number of participants who met criteria for GAD at twelve-month follow-up for the Workshop condition cannot be attributed to participant drop-out.

In the Control condition, one of the three participants who met GAD criteria at baseline assessment dropped out of the study before one-month follow-up. A second

Control participant who met GAD criteria at baseline continued to meet criteria at one-month follow-up, but dropped out of the study before the six-month follow-up assessment. The remaining individual who initially met GAD criteria continued to meet criteria for GAD through twelve-month follow-up.

Table 7.

*Frequencies of Participants Meeting Diagnostic Criteria for GAD*

<i>Condition</i>	<i>Baseline</i>	<i>1-Month Follow-up</i>	<i>6-Month Follow-up</i>	<i>12-Month Follow-up</i>
Control	3	5 (3)	4 (2)	2 (0)
Intervention	3	2 (0)	2 (1)	1 (0)

Note. Values in parentheses indicate number of new cases of GAD

*Post-Hoc Analyses*

To examine gender differences on all dependent variables, a 2 (experimental group: Control, Workshop) X 2 (gender: male, female) X 4 (time: baseline, one-month follow-up, six-month follow-up, 12-month follow-up) repeated measures MANOVA was conducted. Data for the Workshop condition were also analyzed using a 4 (therapist) X 2 (time: baseline, one-month follow-up) repeated measures MANOVA to examine therapist effects on dependent variables. In addition, analyses were conducted to determine whether participants who dropped out of the study at each follow-up assessment point differed from those who did not drop out.

*Examining Attrition Effects*

Between one- and six-month follow-up assessments, 15 participants dropped out of the study. An additional 12 participants dropped out of the study by the twelve-month follow-up assessment. To determine whether these 27 participants differed from participants who remained in the study, a one-way MANOVA comparing participants who remained in the study to those who dropped out was conducted to examine between-subjects changes on all main dependent variables (i.e., PSWQ, GADQ-IV, BDI-II, BAI, IUS, AAQ). Wilk's  $\Lambda$  revealed a nonsignificant between-groups effect for participation status,  $F(6, 52) = 0.87, ns$ . This suggests that participants who dropped out before the twelve-month assessment did not differ significantly from those who remained in the study on any of the dependent variables. There was also no significant Condition by Drop-out Status interaction effect twelve-month follow-up, Wilk's  $\Lambda F(6, 50) = 1.05, ns$ .

To investigate the potential effect of drop-out status on the main dependent variables, a 2 (Time: baseline, one-month follow-up) X 2 (Condition: Workshop, Control) X 2 (participation status: stayed in, dropped out) MANOVA was conducted. Wilk's  $\Lambda$  revealed a nonsignificant within-subjects interaction effect for Time X Condition X Participation status,  $F(6, 63) = 1.31, ns$ . There was also a nonsignificant interaction effect for Time X Participation status,  $F(6, 63) = 1.07, ns$ .

#### *Examining the Effect of Gender*

To examine gender differences in participants' reported worry, state anxiety, presence of GAD, intolerance of uncertainty, depression, and experiential avoidance for both treatment conditions across all assessment points, a repeated-measures MANOVA was conducted, with Condition (i.e., Control, Workshop) and Sex (i.e.,

male, female) as between-subjects factors. Results did not yield a significant Time X Condition X Sex interaction effect, Wilk's  $\Lambda F(18, 25) = 1.13, ns$ . Results also did not reveal a significant main effect for Sex,  $F(6, 37) = 1.82, ns$ .

#### *Examining Therapist Effects*

Because therapist adherence to the intervention protocol was not directly assessed, the effect of therapist on Workshop participants' reported worry, state anxiety, presence of GAD, intolerance of uncertainty, depression, and experiential avoidance was examined. Results of the repeated-measures MANOVA revealed a nonsignificant interaction effect for Time X Therapist, Wilk's  $\Lambda F(72, 97) = 1.40, ns$  as well as a nonsignificant main effect for Therapist, Wilk's  $\Lambda F(24, 127) = 0.90, ns$ .



## CHAPTER 5

### Discussion

The present study is the first study to investigate the efficacy of a preventative intervention for GAD. Prevention efforts in mental health research have previously focused on depression, general anxiety, specific phobias, and panic disorder. These efforts primarily have been targeted toward children and have followed primary and secondary models of prevention. More recently, attention has turned to examining prevention efforts in samples of college students and has targeted specific diagnoses (e.g., Gardenswartz & Craske, 2001; Seligman, et al., 1999). Despite the growing interest in prevention of mental health problems, there is still a paucity of prevention research in mental health. Although there are promising treatment effects for GAD (e.g., Ladouceur et al., 2000), it is somewhat surprising that there have been no published empirical studies targeting prevention of GAD.

Because of the aforementioned gap in the prevention literature (i.e., prevention of GAD), in the present study, a secondary prevention approach was used to examine a brief preventative intervention for GAD. Based on existing secondary prevention research (e.g., Gardenswartz & Craske, 2000; Seligman et al., 1999), the present study employed a psychoeducational workshop format that combined elements from existing treatment protocols for GAD (e.g., Borkovec & Costello, 1993; Ladouceur et al., 2000). Also following extensive research investigating features of GAD, worry and presence of GAD symptoms were examined as main outcome variables. Encouraging results from two pilot studies guided further

modifications for the present study. Results of the present study will be discussed according to hypotheses, followed by a consideration of study limitations and discussion of future directions.

Various factors, such as worry, intolerance of uncertainty, experiential avoidance, related to GAD (e.g., Borkovec, 1994; Dugas et al., 1998) have been targeted in the treatment literature (e.g., Ladouceur et al., 2000). In addition, evidence suggests that GAD is highly comorbid with depression, indicating that examining the impact of an intervention on depression is also important (Brown et al., 2001). Given the substantial research linking these factors to GAD, worry, GAD symptoms, depression, state anxiety, intolerance of uncertainty, and experiential avoidance were examined in the present study.

As hypothesized, reductions in self-reported levels of all dependent variables were demonstrated in Workshop participants, but not Control participants, to varying degrees, across time. For Workshop participants, reductions in levels of worry, symptoms of depression, and, to some extent, experiential avoidance were demonstrated at the post-intervention assessment, indicating that the workshop had immediate therapeutic effects for participants. This finding is somewhat surprising given that there was a span of only two days between baseline and post-intervention assessment in this condition. However, these robust reductions may be explained by one or more factors. For example, participants may have reported reductions in these symptoms as a result of recent acquisition and practice of cognitive-behavioral techniques (e.g., relaxation), considering that they completed post-intervention assessment measures at the end of session two of the workshop. It is also possible

that participants were providing socially desirable responses, as they were not blind to the nature of the study. However, the absence of a correlation between workshop satisfaction and outcome suggests that participants were not simply responding in a socially desirable manner as they did not report the highest level of workshop satisfaction and did not report extreme reductions in worry. Nevertheless, reductions in symptoms, as seen in the Workshop condition, are generally expected following completion of a treatment protocol.

When assessed one-month following baseline assessment, Workshop participants demonstrated even greater improvement on outcome measures compared to Control Participants. At one-month follow-up, Workshop participants reported reduction in worry, depression, state anxiety, presence of GAD symptoms, intolerance of uncertainty, and experiential avoidance. Although it is difficult to determine whether participants were using the techniques introduced during the workshop, these results indicate that they continued to improve following participation in the intervention.

Six months after participating in the workshop, individuals in the Workshop condition reported a decrease in worry and intolerance of uncertainty, whereas Control participants did not demonstrate similar reductions. These results were demonstrated again at the twelve-month follow-up assessment. Although results generally suggested only maintenance of improvement on the various outcome measures through twelve-month follow-up, it is important to consider the substantial attrition that occurred by the twelve-month follow-up assessment, which may have affected the statistical significance of the results. By twelve-month follow-up, 27

participants (13 Workshop; 14 Controls) had dropped out of the study. Although statistical comparison of these participants to those who remained in the study did not yield major differences, it may be likely that inclusion of their data would have altered the results. It is also possible that participants did not demonstrate further improvement on all variables of interest because the stressors (e.g., beginning college) they may have previously reported were no longer salient.

Overall, Workshop participants reported initial reductions in all outcome variables and continued to demonstrate reductions in worry and intolerance of uncertainty one year after baseline assessment. Ideally, reductions in depression, state anxiety, GAD symptoms, and experiential avoidance would have continued through twelve-month follow-up. Although these hypothesized reductions were not entirely supported, it is encouraging that the primary variable of interest (and main feature of GAD), worry, was consistently decreased over time for Workshop participants. Intolerance of uncertainty has also been noted as a main feature of GAD (Dugas et al., 1997) and was consistently improved in participants who completed the workshop intervention in the present study.

Despite the fact that all initial improvements made by Workshop participants were not demonstrated at subsequent follow-up assessments, these improvements were generally maintained throughout the follow-up period (see Tables 4, 5, 6). Participants were recruited for this study based on their “at-risk” status and were therefore not reporting clinically significant GAD symptoms. As a result, they may not be expected to demonstrate long-term, continuous improvement because their symptoms were not as severe as are typically seen in a clinical sample. The aim of

the present study is prevention rather than treatment, further supporting the idea that maintenance of initial reductions is equally important and meaningful.

Research investigating secondary prevention of panic disorder (Gardenswartz & Craske, 2001) also employed a psychoeducational workshop format for intervention delivery and found that workshop satisfaction significantly predicted outcome in individuals who completed the workshop. Although workshop satisfaction was assessed in the present study, contrary to the hypothesis, no support was found for workshop satisfaction as a prediction of outcome. However, participants in the present study did report overall satisfaction with the workshop content and format.

An integral aspect of prevention research is examining the rate of incidence of a disorder over time in the sample of interest. It was predicted that workshop participation would prevent incidence of GAD in Workshop participants; however, this may be difficult to determine. The numbers of participants is too small to make a definitive judgment about prevention of GAD, although it appears that more individuals in the Control condition developed clinically significant symptoms at twelve-months after baseline assessment than did individuals in the Workshop condition. Support for this hypothesis is further confounded by the small sample size and attrition, in addition to the use of a self-report measure to determine diagnostic criteria for GAD.

Based on the data, it can be argued that the workshop served as treatment in some instances. Specifically, for Workshop participants who met GAD criteria at baseline, examination of their reported GAD symptoms at twelve-month follow-up

revealed that they no longer met criteria for the disorder. Because these participants met GAD criteria at baseline, it is more practical to describe the effect of the workshop as treating GAD symptoms for these individuals, rather than preventing onset per se. One participant in the Workshop condition developed onset of clinically-significant GAD symptoms at six-month follow-up and continued to meet diagnostic criteria at twelve-month follow-up. In contrast, two-thirds of the Control participants who met GAD criteria at baseline dropped out of the study and five additional participants met diagnostic criteria by the study's end.

#### *Study Limitations and Methodological Considerations*

Challenges in conducting prevention research, such as measuring reduction of symptoms, change in diagnostic status, risk identification, and issues related to development of preventative interventions have been previously outlined (D. A. Clark, 2004). These challenges were attended to in the present study through careful methodological consideration. For example, consideration was given to targeting subclinical worry as a risk factor based on identification of worry as the main features of GAD (Borkovec & Diaz, 1999). Brief, self-report measures with adequate psychometric properties were used as a time and cost-efficient way to measure symptom change over time. Diagnostic status was assessed using a self-report measure of GAD symptoms. The workshop intervention was developed over the course of two pilot studies and was based on techniques included in two empirically-supported treatment protocols (i.e., Borkovec & Costello, 1993; Ladouceur et al, 2000). It was designed to be brief and delivered in group format to disseminate the

intervention to large numbers of participants. While the present study attempted to address the aforementioned challenges, there are, nevertheless, several limitations.

Perhaps the most important consideration in conducting prevention research is the definition of “at-risk” used to determine participant inclusion criteria. Much debate exists regarding identification of risk factors and sample selection in prevention research. To date, because research is lacking regarding risk factors for psychopathology, prevention research has relied upon models, measures, and treatments of a given disorder to determine risk factors (D. A. Clark, 2004). Such was the case in the present study, where worry, having been previously identified as an integral component of GAD (e.g., Borkovec & Diaz, 1999), was chosen to determine individuals at-risk for developing GAD. The generalizability of factors from etiological models and treatment literature to prevention is questionable; however, in the absence of more well-defined risk factors (protective factors), assessment of subclinical worry appears to be the most stringent approach determining an individual’s risk for developing GAD.

Another challenge in conducting prevention research involves recruiting participants who are at-risk for developing GAD, but who do not currently meet criteria for the disorder. Individuals at risk may be experiencing some symptoms of anxiety and worry, but these symptoms may not significantly interfere with functioning to the extent of impairment that individuals diagnosed with GAD experience. As a result, at-risk participants may not be as motivated to participate in a preventative intervention. It is possible that, of the individuals who were eligible to

participate in the present study, those who volunteered to do so were self-selected based on some unidentified factor (e.g., motivation to learn to cope with stressors).

The present study relied upon self-report of GAD symptoms, using the GADQ-IV (Newman et al., 2001), to determine diagnostic status. While this measure appears to have adequate psychometric properties, there may have been bias in participant symptom endorsement due to inherent issues with using self-report measures (e.g., assumption participant are responding openly and honestly) (Bieling et al., 2004). To more accurately and objectively assess and track participants' diagnostic status, use of a structured diagnostic interview may have been more appropriate. However, the GADQ-IV has been shown to have a comparable rate of diagnostic agreement to the ADIS-IV (Newman et al., 2002). Structured diagnostic interviews have limitations as well, such as being time-intensive and relying on participant report of symptoms.

While the focus of the present study was prevention rather than treatment, existing cognitive-behavioral treatment research (e.g., Borkovec & Costello, 1993; Dugas et al., 2003) suggests that several sessions (whether group or individual format) produces positive response with respect to reduction in symptom level. The present study presented a similar number of techniques to participants in an abbreviated (i.e., two session) format. Presentation of fewer topics or inclusion of more sessions so that participants achieved mastery of some or all of the techniques may have produced stronger results that would be demonstrated longitudinally. It is also possible that inclusion of "booster" sessions to review techniques with participants at various follow-up intervals (e.g., every six months) would increase the



positive effect of the intervention across time. It may also have been useful to assess the extent to which participants continued to utilize techniques they learned during the workshop throughout the follow-up period to determine if the preventative intervention was indeed producing long-term positive effects on GAD symptoms.

Further debate exists in the prevention literature (e.g., Seligman et al., 1999; D. A. Clark, 2004) about whether interventions designed to prevent incidence of a particular disorder are truly prevention or if they are more accurately labeled as treatment with maintenance. This may be especially salient for secondary prevention research, wherein, participants demonstrate some clinical symptoms of a disorder and are therefore in a position to receive alleviation of those symptoms, which may be construed as treatment rather than prevention. It is possible that the workshop intervention in the present study may have treated the symptoms that were present at the beginning of the study and the symptom relief was maintained throughout the follow-up period. Prevention research may be better implemented in samples of relatively asymptomatic individuals as opposed to individuals with subclinical levels of a disorder to address the treatment versus prevention issue.

Another limitation of the present study is the generalizability of the sample. The sample consisted entirely of college students, which, although specifically chosen based on age and exposure to what could be considered a significant stressor (i.e., beginning college), are not representative of a general community sample. In addition, to encourage initial and continued participation, participants were provided with compensation at several points in the study. They may have been more motivated to participate in the study as a result.

Prevention research necessitates the use of large samples in order to confidently conclude that incidence of the disorder has been reduced in a treated sample. While power analyses revealed that the sample size in the present study would yield adequate statistical power, base rates of incidence of GAD in a relatively small sample should be considered. It is likely that because the sample size was not large from the outset of the study, it is difficult to determine whether the intervention prevented GAD because so few participants would have developed the disorder in the course of the one-year follow-up period (D. A. Clark, 2004).

One issue often encountered in studies employing longitudinal designs is participant attrition across time. In the present study, by twelve-month follow-up, 35% of the original sample had dropped out of the study. This likely had a large impact of the size of the statistical effects found for the various dependent variables. Inclusion of data for these participants at all assessment point may have produced meaningful differences in the overall results of the study. Related to the issue of attrition is the data analysis strategy used in the present study. A statistical method such as hierarchical linear modeling (HLM) may have better captured the effect of the workshop intervention on preventing GAD. HLM estimates data points for participants with missing data at various assessment points to include all possible participants in the analyses. Use of such a strategy may have effectively addressed the issue of attrition, at least from a statistical perspective.

Long-term follow-up is an integral component when considering the preventative effect of a program; therefore, a longitudinal design that follows participants for a longer period of time than the current study did is important.

Existing prevention research (e.g., Seligman et al., 1999) followed participants for a four-year period of time to assess long-term effects of the preventative intervention. Multiple assessments that span several years to capture rate of onset of a disorder are necessary to determine the impact of a preventative intervention (D. A. Clark, 2004).

#### *Future Directions*

The present study is a promising contribution to the existing secondary prevention literature; however, given the paucity of prevention research for mental health problems in general, additional prevention research is certainly warranted. Future GAD prevention research should address a number of factors in order to best ensure that incidence of the disorder is indeed prevented in a given sample. It is clear based on existing secondary prevention research and results of the pilot studies for the present study, as well as the present study itself, that certain conceptual and methodological issues are imperative to consider when designing preventative interventions.

Conceptually, identification of risk factors is necessary for determining selection criteria for participant inclusion. Given the lack of research to assist with determining risk for development of psychopathology (e.g., GAD), research must rely on theoretical models and treatments to guide their choice of risk factors to target. Caution must be used in doing so, as it may be difficult to determine how generalizable this information is to an individual's risk of developing a disorder.

Methodologically, GAD prevention research should consider using empirically-based interventions that are cost-efficient but that include presentation of techniques across a sufficient number of sessions to ensure long-term effects of the

intervention. Selection of participants and assessment of diagnostic status is also important. Stringent, well-defined selection criteria and use of relatively objective diagnostic measures (e.g., structured clinical interviews) will likely contribute to a sample that is appropriate for intervention and in which prevention of incidence can be accurately assessed. Prevention research in general necessitates the use of large sample sizes and long-term, multi-year follow-up assessments to ensure that onset and prevention of incidence has adequately occurred. Finally, effort should also be made to reduce attrition, despite difficulty in “selling the intervention” to participants who do not meet diagnostic criteria at baseline.

Based on evidence supporting use of cognitive-behavioral techniques for successfully treating GAD (e.g., Ladouceur et al., 2000), the present study examined prevention of this disorder in the absence of pre-existing prevention research for GAD. This study provided initial evidence of the feasibility of conducting secondary prevention research for GAD. While the present study addressed many of the methodological challenges associated with prevention research in general, it was not without limitations. Attending to these limitations and challenges in future research will yield more definitive results and implications for preventing GAD. In an era of rising costs for health and mental health care, prevention programs for prevalent disorders such as GAD are important. A brief, psychoeducational workshop intervention may be a usable format for disseminating a prevention program for this and other disorders.

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## APPENDICES

## APPENDIX A

Participant #

Date

Assessment

**PSWQ**

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.
- \_\_\_ 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 done.

## APPENDIX B

Participant #  
Date  
Assessment

**GADQ-IV**

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 stop worrying) once it starts?  
Yes \_\_\_\_\_ No \_\_\_\_\_
4. Do you worry excessively or uncontrollably about minor things 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 or uncontrollably:
- |          |          |
|----------|----------|
| a. _____ | d. _____ |
| b. _____ | e. _____ |
| c. _____ | f. _____ |
6. During the last six months, have you been bothered by excessive worries more days than not?  
Yes \_\_\_\_\_ No \_\_\_\_\_
7. During the past six months, have you often been bothered by any of the following symptoms?  
Place a check next to each symptom that you have experienced more days than not:
- |   |                             |
|---|-----------------------------|
| _____ restlessness or feeling keyed up or on edge   | _____ irritability          |
| _____ difficulty falling/staying asleep or restless | _____ being easily fatigued |
| _____ unsatisfying sleep                            | _____ muscle tension        |
| _____ difficulty concentrating or mind going blank  |                             |
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 | Mild |   | Moderate |   | Severe | Very Severe |   |   |
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 |
| /    | /    | / | /        | / | /      | /           | / | / |
| None | Mild |   | Moderate |   | Severe | Very Severe |   |   |

## APPENDIX C

Participant #  
Date  
Assessment

## AAQ

Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following scale to make your choice.

1-----2-----3-----4-----5-----6-----7  
 never very seldom seldom sometimes frequently almost always always  
 true true true true true true true

- \_\_\_ 1. I am able to take action on a problem even if I am uncertain what is the right thing to do.
- \_\_\_ 2. A person who is really “together” should not struggle with things the way I do.
- \_\_\_ 3. I try to suppress thoughts and feelings that I don’t like by just not thinking about them.
- \_\_\_ 4. I try hard to avoid feeling depressed or anxious.
- \_\_\_ 5. There are not many activities that I stop doing when I am feeling depressed or anxious.
- \_\_\_ 6. It’s OK to feel depressed or anxious.
- \_\_\_ 7. It’s unnecessary for me to learn to control my feelings in order to handle my life well.
- \_\_\_ 8. Despite doubts, I feel as though I can set a course in my life and then stick to it.
- \_\_\_ 9. If I could magically remove all the painful experiences I’ve had in my life, I would do so.
- \_\_\_ 10. I am in control of my life.
- \_\_\_ 11. When I feel depressed or anxious, I am unable to take care of my responsibilities.
- \_\_\_ 12. I rarely worry about getting my anxieties, worries, and feelings under control.
- \_\_\_ 13. I’m not afraid of my feelings.
- \_\_\_ 14. When I compare myself to other people, it seems that most of them are handling their lives better than I do.
- \_\_\_ 15. Anxiety is bad.
- \_\_\_ 16. In order for me to do something important, I have to have all my doubts worked out.



## APPENDIX D

Participant #  
Date  
Assessment

**IUS**

You will find below a series of statements which describe how people may react to the uncertainties of life. Please use the scale below to describe to what extent each item is characteristic of you (please write the number that describes you best in the space before each item).

- | <b>1</b>                                       | <b>2</b>                                     | <b>3</b>                                     | <b>4</b>                                 | <b>5</b>                                     |
|--|--|--|--|--|
| <b>not at all<br/>characteristic<br/>of me</b> | <b>a little<br/>characteristic<br/>of me</b> | <b>somewhat<br/>characteristic<br/>of me</b> | <b>very<br/>characteristic<br/>of me</b> | <b>entirely<br/>characteristic<br/>of me</b> |
| ___ 1.   |  |  |  |  |
| ___ 2.   |  |  |  |  |
| ___ 3.   |  |  |  |  |
| ___ 4.   |  |  |  |  |
| ___ 5.   |  |  |  |  |
| ___ 6.   |  |  |  |  |
| ___ 7.   |  |  |  |  |
| ___ 8.   |  |  |  |  |
| ___ 9.   |  |  |  |  |
| ___ 10.  |  |  |  |  |
| ___ 11.  |  |  |  |  |
| ___ 12.  |  |  |  |  |
| ___ 13.  |  |  |  |  |
| ___ 14.  |  |  |  |  |
| ___ 15.  |  |  |  |  |
| ___ 16.  |  |  |  |  |
| ___ 17.  |  |  |  |  |
| ___ 18.  |  |  |  |  |
| ___ 19.  |  |  |  |  |
| ___ 20.  |  |  |  |  |
| ___ 21.  |  |  |  |  |
| ___ 22.  |  |  |  |  |
| ___ 23.  |  |  |  |  |
| ___ 24.  |  |  |  |  |
| ___ 25.  |  |  |  |  |
| ___ 26.  |  |  |  |  |
| ___ 27.  |  |  |  |  |

## APPENDIX E

Participant #  
Date  
Assessment

**WSQ**

Please respond to the following questions regarding your experience with the anxiety management workshops. Please circle the number that best corresponds with your opinion/experience with the workshops.

**1. How much do you think the tools that you learned in these workshops will help you manage your anxiety and worry now and in the future?**

1	2	3	4	5
not at all	somewhat	moderate	quite so	very much so

**2. How interesting did you find the workshop information and activities?**

1	2	3	4	5
not interesting		somewhat interesting		very interesting

**3. Was the material presented easy to understand?**

1	2	3	4	5
difficult	somewhat difficult	neither easy nor difficult	somewhat easy	very easy

**4. What specifically did you like about the workshops?**

**5. What did you dislike about the workshops?**

**6. Is there anything that you would change about the workshops?    Y    N**

**If so, what?**

**7. Overall, how satisfied were you with the workshops?**

1	2	3	4	5
very unsatisfied	somewhat unsatisfied	neither satisfied nor unsatisfied	somewhat satisfied	very satisfied

## APPENDIX F

**GAD Prevention: Session 1 Protocol*****Step 1: Informed Consent***

Facilitator hands out two copies of the consent form to each participant. Facilitator briefly summarizes the consent form and describes the nature of their participation as follows:

- *they will attend the 2 sessions and come back to complete questionnaires in one month, after which they will receive their 4 research credit). They will be contacted in one month's time to return to complete the questionnaires (questionnaires take about 15 minutes). Six months after they complete the workshops, they will be contacted and asked to return to complete the same questionnaires, after which they will receive \$10 for their time. They will be contacted again in 12 months and asked to return to complete the same questionnaires, after which they will also receive \$10.*

Facilitator collects one signed consent form from each participant. This exercise should answer the question “why are you here today?”

***Step 2: Handout pre-treatment assessments to complete***

After collecting the consent form from a participant, hand out a packet of pre-assessment measures, making sure to put the participants' subject number on each measure.

Paraphrase the following instructions:

- *We have a few questionnaires that we would like you to complete before beginning the group activities today. These are the same measures that you will fill out after completing both sessions. Please work efficiently to complete the measures and turn them back into the research assistant upon completion.*

Allow 20 minutes to complete the measures. After 15 minutes remind participants that they have five minutes left. Wait until all measures are collected before moving on to the next step.

***Step 3: Introduction***

Describe the overall format of the sessions:

- Talking part during which they can take notes if they want to that will last about 20 minutes and will cover explanations of anxiety, worry, and some strategies to help with them.
- Then there is an action part where we will have discussions and do activities as a group.

Then, start a brief introductory “getting to know you” exercise where you introduce yourself and have the rest of the people say their first name, their major (if they know) and what they want to get out of the sessions (if they know).

#### ***Step 4: Description of Worry***

Thank participants for coming and proceed with a description of worry from a cognitive behavioral perspective. Explain that this is a “talking part.” The description should contain the following components:

- Begin with the evolutionary significance of anxiety, fear and worry, using the example of preparing for the attack of a lion in the jungle.
- In addition, the 3-systems model of anxiety will be explained (i.e. physiology, cognition, and behavior), and diagrams will be used to illustrate the relationship between the three systems.
- Then the distinction between normal versus problematic worry will be made, and will touch on prediction and control of the future, controllability of the worry process, interference with day-to-day life, level of distress, and misconceptions about the usefulness of worry (metacognitions).
- Finally, worry will be described in the context of its avoidant function.

The specific information that should be given for each component is described below in detail. The facilitator should take care to paraphrase all of the following information and use the specific examples given to highlight each component. Each component should be described in the order given here.

#### ***Evolutionary Description of anxiety and worry***

Explain to the participants that anxiety, fear and worry are all normal human experiences. People need to experience them at appropriate times in order to survive. We can see how they developed by looking at an evolutionary perspective. Our ancestors needed to be able to detect danger in the environment and prepare for coping with threat. Panic, for instance is a fear reaction to danger.

**Example** *If one of our ancestors in the jungle happened upon a hungry lion [lionhead slide], the panic response would be a very adaptive way to help that ancestor act quickly, with an immediate strenuous action of escaping or fighting [panic lion slide]. Anxiety is a little different, it involves having the urge to fight or to flee (some of you might have heard of the “fight or flight response”) primed and ready to go before the lion shows up (imagining encountering the lion and deciding whether to try walking through the jungle).*

When the fight or flight systems get triggered the body’s physiology changes. That is, there is an increase in activities like breathing and heart rate. When the threat of danger is real, anxiety is crucial to our survival, we are now primed and ready to act. Normal worry can also serve an adaptive function. It helps people prepare for the future or problem-solve and decide on ways to cope with upcoming difficult situations.

**Example** *For instance, before starting on the trip through the jungle, that ancestor may think about what to do about encountering a lion [thinking of lion slide].*

Next, show [Calvin and Hobbs shark slide]. This slide illustrates how anxiety causes people to anticipate bad things happening.

### **3-Systems Model of Anxiety**

Paraphrase the following description of the physiology, cognition, and behaviors that are involved with anxiety.

It is also important to understand the different components that are involved in anxiety. It's a lot harder to understand or manage your anxiety if it is view as a whole "lump." The lump is a lot harder to do anything about. Has anyone ever told you (or have you told yourself) to just stop being so anxious? That is a lump approach and it doesn't really work because it doesn't tell you how to stop being anxious, or even what anxiety is. So, breaking anxiety down into component parts takes away that uncontrollable quality of anxiety. Scientists often break anxiety down into three parts: physical, behavioral, and cognitive (thinking) [3 systems model of anxiety slide].

#### **physical**

The physical part is, of course, very important. Physical feelings that often go along with anxiety are muscle tension, a rapid pulse, sweating, abdominal distress, trembling, shaking, and so on. It's your nervous system that causes the physical sensations as part of the body's protective mechanisms, and some of the sensations can themselves be anxiety-provoking when you don't fully understand them. However, keep in mind that even though some of these symptoms might be a little scary, they are not dangerous.

#### **cognitive**

What is going on in your mind during anxiety is also very important. We call this the cognitive part. The mind also prepares for danger when it is in an anxious state. As we will see later, the mind can actually be a primary reason for feeling anxious in the first place. One of the major things that happens during anxiety is that the anxious person turns their attention toward the source of threat.

**Example** *For instance, when considering the lion in the jungle example, if that person in the jungle heard a twig snap behind some trees, they would immediately turn to look and listen carefully for a lion.*

The thoughts and images in the mind become focused on wondering whether something bad is about to happen and what that might be. People often tend to believe that something bad is about to happen even though the actual probability of it happening is very low. Also, people tend to focus on the worst possible outcome instead of more positive possibilities. Anxious thoughts (the ones about all the possible negative outcomes) are referred to as *worries*. We will talk more about worry and how it plays into anxiety in a few minutes.

### **behavior**

A third component of anxiety is behavior. There are a lot of behaviors that go along with the physical and thought components, like poor concentration and irritability, or failure to begin a new project (procrastination). In addition, really anxious people might do a lot of checking in with people to see if everything is okay since they are worried that bad things might happen.

**Example** *For instance, if a student is working on paper and needs a particular book, they might call the library to see if the library has the book and to make sure that the book is in. But the person who is expecting the worst case scenario might also call a local bookstore to see if they have the book, just in case when they get to the library the book is already checked out.*

Another way to break down the “lump” (i.e., anxiety) is to understand that there are different kinds of experiences that people often describe as anxiety. People often lump together anxiety, fear, and worry, but really they are all different things, even though they are very often experienced together. Fear is the perception that there is an immediate threat around you. Anxiety is a that focuses on the future in which a person attempts to cope with upcoming negative events. Anxiety is a process that develops over time.

So, we’ve described anxiety and fear, now, what is worry? [Solicit suggestions] [**show Worry slide**]. Worry is a strategy that people use to solve problems and respond to perceived threats. So, it is focused on the future [**click slide**], rather than on the present or the past. Also, worry involves thinking [**click slide**]. In fact, a definition of worry could be [**click slide**] “anticipating problems; things we say to ourselves that we think will help us solve problems.” But from this definition, doesn’t it seem like worry would be a good thing? Let’s look at the difference between normal worry that everyone does, and worry that is causing a problem in someone’s life.

### ***Normal versus Problematic Worry***

Worry and anxiety are normal experiences, and important ones too as we’ve already said. You are here today because you indicated on a questionnaire that you worry to some extent. But how do you know whether your worry is a big problem, and could possibly develop into a bigger one? [solicit suggestions] [**show rabbit slide**].

The first question to ask is whether worrying actually helps you to solve a problem. Does worrying result in reaching a possible solution to a particular problem? Researchers have spent a lot of time looking at the worry process. When they ask people to come into the lab and worry, they find out that problematic worrying is not the same as problem solving. In fact, it even can even get in the way of finding an effective solution to a problem.

You can tell if worry and anxiety are becoming a problem for you by looking at whether they interfere with your life in important areas, like your relationships with other people or your performance in school. The most important ways that worry can interfere with your life depend on several things. One is how *excessive* it is: do you

worry all the time? Another key way that worry can become a big problem is how many things are worried about (or how *pervasive* it is): do you worry about many different areas of your life? It turns out that another really important aspect to look at in determining whether a person's worry has stepped over the threshold into the "big problem" area is, how *controllable* the worry is: can you stop worrying when you want to?

Finally, if worry becomes excessive, pervasive, and uncontrollable, and is also accompanied by other symptoms, such as muscle tension and restlessness, and these symptoms last for a long time (6 months or more), it can develop into Generalized Anxiety Disorder. GAD is a big mental health problem in the United States, and anxiety disorders are some of the most commonly diagnosed mental health problems.

### ***Worry as Avoidance* [click for next worry as avoidance slide]**

This may sound weird at first, but research has shown that worriers often use worry as a way to avoid more intense emotions. You might think that this doesn't make sense because worry is such an intense experience. But let's look more closely at what this means. Remember we said earlier that worry involves thinking. Well, how does the thinking process get started? Chances are, it started from some "trigger," **[show worry as avoidance slide (trigger only); click once]** which was based on some feeling or image that was experienced as very negative. Then after the trigger, a string of thoughts follow **[click worry as avoidance slide 3 times (to show the 3 thought bubbles)]** that lead the worrier further and further away from that trigger. The worrier might feel better at first because they have "thought" themselves far away from the intense trigger, and they might even think that all those thoughts were somehow helping them to solve a problem, but we already know that this probably isn't true. So, what happened to the original trigger? Did the worrier get over their fear or whatever feeling they were having? No, they just got further away from it without dealing with it at all. That's what we mean when we say that worry is a way to avoid more intense emotions.

Let's look at an example to help understand how worry actually causes people avoid intense emotions with their thoughts in a way that prevents them from dealing with their emotions.

***Example*** *Let's say that a young woman's Aunt calls her from California and invites her to fly out to see her. The Aunt even offers to pay for the ticket. Now, let's say the young woman (Ann) is afraid of flying because she's scared that there might be a terrorist on her plane. That's can be a pretty big fear these days, with some pretty intense emotions attached to it. Perhaps, when her Aunt invited her out and mentioned the plane, Ann got a brief image in her mind of a terrorist on the plane with a bomb and the plane blowing up. That's a pretty strong image. Now, let's say that Ann is a worrier. She might react to that fearful image with a string of thoughts like this, "will there be sky marshals? Will they check every passenger for bombs? What if they check my suitcase? Should I pack a hairdryer or will it take up too much room in the suitcase? Will my Aunt have a hairdryer? What if she doesn't like other*

*people to use her hairdryer? Could I buy one in California? Would it be more expensive than here? How much do vegetables cost in California (I wonder if they're more expensive than they are here? I have to eat fresh vegetables everyday to stay healthy. I never eat as many fresh vegetables as I should." At this point, Ann would probably tell her Aunt that she can't come because it would be too much of a hassle and the trip would be overwhelming.*

*What do you think will happen the next time Ann gets the opportunity to fly? She'll probably say no, go off with another string of worrisome thoughts, and she'll still be afraid to fly. That's what I mean when I say that worry can cause people to avoid strong emotions. Ann had a strong emotion (feeling afraid to fly) and a strong image that went along with it (imagining a terrorist on the plane with a bomb). But she didn't stay with the fear and work through it or problem solve around it. She set off on a string of thoughts that got her further and further from the initial fear. By the time Ann answered her Aunt, she didn't feel as afraid as she did when she had the initial image of the plane exploding because her string of thoughts lead her away from the worries about the terrorist with a bomb. This is what I mean when I say that worry can work in the short term; it did reduce Ann's fear. But what about in the long term? Ann is still afraid of flying so the next time anyone mentions flying she's still going to be afraid. So, anytime that fear gets triggered, Ann will worry and never get over being afraid of flying.*

Any questions?

Should Ann fly? [see if anyone mentions behavioral avoidance]

**Example (cont.)***Did you notice that Ann didn't just avoid feeling her fear of flying, but she also avoided flying all together? Behavioral avoidance is another common type of avoidance that worriers engage in. She was fearful of flying, had all those thoughts, and avoided flying to her Aunt's and will probably avoid flying again in the future. Behavioral avoidance can also cause Ann to keep her fear of flying. If she's afraid to fly and never flies she will never learn that flying is actually not bad these days (especially if you get one the new planes that has a 15 channel TV for each passenger).*

*One last thing to point out from this example. Let's say that Ann gets off the phone and goes back the homework that she was working on before her Aunt called. She's all worked up with this string of thoughts and this anxiety that goes along with it. Also, she's thinking negatively about herself ("I never eat enough vegetables"). So, do you think her homework skills are going to suffer? You bet, she's going to be distracted, probably have more negative thoughts about herself, perhaps about her ability to do her homework well, and have a hard time concentrating. This is how worry can cause people to perform more poorly on tasks.*



### ***Step 5: Facilitator overviews rationale for treatment***

After the description of anxiety and worry, the facilitator will *briefly* go over the specific treatment techniques that will be used during the two sessions (more detailed descriptions will be given prior to the introduction of each technique).

- Tie into the last section by explaining that these sessions are designed to help prevent the development of GAD in students beginning college.

Now that you have an understanding of the nature and function of worry, I am going to briefly describe some techniques that have shown to help people control and decrease worry. Remember, the purpose of learning how to have more control over your anxiety and worry is not to eliminate them. Worry and anxiety are normal things; we are going to help prevent problematic worry. We will go through an overview of the techniques that will be taught to you in more detail during today's session and the next session. Later, when you learn the techniques, I hope to broaden your understanding of them by discussing them as a group, and even by practicing them, in here and at home.

Following is a list of the techniques and the descriptions that you are to give participants. [At this point, ask participants to open their packets and take out "Treatment Techniques for Worry" and follow along as you describe the techniques they will learn] [show treatment techniques for worry slide]. Please remember to be brief, so that you can spend more time describing them later.

***Treatment Techniques for Worry*** [click slide to show each of the following headings]

1. **Self-monitoring** - an activity designed to increase awareness of the worry process and increase the ability to focus on what is happening in the present (as opposed to always worrying about what is going to happen in the future). Basically, it involves paying attention to when you are worrying and writing down on a form what you are worrying about.
2. **Relaxation Training** – This is a relatively easy activity to learn (although not so easy to practice for some people). Basically, you learn how to take a little time and just sit and relax the muscles in your body. If people practice this enough, they can use it as something to do instead of worrying
3. **Changing Unbalanced Thinking** – This is a technique that gets you to look more closely at what you are thinking about, since worriers are distressed by their thoughts. The idea is to help you increase your understanding of the relationship between thoughts and anxiety and worry. You will learn to challenge and change unhelpful thinking (that is, thinking that isn't accurate and causes you distress).
4. **Worry Exposure** – This is an activity designed to help worriers face the things they are likely avoiding when they are worrying. Basically, the idea is to take an image of something you might worry about a lot (like a plane crashing when you are traveling by air) and keep that image in your mind for

several minutes. Then, you think of all the possible alternatives to the plane crashing.

5. **Problem Solving** – This is a technique that you probably already do naturally a lot of the time. For worriers, it can be especially important to learn to problem-solve to effectively handle solvable problems instead of worrying, which doesn't actually solve a problem.

[At this point, ask if there are any brief questions]. Remind participants that they will learn a lot more about each these techniques and activities over the next two sessions. Then tell them that today they will learn Self-Monitoring. At the end they will learn a Relaxation Exercise, that people often find very enjoyable.

***Step 6: Facilitator gives detailed explanation of the relationship between thoughts feelings and behaviors***

[Ask participants to take out the handout titled, “Relationship Among Thoughts, Feelings, and Behaviors”] and use it take notes on if they need to help with the following discussion. [**show relationship between thoughts, feelings and behaviors slide**]. Define each term as follows and provide the accompanying examples:

**Situation** – Something that occurs in one's environment or it could even be some memory of something that occurred in the past or something that you read about or saw on TV.

**Example** *For instance, you are in an introductory English course and the Professor is about to hand back your first exam, which you took during the previous class.*

**Thoughts** – A person's perceptions of an event, the way they understand an event, or what is going through their mind in response to a situation.

**Example** *For instance, when the Professor says he is about to pass back the exams you think, “What if I failed?”*

**Feelings** – A person's emotional experiences.

**Example** *For instance, a rush of fear that you feel when you think that you might have failed the exam.*

**Behaviors** – What a person actually does in response to a situation that occurs.

**Example** *For instance, when the Professor hands out the exam you refuse to look at it until you get home so that if you did fail you won't burst into tears in front of the whole class.*

**Bodily Sensations** – Feelings inside the body that go along with thoughts and feelings, such as accelerated heart rate and breathing rate.

Now, explain the relationship between a situation, and the accompanying thoughts, feelings and behaviors based on the Cognitive Model. Specifically, paraphrase the following explanation, and [point to the appropriate bubble to emphasize the explanation]. People's emotions and behaviors are influenced by their perceptions of events. So, it's not the situation itself that directly determines what people feel, but how they *perceive* a situation.

**example** *Using the example of the Professor passing back an exam, imagine how some of the students in the course responded emotionally to his statement that he was about to pass back the exam. Students would have different emotional responses depending on what went through their minds.*

- *For instance, Student A might think, "I always get A's and I can't wait to get my first A in college." This student would likely be feeling excited and happy.*
- *Student B might think, "That test was harder than I expected, but I studied pretty hard and I'm pretty sure I answered the long essay question right." That thought might lead Student B to feel a little apprehensive but hopeful.*
- *Student C might think "I didn't study at for that exam at all; I hope I get at least a D so I can pass this class." Student C might be feeling anxious.*

So, the way people feel is associated with how they think about a situation. In Changing Unbalanced Thinking, what we are trying to do is look at the thoughts that automatically come into your mind in response to a situation, and how those thoughts affect your mood.

The most important thing for people who are anxious is to look at those thoughts that are causing negative emotional reactions, and to look at whether those thoughts are causing problems.

**Example** *For instance, remember the student whose automatic thought was "What if I failed?" And who had a rush of fear? Well, what if that student was actually really smart, studied really hard, and had a history of doing well in English class? Would it seem appropriate to think that they failed? Would it make sense to feel so scared you couldn't even look at your exam?" The student is engaging in unbalanced thinking and that thinking was related to the negative emotional response.*

[Once you get some feedback from participants, tell them that the next exercise will be designed to help them learn more about their automatic thoughts, how they are connected to their emotions, and how to challenge the thoughts that are unhelpful and cause a lot of problems.]

### ***Step 7: Facilitator leads exercise in self-monitoring***

Now, we are going to practice monitoring thoughts, and figuring out the connection between your thoughts, feelings and behaviors related to anxiety and worry. [Ask them to take out the self-monitoring form 1, situation, thought, feeling (rating), and behavior]

First, let's look at an example [**show self-monitoring slide one frame at a time and read along**]. Ask them to record what's written in each slide on their own self-monitoring forms as you go through the example so they'll have a model. Ask for a participant to give an example:

*“Would anyone like to offer an example of a situation that happened recently that lead them to feel moderately anxious”.*

Using the example given ask people to record on their monitoring forms each step of the process of determining what is the situation, thought, feeling, and behavior. Use a group discussion to figure out which is which.

*Then ask participants to complete the exercise individually using a recent example from their lives.*

### **Step 8: Facilitator leads a relaxation exercise [click slide]**

The final exercise for today is the relaxation practice. People who worry and are anxious often have feelings in their bodies such as muscle tension that contribute the unpleasantness of the experience. As mentioned before, the purpose of the exercise is to learn how to take a little time and just sit and relax the muscles in your body. If people practice this enough, they can use it as something to do instead of worrying. Relaxation is another good pathway to help interrupt the process of anxiety and worry.

There are many different procedures for relaxation. For instance, some people listen to soft music or practice yoga. Another procedure that is very useful is called progressive muscle relaxation training, and it is used a lot by specialists in the field of anxiety reduction. There are two parts of the process: one is for physical relaxation, and the other is for mental relaxation.

- The physical relaxation part is taught through a series of tensing and releasing exercises. It usually begins with 16 different muscle groups, and then after practice, breaks down to 8 muscle groups, then 4. Today, the purpose is to give you the basic idea of the tense and relax procedure so we are going to work on the 8 muscle group procedure.
- The mental relaxation component involves focusing on the sensations that are experienced as a result of the tensing and relaxing. That way, you remain focused on what is happening in the present and not worrying about the future.

The handout on progressive relaxation is provided so you can practice at home [point them to the PMR handout].

*Instruct participants to get into a comfortable position and sit quietly for a few seconds. Let them know that they can open or close their eyes, as feels comfortable.* Be aware of addressing the needs of any individuals with physical disabilities. Follow this procedure (taken from MAW), demonstrating each step:

1. Build up the tension in your arms by making a fist with hands, pulling up the wrists, pulling your arms back and in towards your sides. Don't dig your nails

into your hands. Remind them that the purpose of this exercise is to feel tension not pain. Feel the tension through your fingers, knuckles, hands, wrists, in the back of your arms and towards your sides, and even radiating up into your shoulders. Focus on the sensations of tension. Hold the tension for ten seconds. Now, release the arms and let them relax heavily down. Focus on your arms and feel the difference compared to the tension. Your arms feel heavy, warm, and relaxed. Relax the muscles for 20 seconds.

2. Now, build up the tension in your legs by flexing your feet, pointing your toes towards your upper body, pulling your legs together and lifting them off the chair. Feel the tension as it spreads through your feet, your ankles, your shins, your calf muscles. Feel the tension spread down the back of your leg, into your foot, under the foot, and around the toes. Feel the tightness in our upper legs. Feel the pulling sensations from your hip down and notice the tension in your legs. Focus on your legs for 10 seconds. Now, release the tension, and let your legs drop heavily onto the chair. Let the tension disappear. Focus on the feeling of relaxation. Feel the difference in your legs. Focus on the sense of comfort, warmth, and heaviness of relaxation for 20 seconds.
3. Now, build tension in your stomach by pulling your stomach toward your spine, very tight. Feel the tension. Feel the tightness and focus on that part of your body for 10 seconds. Now let the stomach go – let it go further and further. Feel the sense of warmth circulating across your stomach. Feel the comfort of relaxation (20 seconds).
4. Now, build up the tension around your chest by taking in a deep breath and holding it. Your chest is expanding, the muscles are stretched around your chest – feel the tension around your front and your back. Hold your breath for 10 seconds. Now, slowly let the air escape and breathe normally, letting the air flow in and out smoothly and easily. Feel the difference as the muscles relax in comparison to the tension (20 seconds).
5. Moving up to your shoulders, imagine your shoulders are on strings being pulled up toward your ears. Feel the tension around your shoulders, radiating down into your back and up into your neck and the back of your head. Focus on that part of your body. Describe the sensations to yourself. Focus for 10 seconds and then let the shoulders droop down. Let them droop further and further, feeling very relaxed. Feel the sense of relaxation around your neck and shoulders. Focus on the comfort of relaxation (20 seconds).
6. Build the tension around your neck by pressing the back of your neck toward the chair and pulling your chin down toward your chest. Feel the tightness around the back of the neck spreading up into your head. Focus on the tension for 10 seconds. Now release, letting your head rest heavily. Nothing is holding it up. Focus on the relaxation for 20 seconds and feel the difference from the tension.
7. Build the tension around your eyes by squeezing your eyes tightly shut for a few seconds and releasing. Let the tension disappear from around your eyes. Feel the difference as the muscles relax (20 seconds).
8. Finally, build up the tension across the upper forehead by raising your eyebrows up as high as you can. Feel the wrinkling and the pulling sensations

across your forehead and the top of your head. Hold the tension for 10 seconds and then relax, letting your eyebrows rest down and the tension leave. Focus on the sensations of relaxation and feel the difference compared to the tension (20 seconds).

9. Now, let your whole body feel relaxed and comfortable. As I count from 1 to 5, feel yourself becoming even more relaxed. One, letting all the tension leave your body. Two, sinking further and further into relaxation. Three, feeling more and more relaxed. Four, feeling very relaxed. Five, deeply relaxed. Now, as you spend a few minutes in this relaxed state, think about your breathing. Feel the cool air as you breathe in and the warm air as you breathe out. Your breathing is slow and regular. And, every time you breathe out, think to yourself the word, relax, relax, relax... feeling comfortable and relaxed. Remain this way for 30 seconds. Now, as you count backward from 5 to 1, gradually feel yourself becoming more alert and awake. Five, feeling more awake. Four. Three, feeling more alert. Two, open your eyes if they are closed. One, sitting up.

Pause for a moment so they can regroup before moving on. Ask about their experience (e.g., did they enjoy it? Find it relaxing? Difficult to concentrate?). Discuss practicing the PMR at home: might want to consider tape-recording it because it's easier than reading it; should try to find a quiet environment to practice in; also, PMR is very useful if they have trouble falling asleep at night;

### ***Step 9: Facilitator gives at-home assignment***

At this point the first session is almost over. [Ask participants to use the extra self-monitoring forms in their packets to record their anxiety and worry between now and the second session. Remind them that the instructions for the self-monitoring at-home assignment are also written up and included in their packets].

- The directions are to take out a self-monitoring form after each meal (just after breakfast lunch and dinner, or three times a day if they eat less than 3 meals a day).
  - On the self-monitoring form record a situation that made them feel anxious (if they didn't experience such a situation since the last monitoring time it is okay to leave a blank for that recording time), including the date and time of the incident.
  - Then note any thoughts associated with the incident, followed by emotions (e.g. anxiety, fear).
  - Finally, they are to note the outcome (behavior) that followed.
  - Participants are to bring the completed self-monitoring forms to the next session.

Let them know that while they don't *have* to do this at-home assignment, and it is not graded, it is important. First, express a little empathy for the amount of coursework that they have, and for the challenges of transitioning into college life.

Then, remind them that these sessions are designed to hopefully make their college experience more worry free and less anxious. List the benefits of engaging in a self-monitoring exercise – increased awareness of their anxiety and worry experience, which might even help with anxiety, allows them to begin to see the process of their own anxiety (i.e. how their particular situations, thoughts, feelings and behaviors go together in some kind of pattern), and in addition, monitoring over time helps anxious people to look for a pattern in the kinds of situations that trigger their anxiety and worry.

In addition, let them know that while the monitoring forms won't be collected during the next session, they will be used in exercises that build on what they learned today, and will help deepen their understanding of their anxiety and worry. Give them a hint about the next session, that we will be looking for the themes that cut across their anxiety and worry, and that identifying those themes will be very interesting and could be very helpful.

Tell them that it is recommended that they practice the relaxation procedure twice a week, using the relaxation handout to go through each muscle group, since the more you practice the better you get. Finally, tell them that if they should still come to the next session, even if they don't do the at-home assignment.

#### ***Step 10: Facilitator conducts a wrap-up discussion***

The final step is to conduct a very brief wrap-up discussion. First, list things accomplished today using slide [**show slide titled Summary Session 1**]. Go through each item on the slide, *briefly* describing each as related to your earlier discussion of the topics.

Let them know that although the facilitator did a lot of talking this session, next time will have much less discussion by the facilitator and more group exercises.

Let participants know that we want these sessions to be as helpful as possible for them. Therefore if there are any lingering questions about any of the information or procedures they learned today they should feel free to contact the facilitator using the contact information in the handout packet. In addition, if any questions come up regarding the at-home assignments, they should also feel free to call and ask for answers.

## APPENDIX G

**GAD Prevention Session 2 Protocol*****Step 1: Distribute handouts***

Handout packets to accompany session 2 to all participants. Thank them for coming again. Express excitement about the process they have undertaken here.

***Step 2: Going Over At-home Assignments***

Ask participants to discuss their experiences with the at-home assignments, both the relaxation procedure and the self-monitoring. In addition, ask if there were any lingering questions from last session, assuring people that if they have a question, someone else probably has the same question. If any questions come up that will be answered in today's activities, tell them that they should be answered later (and check back in at wrap-up to make sure they were). The goal here is to re-establish group rapport and bridge from the last session.

***Step 3: Challenging Anxious Thinking***

This is the biggest discussion for the day. [Ask participants to get out their self-monitoring forms #1 [show self-monitoring form 1 slide] from the At-home assignment and a blank self-monitoring form #2 [show slide] and the handout titled, "common anxious thinking."] This list includes the types of anxious thinking that will be the focus of the lecture.

First, define a "cognitive distortion"(i.e., unhelpful thought). Explain that a cognitive distortion is not to say that someone's thinking is bad, or evil, or wrong, but a cognitive distortion is a way of thinking about things that leads to a lot of negative emotions and could probably be looked at in another way. **[show slide from last session that shows the relationship between thoughts, feelings, and behaviors]** Remind them that the way we think can impact the way we feel. Next, give an example of how anxious thinking can lead to significant problems.

**Example** *Remind them of the person (Ann) from last session who was afraid to fly because she imagined a terrorist blowing up the plane. Now, imagine that Ann thinks that it is very likely that airports are swarming with terrorists who could easily make it onto a plane without getting detected and imagine that she is forced to fly because of some obligation she can't get out of. How is she going to feel once she steps into the airport and makes her way toward her gate? She is primed to look for threats, scanning every person around her, freaking out whenever she sees anyone who looks remotely like they might be a terrorist carrying a bomb. She probably feels restless, and tense, and is worrying up a storm. And why is she in such a state? Is it really that likely for a terrorist to be in an airport and get on a plane? Absolutely not. Chances are still much greater that Ann would get into a car accident on the way to the airport than being in a plane crash for any reason. So, what is*



*going on that causes this worrier to get so worked up? [Here, solicit some examples, pulling for cognitive distortions, and see if someone even mentions probability overestimation, since they have the handouts]. She is imagining the worst possible scenario.*

Next, explain that researchers who study pathological worry and Generalized Anxiety Disorder have found that there are “cognitive distortions” that are common in people who worry. The plan for this activity is to go over each of those distortions, with the goal for each of them to be able to recognize them when they pop up in their own thinking, and to learn how each of the distortions contributes to anxiety and worry.

Next, you should describe each distortion, solicit examples from participants, and explain how it is connected to anxiety [**show common anxious thinking slide**]:

- **Probability overestimation**
  - *Definition* – Overestimating the likelihood that future negative events will occur.
  - *Example* – A student is 85% certain that if they go and ask a professor a question about a term that confused them during a lecture, the professor will angrily tell the student that the lecture was clear and that he or she should figure it out on their own.
  - *Contribution to worry and anxiety* – People might avoid situations for which they incorrectly overestimate the likelihood of negative events. That avoidance keeps people from learning information that would discount the probability overestimation. In addition, during times of high anxiety, people are more likely to experience negative thoughts and images, and more likely to treat them as though they are facts, which will in turn cause anxiety to be even higher.
  - [**show meteor slide**]
  
- **Catastrophizing [click slide]**
  - *Definition* – Predicting future horrible negative events without considering other, more likely outcomes. This usually goes along with probability overestimation.
  - *Example* – If you ask someone you are interested in out on a date and they say no, you conclude that it obviously means that you will have a life of loneliness and despair, and will never find someone to love.
  - [**show two cartoons slide**]
  - *Contribution to worry and anxiety* – Having tunnel vision for horrible future negative events can lead to strings of worry about the future catastrophe. In addition, assuming there is huge threat right around the corner causes the body’s danger system to activate, which leads to lots of symptoms of anxiety.
  
- **Uncertainty Intolerance [click slide]**
  - *Definition* – tendency to react negatively to an uncertain event that has nothing to do with the likelihood that the event will occur or of any

consequences associated with it. Basically, someone who finds it difficult to deal with situations where the outcome is not clear. A thought that would go along with this belief would be, “it is bad if something is uncertain.”

- *Example* – A student is asked to play poker by a group of fellow students in the same dorm, and begins to play but starts to feel anxious and eventually leaves the game because the uncertainty involved in playing poker leads the student to react negatively.
  - *Contribution to worry and anxiety* – An individual with uncertainty intolerance would negatively evaluate uncertain situations, which occur frequently in everyday life, and perceive many sources of danger in their daily lives, which increases worry and anxiety.
- **Controllability of future [click slide]**
    - *Definition* – tendency to believe that you have personal control over future events. This goes along with uncertainty intolerance.
    - *Example* – A doctor believes that if she can only explain the patient’s options using just the right words and using a very persuasive argument, she can control whether her patient will decide to come in for a surgery he needs.
    - *Contribution to worry and anxiety* – the doctor is likely to worry about all the things she can think about that could influence her patient’s future behavior as a strategy to help her control her patient’s behavior.
  - **Metacognitions [click slide]** – false beliefs about worry that get in the way of treatment designed to disrupt the worry process.
    - **Types**
      - Worry is an effective problem solving strategy
        - *Example* – “Worrying helps me to solve problems. If I didn’t worry so much I wouldn’t be able to solve so many problems.”
        - *Dispelled* – Worry is not an effective problem-solving strategy and may get in the way of effectively solving problems.
      - Worry helps keep the future from being a surprise
        - *Example* – “If I worry about every possible outcome of something I dread then it won’t be a surprise when it happens.”
        - *Dispelled* – No one can predict the future.
      - Worry helps keep one’s mind off of really difficult things to think about
        - *Example* – “If I worry about little things like whether my car is clean then it distracts me from thinking about painful feelings.”
        - *Dispelled* – Distraction actually causes avoided feelings and images to keep popping up.

- *Contribution to worry and anxiety* – Metacognitions keep the worry and anxiety process in place by preventing the worrier from wanting to learn different, effective strategies.

Explain that learning to identify cognitive distortions can be very helpful in lessening anxiety. Because worrisome thoughts may come automatically, it is good to learn how to identify those anxious patterns of thinking whenever their anxiety level is increasing. When anxiety is going up and up, it is likely that there is some cognitive distortion occurring. The idea is to take a deep breath and take a few moments to notice how your thinking is contributing to your anxiety.

After everyone understands the cognitive distortions and is able to give some examples, [ask them to look at their completed self-monitoring forms and look for examples of cognitive distortions in the thoughts column, using the list of distortions to refer to. Ask them to take a few minutes to go over their lists and see what they can come up with.] When everyone has gone over their list, begin a group discussion, asking participants to share examples of distorted thoughts from their monitoring forms. This is also an opportunity to fine-tune their understanding of cognitive distortions.

The next component of cognitive therapy is to learn how to challenge these distortions [**show self-monitoring 2 slide**]. There are several important points to make about how to challenge thinking that should be explained to them:

- 1) Challenging thoughts does not mean flip-flopping to “positive thinking.” The goal is not to replace negative thoughts with “everything is wonderful and fine, there’s nothing in the world to worry about.” Positive thinking is just as inaccurate as negative thinking. The goal is to learn *balanced thinking*, by taking a more realistic perspective, after taking a few moments to step aside from the anxious cycle to examine the evidence available to you. Negative things do happen, so to always have positive thinking is just as unhelpful and can get in the way of problem-solving. But, negative events usually occur with a much lower likelihood than worriers predict, and with far fewer negative consequences than worriers imagine.
- 2) Thoughts and images become habit-like and so they are almost automatic. So, before we evaluate our thinking, we should consider that we might be using a set of beliefs or without being aware of the kinds of assumptions we are making.
- 3) Although beliefs and self-statement patterns can become habits and hard to break, they can be changed with practice and effort
- 4) Strategies to combat problematic thoughts [refer to handout] [**show strategies slide**]
  - a. Go through each set of questions on the slide. Tell participants that these are questions that people might ask themselves when they find that they are experiencing unhelpful/worrisome thoughts or they’re in anxiety-provoking situations.

Now, I am going to demonstrate how you can change the way you feel by challenging your thinking and coming up with a more balanced thought.

Use example of anxious thought from last session (“I failed the exam”) [**show slide of stick person depicting example**] to challenge a thought. [Next, go through balanced thinking slide one frame at a time]. [**show completed balanced thinking slide**]

Next, *ask participants to share an example of a cognitive distortion that would be associated with anxiety*. Describe each step of the process outlined on the slide [**show a blank self-monitoring 2 form slide**], being careful to offer troubleshooting advice along the way. For instance, how to distinguish between a thought and a feeling, and how to decide whether a balanced thought is appropriate (e.g. reasonable, realistic). The goal of the exercise is to develop a balanced thought that leads to a level of feeling that is tolerable. Mention that the solvable or unsolvable problem is to be left blank for now, but will be used later.

The last part of the exercise is to ask each participant to go through this process individually using the “Self-monitoring 2” form from their packets. *Ask participants to choose a thought that leads to a moderate level of anxiety and/or worry*. Caution them to not choose their most intensely anxiety-provoking situations because it is easier to learn the process by using a situation that is not so difficult (the person who offered the example for the first thought challenging exercise can sit this one out if they want or they could try another one).

When everyone has completed a form and come up with a balanced thought with an accompanying tolerable level of anxiety/worry, ask for volunteers to share their examples with the group by briefly going over their process of going from a situation to a tolerable feeling. Use as many examples as there is time for, offer compliments and suggestions for “fine-tuning” the process.

#### ***Step 4: Worry Exposure Exercise***

First, explain that you are going to conduct an exercise to show them how avoiding thoughts, feelings, and images isn’t very effective. Tell them that in the next two minutes they can think about anything in the world except a *white bear*. They can close or open their eyes and you will time them. [At the end of two minutes ask about their experience]. Then, finish with the point that even saying to yourself not to think about something involves thinking about it. The white bear example provides the foundation for understanding the usefulness of the worry exposure exercise which follows.

This exercise has three parts [**show worry exposure exercise slide; click once**]. First, you will be working with the group to identify domains that typically cause them each to worry. Next, you will help them develop a moderately fearful image that underlies the theme (with the worst possible outcome) and ask them to hold onto it for several minutes. Finally, immediately proceeding the imagery period

you will ask them to note on paper as many alternatives to the fearful scenario that they can come up with.

### **1) Identifying Worry Theme [click slide]**

Here, they are to get out their self-monitoring forms again. The instruction for this component is to *ask each participant to identify a “theme” in their worry*. Offer examples of themes that worriers often worry about, such as finances, family, their own health, the health of people they love, the state of the world, and school. Ask them to choose a theme that is moderately worrisome for them, and not to choose one that is really distressing (maybe a 5 out of 10). They don't need to share their theme with the group. Later if they want to, they can share it. At this point, ask each person if they have identified a theme and written it down. If anyone is struggling with coming up with a theme, suggest that they think about some recent event that caused them a moderate degree of anxiety.

### **2) Developing and Holding Underlying Image [click slide]**

The next step is for them to create an image based on the underlying negative emotion of the theme. Offer an example of how this is done.

***Example*** *a student who has a financial theme of their worry might have an underlying fear that they will run out of money, feel like a failure, and be totally humiliated by asking their parents for help and getting a really negative reaction from their parents. So, an image that might go along with that would be a scene in which they image themselves blowing their money recklessly, asking their parents for money and having their parents angrily refusing and calling them irresponsible.*

It doesn't have to be a long scenario, but ask them to take a few moments to really get the image clear in their minds. Suggest that they consider sounds, colors, smells, tastes, feelings, and the backdrop of the scene. This will help them get a clear image. At this point it will be important to have an assistant around in case anyone bolts from the room in distress.

The next part of this exercise is to have them close their eyes and hold the image for 5 minutes. Tell them you will be timing them. Suggest that if they find their minds wandering to simply come back to the image when that happens.

### **3) Coming up with Alternative Outcomes [click slide]**

After the five minutes are up *ask them to open their eyes and take out a piece of blank paper from their packets and a writing utensil*. Now, they are to take up to five minutes to write down as many alternative outcomes to the scene they imagined.

***Example*** *the student who imagined getting humiliated after asking their parents for money, might write down alternatives, such as taking out a low interest student loan, or asking their parents to help them come up with a financial plan.*

### ***Process Discussion***

Lead a brief discussion on their experience with the exercise. Ask for volunteers to describe what they liked and didn't like about it, as well as what might have been challenges for them to actually doing the exercise.

Finally, mention some of the challenges that often come up for people who do this exercise and offer suggestions for how to get around them

- People often find that 5 minutes feels like forever. When we do this exercise in treatment for people with GAD, we have them imagine their worry scenario for 30 minutes or more.
- People often find that their mind wanders when they are doing this exercise; it's no big deal if that was your experience, just try to bring your mind back to the scenario.
- Another thing that people mention that they have difficulty with is coming up with a really vivid scenario. It's important to create a very detailed image that will cause you to feel some anxiety. The idea here is that even though you feel anxious thinking about the image, the longer you think about it, the more used to it you'll become and your anxiety will eventually decrease. Your anxiety should also decrease after you come up with alternative explanations for your scenario.

### ***Step 5: Facilitator leads a relaxation exercise [click slide]***

Instruct participants to get into a comfortable position and sit quietly for a few seconds. Let them know that they can open or close their eyes, as feels comfortable. Be aware of addressing the needs of any individuals with physical disabilities. Follow this procedure (taken from MAW), demonstrating each step:

1. Build up the tension in your arms by making a fist with hands, pulling up the wrists, pulling your arms back and in towards your sides. Don't dig your nails into your hands. Remind them that the purpose of this exercise is to feel tension not pain. Feel the tension through your fingers, knuckles, hands, wrists, in the back of your arms and towards your sides, and even radiating up into your shoulders. Focus on the sensations of tension. Hold the tension for ten seconds. Now, release the arms and let them relax heavily down. Focus on your arms and feel the difference compared to the tension. Your arms feel heavy, warm, and relaxed. Relax the muscles for 20 seconds.
2. Now, build up the tension in your legs by flexing your feet, pointing your toes towards your upper body, pulling your legs together and lifting them off the chair. Feel the tension as it spreads through your feet, your ankles, your shins, your calf muscles. Feel the tension spread down the back of your leg, into your foot, under the foot, and around the toes. Feel the tightness in our upper legs. Feel the pulling sensations from your hip down and notice the tension in your legs. Focus on your legs for 10 seconds. Now, release the tension, and let your legs drop heavily onto the chair. Let the tension disappear. Focus on

the feeling of relaxation. Feel the difference in your legs. Focus on the sense of comfort, warmth, and heaviness of relaxation for 20 seconds.

3. Now, build tension in your stomach by pulling your stomach toward your spine, very tight. Feel the tension. Feel the tightness and focus on that part of your body for 10 seconds. Now let the stomach go – let it go further and further. Feel the sense of warmth circulating across your stomach. Feel the comfort of relaxation (20 seconds).
4. Now, build up the tension around your chest by taking in a deep breath and holding it. Your chest is expanding, the muscles are stretched around your chest – feel the tension around your front and your back. Hold your breath for 10 seconds. Now, slowly let the air escape and breathe normally, letting the air flow in and out smoothly and easily. Feel the difference as the muscles relax in comparison to the tension (20 seconds).
5. Moving up to your shoulders, imagine your shoulders are on strings being pulled up toward your ears. Feel the tension around your shoulders, radiating down into your back and up into your neck and the back of your head. Focus on that part of your body. Describe the sensations to yourself. Focus for 10 seconds and then let the shoulders droop down. Let them droop further and further, feeling very relaxed. Feel the sense of relaxation around your neck and shoulders. Focus on the comfort of relaxation (20 seconds).
6. Build the tension around your neck by pressing the back of your neck toward the chair and pulling your chin down toward your chest. Feel the tightness around the back of the neck spreading up into your head. Focus on the tension for 10 seconds. Now release, letting your head rest heavily. Nothing is holding it up. Focus on the relaxation for 20 seconds and feel the difference from the tension.
7. Build the tension around your eyes by squeezing your eyes tightly shut for a few seconds and releasing. Let the tension disappear from around your eyes. Feel the difference as the muscles relax (20 seconds).
8. Finally, build up the tension across the upper forehead by raising your eyebrows up as high as you can. Feel the wrinkling and the pulling sensations across your forehead and the top of your head. Hold the tension for 10 seconds and then relax, letting your eyebrows rest down and the tension leave. Focus on the sensations of relaxation and feel the difference compared to the tension (20 seconds).
9. Now, let your whole body feel relaxed and comfortable. As I count from 1 to 5, feel yourself becoming even more relaxed. One, letting all the tension leave your body. Two, sinking further and further into relaxation. Three, feeling more and more relaxed. Four, feeling very relaxed. Five, deeply relaxed. Now, as you spend a few minutes in this relaxed state, think about your breathing. Feel the cool air as you breathe in and the warm air as you breathe out. Your breathing is slow and regular. And, every time you breathe out, think to yourself the word, relax, relax, relax... feeling comfortable and relaxed. Remain this way for 30 seconds. Now, as you count backward from 5 to 1, gradually feel yourself becoming more alert and awake. Five, feeling

more awake. Four. Three, feeling more alert. Two, open your eyes if they are closed. One, sitting up.

### ***Step 6: Problem Orientation***

The next thing we're going to talk about is something that we call problem orientation. Problem-orientation involves the ways in which we look at and react to problems. How do you typically react to problems? [solicit some examples]. People who worry a lot often see their problems differently. I am going to go over some of the most common ways where people have trouble when it comes to orienting to problems **[show problem orientation slide]**

#### ***Failing to recognize a problem before it's "too late" [click slide]***

Sometimes people avoid seeing a problem in their daily lives when they don't want to have to deal with it. So, sometimes a problem can begin as a small one, and then if nothing is done to solve it, it becomes a really big one.

**Example** *let's think about a student whose professor asks her at the end of class to meet with him the next day. The student might feel very anxious because she does not know why the professor wants to meet with her (maybe she thinks she failed a paper). As a result, the student might decide to go out drinking that night and sleep through the meeting with the professor. What might happen to this student who avoided meeting with her professor? Well, what if the professor simply noticed that the student look confused and possibly didn't understand something he discussed in class and wanted to clarify it for her before an upcoming exam? If she avoided getting the help she needed to understand a concept (a small problem), she might end up failing the exam (a bigger problem).*

There are different ways that you can make sure that you're recognizing a problem before it is too late.

- you can listen your feelings to see if there may be a problem. If you are really anxious and upset, there might be problem around. You can ask yourself whether there is some problem that you aren't seeing that is causing these feelings.
- Another way you can help recognize problems is to make up a checklist of problems that occur pretty regularly in your life. Some examples of these kinds of problems might be: problems at work, problems in school, and financial problems. Every time these kinds of problems occur you might act like as if it was the first time they happened and act surprised and hurt. If you prepare a list of problems that tend to occur regularly in your life, you might be able to recognize problems more quickly, and you might be less freaked out when they happen.



***Thinking it is abnormal to have a problem [click slide]***

If a person thinks that having problems is abnormal, they will be more likely to try to avoid all problems, even though this isn't possible. Have you ever met anyone who has absolutely no problems? If someone instead sees a problem as a normal part of life they can put their energy into solving the problem instead of feeling annoyed that a problem is occurring.

Sometimes people think that the problem is normal, but believe that problems should be solved quickly and completely. In reality, some problems are very complicated and take a lot of time and effort to solve. So, if you remember that it is normal that it takes time and effort to solve some problems, you will be able to solve those types of problems more effectively.

***Seeing a problem as a threat rather than a challenge [click slide]***

People usually try to avoid threats in order to protect themselves. But most problems are usually somewhere between being a threat and an opportunity. People with pathological worry tend to see problems as huge threats that need to be avoided. Even if your problems feel like threats, if you are able to see them a little bit more like opportunities, it will make quite a difference in how you feel about trying to solve them. The idea is to not see the problem as 100% threat or 100% opportunity, but somewhere in between. Let's look at an example [**show slide**].

***Step 7: Problem-Solving Exercise***

This exercise also uses their completed self-monitoring forms. At this point, direct their attention to the solvable column on the monitoring form. Define solvable and unsolvable problems [**show solvable problem slide**]:

- **Solvable problem** – a situation that you have control over and has a possible solution that you can effect
- **Unsolvable problem** – a situation that you do not have any control over and may be associated with a cognitive distortion.

Now, they are to go through their #2 forms and look at the situations that they worried about and note in this column whether the situation is solvable or not solvable.

First, focus on the unsolvable problems. When they encounter a problem and decide that it is unsolvable the next step is to use the balanced thinking strategies that they learned earlier.

Explain that the next exercise focuses on what to do with solvable problems. Researchers have found that worriers often times worry about solvable problems, but that worrying doesn't actually solve a problem. As we talked about earlier, worrying

is a poor problem-solving strategy, even though worriers often believe that it is helpful.

Next, describe the steps of problem-solving [take out handout titled, “problem solving”]:

- 1) Identify a specific solvable problem
  - 2) Brainstorm all the possible solutions to the problem, no matter how far fetched they might sound
  - 3) Come up with a plan based on the best solutions identified during the brainstorming
  - 4) Follow the plan and don't change it (or worry about whether it needs to be changed) for an identified realistic length of time (which depends on the nature of the problem, but 1-2 weeks is likely a good ballpark)
  - 5) After the designated time period, evaluate the plan. Is it working?
  - 6) Modify the plan if necessary. Does it need to be modified slightly to be more effective? Have you learned anything since you developed it that could be incorporated to make it more effective? Do you need more time to see if it is going to work? Do you need to do another brainstorming session to come up with more ideas?
  - 7) Follow the plan for another 2 week period
  - 8) Continue this process until the problem is no longer a problem
- You can have different plans for more than one problem
  - Do not go back and forth between steps. Follow the process.
  - If you are having a hard time at any step, practice identifying your automatic thoughts. Are you having any cognitive distortions about problem-solving that are getting in the way of being able to solve the problem?

### ***Problem-Solving Example***

Now, ask the group for a volunteer for a solvable problem and go through each of the steps with that problem (try to pick a relatively easy one).

### ***Step 8: Wrap-up and Discussion***

#### ***Overview components of the two sessions:***

- **[show overview of 2 sessions slide #1]** Learned about Worry and Anxiety from a cognitive behavioral perspective
  - Normal versus problematic worry
  - Worry as avoidance of strong emotions
  - Connection between thoughts, feelings, and behaviors
- **[show overview of 2 session slide #2]** Learned treatment techniques to disrupt the anxiety and worry cycle

- Changing unbalanced thinking to become more realistic
- Self-monitoring of your anxiety process to better understand how you experience worry and anxiety
- Relaxation training to disrupt the anxiety process and learn another way to react
- Exposing yourself to images that underlie your worry themes and coming up with alternatives
- Problem-orientation to learn how you face a problem in ways that might contribute to anxiety
- Problem-solving techniques to effectively deal with solvable problems

***Address any lingering questions***

Answer any specific questions that you have time for and offer to answer any that pop up later or are more detailed at a later time, either on the phone or in person by making an appointment.

***Step 9: Outcome Measures***

At this point hand out the outcome measure packets and remind participants that these are the same measures that they filled out when they came in the first time. Ask them to complete all items on each form and hand them in the facilitator or research assistant when they are finished. Also, ask them to write any additional comments that they might have on a piece of paper to include with the questionnaires. Tell them that they could also email with any comments.

## APPENDIX H

**Consent Form for Screening Survey**

My name is Diana Higgins and I am a graduate student at the University of Maine. I am currently conducting a research project that will examine the effectiveness of a workshop designed to help college students learn to manage their anxiety and worry. This screening questionnaire will help us determine which individuals will qualify for the research project. You are being asked to complete the following short questionnaire because you are at least 18 years of age. The questionnaire asks about symptoms of worry (e.g., I worry all the time). You will not receive research credit for completing this questionnaire. However, if your responses indicate that you may qualify to participate in my research project, you will be contacted to be invited to participate. If you are contacted, you are not obligated to participate. If you do choose to participate in this study after qualifying, you will receive 4 hours of research credit in addition to monetary compensation for participation in follow-up assessments (\$20).

Completing this questionnaire will take approximately 3 minutes. Your responses will be confidential. Your data will be assigned an arbitrary number. If you do not qualify for the study, there will be no link between your assigned number and name. All collected data will be kept in a locked file cabinet in a laboratory at the university. There are no real benefits for you to complete these questionnaires. There are no known risks that are associated with completing these screening questionnaires.

Please sign below if you understand this consent form and agree to be contacted by a study experimenter if you qualify for the study.

---

 Your Signature

---

 Date

---

 Printed Name

---

 Telephone Number

---

 E-mail address

If you have any questions about this screening survey, please contact Diana Higgins (581-2063, 330 Corbett Hall) or Dr. Jeffrey Hecker (581-2033, 301 Little Hall). Both Diana Higgins and Dr. Hecker can be reached on First Class as well. If you have any questions about your rights as a research participant, please contact Gayle Anderson, Assistant to the Protection of Human Subjects Review Board, at 581-1498 ([gayle@maine.edu](mailto:gayle@maine.edu)).

Please turn over the page to complete the questionnaire →

### PSWQ

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.
- \_\_\_ 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 done.

Year in school:      first year \_\_\_ sophomore \_\_\_      junior \_\_\_      senior \_\_\_  
Other \_\_\_\_\_

Age \_\_\_\_\_

Have you been diagnosed with an anxiety disorder in the past year?

Yes \_\_\_ No \_\_\_

Have you taken medication or received therapy/counseling for an anxiety-related problem in the past 12 months?      Yes \_\_\_\_\_ No \_\_\_\_\_

## APPENDIX I

### **Informed Consent (Control Condition)**

You are invited to participate in a research project being conducted by the Department of Psychology. Diana Higgins, a doctoral student in the Department of Psychology, is carrying out the study and is supervised by Dr. Jeffrey Hecker. The purpose of the study is to test an approach to helping first-year students learn to manage anxiety and worry.

#### **What you will be asked to do?**

If you decide to participate, you will be asked to complete a packet of questionnaires designed to measure symptoms of anxiety and depression. On most of these questionnaires you are provided with a variety of statements (e.g., “Many situations make me worry.” “I hate being taken by surprise.” “When I am uncertain I can’t go forward.” “I am sad all the time.” “I cry more than I used to.”) and asked how well these describe you. On other questionnaires you are asked to indicate how strongly you have experienced anxiety symptoms recently (e.g., “Nervous,” “Shaky”). You can skip items if you prefer or not even respond to the questionnaires if you don’t want to. However, we encourage you to respond to all the items on each questionnaire, as your responses are important to our research.

You will be asked to return to the lab one month after the initial assessment period to complete the same questionnaires. About six months after completing the initial packet of questionnaires, we will invite you to return to complete the questionnaires in exchange for monetary compensation for your time. We will also contact you one year after completing the initial questionnaires to invite you to return to complete the same questionnaires. You will also receive monetary compensation for participation in the one-year follow-up as well. Participating in the current project does not commit you to complete any questionnaires we may send you in the future.

#### **Risks**

Completion of the questionnaires for this study allows the researchers to monitor your symptoms of anxiety and depression. It is possible that you may experience an increase in distress while completing the questionnaires because they require you to think about some potentially unpleasant feelings and behaviors.

#### **Benefits**

Upon completion of the one-month follow-up packet of questionnaires, you will receive 4 hours of research credit.

**Confidentiality**

Your name will not be on any of the questionnaires. A code number will be used to protect your identity. Data will be kept in the principal investigator's laboratory in a locked file cabinet. Only Diana Higgins, Dr. Hecker, and the graduate students working with them on this research will have access to the information you share with us. The key linking your name to the data will be destroyed after five years. The de-identified data will be kept indefinitely.

**Voluntary**

Your participation in this study is completely voluntary. You may leave the study at any time.

**Contact Information**

If you have any questions about this study, please contact Diana Higgins (581-2063, 330 Corbett Hall) or Dr. Jeffrey Hecker (301 Little Hall). Both Diana Higgins and Dr. Hecker can be reached on First Class as well. If you have any questions about your rights as a research participant, please contact Gayle Anderson, Assistant to the Protection of Human Subjects Review Board, at 581-1498 ([gayle@maine.edu](mailto:gayle@maine.edu)).

Your signature below indicates that you have read and understand the above information. You will receive a copy of this form.

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Signature

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Date

## APPENDIX J

### **Informed Consent (Workshop Condition)**

You are invited to participate in a research project being conducted by the Department of Psychology. Diana Higgins, a doctoral student in the Department of Psychology, is carrying out the study and is supervised by Dr. Jeffrey Hecker. The purpose of the study is to test an approach to helping first-year students learn to manage anxiety and worry.

#### **What you will be asked to do?**

If you decide to participate, you will be asked to participate in a two-session anxiety management workshop. Each workshop session lasts approximately two hours. You will meet with a small group (6 to 8) other students participating in the project and a group leader. The leader will take you through a variety of exercises designed to help you learn to understand anxiety and develop skills for managing anxiety.

At the beginning of the first session and the end of the second you will be asked to complete a packet of questionnaires designed to measure symptoms of anxiety and depression. On most of these questionnaires you are provided with a variety of statements (e.g., “Many situations make me worry.” “I hate being taken by surprise.” “When I am uncertain I can’t go forward.” “I am sad all the time.” “I cry more than I used to.”) and asked how well these describe you. On other questionnaires you are asked to indicate how strongly you have experienced anxiety symptoms recently (e.g., “Nervous,” “Shaky”). You will also be asked to return to the research lab one month later to complete the same packet of questionnaires.

You can skip items if you prefer or not even respond to the questionnaires if you don’t want to. However, we encourage you to respond to all the items on each questionnaire, as your responses are important to our research.

About six months after the workshop, we will invite you to return to complete the questionnaires in exchange for monetary compensation for your time. We will also contact you one year after completing the initial questionnaires to invite you to return to complete the same questionnaires. You will also receive monetary compensation for participation in the one-year follow-up assessment as well. However, participating in the current project does not commit you to complete any questionnaires we may send you in the future.

#### **Risks**

While the goal of the interventions used in this study is to reduce your anxiety, it is possible that you may experience an increase in distress while participating in the workshop. Because the intervention will be provided to you in a group format, we cannot keep the fact that you are participating in this project a secret. Other participants will know you are participating. While we encourage group participants to not share with others any information they might learn about someone



else involved in the study, we cannot guarantee that all participants will keep information confidential.

### **Benefits**

We expect that participation in the anxiety prevention workshop will lead to a decrease in general anxiety for most participants. You will be taught strategies to manage anxiety that you can continue to use in the future. Research studies have found that interventions of the type used in this research project tend to be helpful to people who are experiencing symptoms of anxiety and depression. Upon completion of the workshop and one-month follow-up questionnaires, you will receive 4 hours of research credit.

### **Confidentiality**

Your name will not be on any of the questionnaires. A code number will be used to protect your identity. Data will be kept in the principal investigator's laboratory in a locked file cabinet. Only Diana Higgins, Dr. Hecker, and the graduate students working with them on this research will have access to the information you share with us. The key linking your name to the data will be destroyed after five years. The de-identified data will be kept indefinitely.

### **Voluntary**

Your participation in this study is completely voluntary. You may leave the study at any time.

### **Contact Information**

If you have any questions about this study, please contact Diana Higgins (581-2063, 330 Corbett Hall) or Dr. Jeffrey Hecker (301 Little Hall). Both Diana Higgins and Dr. Hecker can be reached on First Class as well. If you have any questions about your rights as a research participant, please contact Gayle Anderson, Assistant to the Protection of Human Subjects Review Board, at 581-1498 ([gayle@maine.edu](mailto:gayle@maine.edu)).

Your signature below indicates that you have read and understand the above information. You will receive a copy of this form.

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Signature

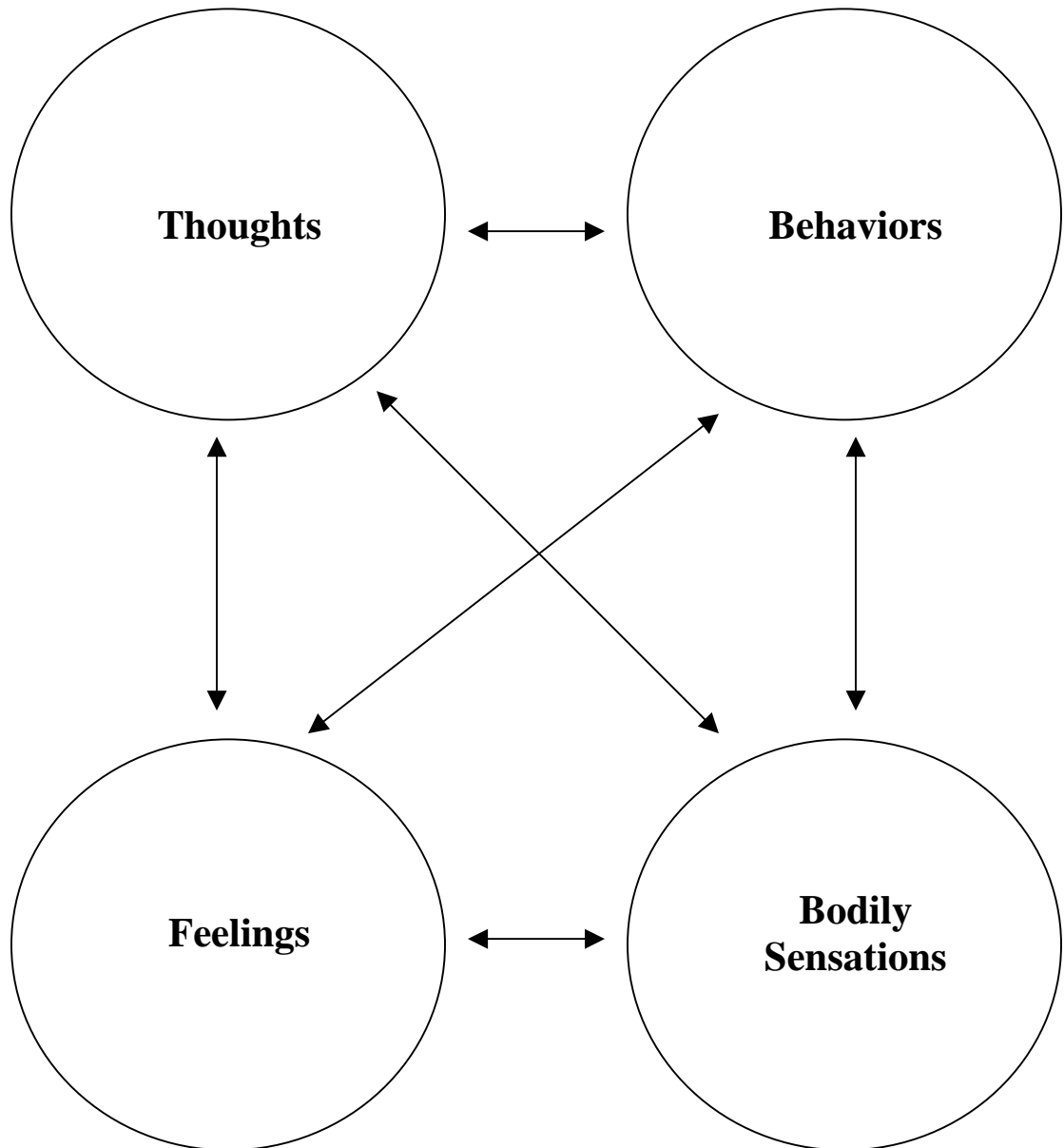
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Date

## APPENDIX K

**Workshop Session 1 Handouts***Treatment Techniques for Worry*

- 1) **Self-monitoring** - an activity designed to increase awareness of the worry process and increase the ability to focus on what is happening in the present (as opposed to always worrying about what is going to happen in the future). Basically, it involves paying attention to when you are worrying and writing down on a form what you are worrying about.
- 2) **Relaxation Training** – This is a relatively easy activity to learn (although not so easy to practice for some people). Basically, you learn how to take a little time and just sit and relax the muscles in your body. If people practice this enough, they can use it as something to do instead of worrying.
- 3) **Changing Unbalanced Thinking** – This is a technique that gets you to look more closely at what you are thinking about, since worriers are distressed by their thoughts. The idea is to help you increase your understanding of the relationship between thoughts and anxiety and worry. You will learn to challenge and change maladaptive thinking (that is, thinking that isn't accurate and causes you distress).
- 4) **Worry Exposure** – This is an activity designed to help worriers face the things they are likely avoiding when they are worrying. Basically, the idea is to take an image of something you might worry about a lot (like a plane crashing when you are traveling by air) and keep that image in your mind for several minutes. Then, you think of all the possible alternatives to the plane crashing.
- 5) **Problem Solving** – This is a technique that you probably already do naturally a lot of the time. For worriers, it can be especially important to learn to problem-solve to effectively handle solvable problems instead of worrying, which doesn't actually solve a problem.

**Relationship Among Thoughts, Feelings, & Behaviors**

*Self-Monitoring Form 1*  
*Situation, Thought, Feelings, Behavior*

<b>Situation</b>	<b>Thought</b>	<b>Feeling</b>	<b>Behavior</b>

### ***Progressive Muscle Relaxation***

One relaxation procedure that is very useful is called progressive muscle relaxation training, and it is used a lot by specialists in the field of anxiety reduction. There are essentially two components in the process: one is for physical relaxation and the other is for mental relaxation. The physical relaxation part is taught through a series of tensing and releasing exercises. Below is an 8 muscle group procedure. The mental relaxation component involves focusing on the sensations that are experienced as a result of the tensing and relaxing. That way, you remain focused on what is happening in the present and not worrying about the future. First, get into a comfortable position and sit quietly for a few seconds.<sup>11</sup>

- 1) Build up the tension in your arms by making a fist with hands, pulling up the wrists, pulling your arms back and in towards your sides. Don't dig your nails into your hands. Remind them that the purpose of this exercise is to feel tension not pain. Feel the tension through your fingers, knuckles, hands, wrists, in the back of your arms and towards your sides, and even radiating up into your shoulders. Focus on the sensations of tension. Hold the tension for ten seconds. Now, release the arms and let them relax heavily down. Focus on your arms and feel the difference compared to the tension. Your arms feel heavy, warm, and relaxed. Relax the muscles for 20 seconds.
- 2) Now, build up the tension in your legs by flexing your feet, pointing your toes towards your upper body, pulling your legs together and lifting them off the chair. Feel the tension as it spreads through your feet, your ankles, your shins, your calf muscles. Feel the tension spread down the back of your leg, into your foot, under the foot, and around the toes. Feel the tightness in our upper legs. Feel the pulling sensations from your hip down and notice the tension in your legs. Focus on your legs for 10 seconds. Now, release the tension, and let your legs drop heavily onto the chair. Let the tension disappear. Focus on the feeling of relaxation. Feel the difference in your legs. Focus on the sense of comfort, warmth, and heaviness of relaxation for 20 seconds
- 3) Now, build tension in your stomach by pulling your stomach toward your spine, very tight. Feel the tension. Feel the tightness and focus on that part of your body for 10 seconds. Now let the stomach go – let it go further and further. Feel the sense of warmth circulating across your stomach. Feel the comfort of relaxation (20 seconds).
- 4) Now, build up the tension around your chest by taking in a deep breath and holding it. Your chest is expanding, the muscles are stretched around your chest – feel the tension around your front and your back. Hold your breath for 10 seconds. Now, slowly let the air escape and breathe normally, letting the

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<sup>1</sup> A good tip for the relaxation procedure is to tape record it and play it back to yourself so that you don't have to read along as you go.

air flow in and out smoothly and easily. Feel the difference as the muscles relax in comparison to the tension (20 seconds).

- 5) Moving up to your shoulders, imagine your shoulders are on strings being pulled up toward your ears. Feel the tension around your shoulders, radiating down into your back and up into your neck and the back of your head. Focus on that part of your body. Describe the sensations to yourself. Focus for 10 seconds and then let the shoulders droop down. Let them droop further and further, feeling very relaxed. Feel the sense of relaxation around your neck and shoulders. Focus on the comfort of relaxation (20 seconds).
- 6) Build the tension around your neck by pressing the back of your neck toward the chair and pulling your chin down toward your chest. Feel the tightness around the back of the neck spreading up into your head. Focus on the tension for 10 seconds. Now release, letting your head rest heavily. Nothing is holding it up. Focus on the relaxation for 20 seconds and feel the difference from the tension.
- 7) Build the tension around your eyes by squeezing your eyes tightly shut for a few seconds and releasing. Let the tension disappear from around your eyes. Feel the difference as the muscles relax (20 seconds).
- 8) Finally, build up the tension across the upper forehead by raising your eyebrows up as high as you can. Feel the wrinkling and the pulling sensations across your forehead and the top of your head. Hold the tension for 10 seconds and then relax, letting your eyebrows rest down and the tension leave. Focus on the sensations of relaxation and feel the difference compared to the tension (20 seconds).
- 9) Now, let your whole body feel relaxed and comfortable. As I count from 1 to 5, feel yourself becoming even more relaxed. One, letting all the tension leave your body. Two, sinking further and further into relaxation. Three, feeling more and more relaxed. Four, feeling very relaxed. Five, deeply relaxed. Now, as you spend a few minutes in this relaxed state, think about your breathing. Feel the cool air as you breathe in and the warm air as you breathe out. Your breathing is slow and regular. And, every time you breathe out, think to yourself the word, relax, relax, relax... feeling comfortable and relaxed. Remain this way for 30 seconds. Now, as you count backward from 5 to 1, gradually feel yourself becoming more alert and awake. Five, feeling more awake. Four. Three, feeling more alert. Two, open your eyes if they are closed. One, sitting up.

## *At Home Assignment*

### *Self-Monitoring Exercise*

Please follow the following instructions between now and the next group meeting:

- Take out a self-monitoring form #1 after each meal (just after breakfast, lunch, and dinner, or three times a day if you eat less than three meals a day).
- On the self-monitoring form in the *Situation* column record a situation that made you feel anxious (if you didn't experience such a situation since the last monitoring time, it is okay to leave a blank for that recording time). Include the date and time of the incident.
- In the *Thought* column, note any automatic thoughts associated with the incident.
- In the *Feeling* column, note any emotions (e.g., anxiety, fear) that went along with the thought.
- Rate the intensity of the emotion on a scale from 1-10.
- In the *Behavior* column, note the outcome (behavior) that followed the situation.
- Use more than 1 self-monitoring form #1 if necessary.

Bring the completed self-monitoring forms to the next session.

### *Relaxation Exercise*

Practice the progressive muscle relaxation exercise (see handout titled, "progressive muscle relaxation") on your own in a quiet, uninterrupted setting at least two times before the next session.

## APPENDIX L

**Workshop Session 2 Handouts*****Self-Monitoring Form 1***  
***Situation, Thought, Feelings, Behavior***

<b>Situation</b>	<b>Thought</b>	<b>Feeling</b>	<b>Behavior</b>



***Self-Monitoring Form 2***  
***Balanced Thinking***

<b>Situation</b>	<b>Thought</b>	<b>Feeling</b>	<b>Evidence For</b>	<b>Evidence Against</b>	<b>Balanced Thought</b>	<b>Feeling (rating)</b>	<b>Solvable/ Unsolvable</b>

## Common Anxious Thinking

- **Probability overestimation**
  - *Definition* – Overestimating the likelihood at future negative events will occur.
  - *Example* – A student is 85% certain that if they go and ask a professor a question about a term that confused them during a lecture, the professor will angrily tell the student that the lecture was clear and that he or she should figure it out on their own.
  - *Contribution to worry and anxiety* – People might avoid situations for which they incorrectly overestimate the likelihood of negative events. That avoidance keeps people from learning information that would discount the probability overestimation. In addition, during times of high anxiety, people are more likely to experience negative thoughts and images, and more likely to treat them as though they are facts, which will in turn cause anxiety to be even higher.
  
- **Catastrophizing**
  - *Definition* – Predicting future horrible negative events without considering other, more likely outcomes. This usually goes along with probability overestimation.
  - *Example* – If you ask someone you are interested in out on a date and they say no, you conclude that it obviously means that you will have a life of loneliness and despair, and will never find someone to love.
  - *Contribution to worry and anxiety* – Having tunnel vision for horrible future negative events can lead to strings of worry about the future catastrophe. In addition, assuming there is huge threat right around the corner causes the body's danger system to activate, which leads to lots of symptoms of anxiety.
  
- **Uncertainty Intolerance**
  - *Definition* – tendency to react negatively to an uncertain event that has nothing to do with the likelihood that the event will occur or of any consequences associated with it. Basically, someone who finds it difficult to deal with situations where the outcome is not clear. A thought that would go along with this belief would be, "it is bad if something is uncertain."
  - *Example* – A student is asked to play poker by a group of fellow students in the same dorm, and begins to play but starts to feel anxious and eventually leaves the game because the uncertainty involved in playing poker leads the student to react negatively.
  - *Contribution to worry and anxiety* – An individual with uncertainty intolerance would negatively evaluate uncertain situations, which occur frequently in every day life, and perceive many sources of danger in their daily lives, which increases worry and anxiety.

- **Controllability of future**
  - *Definition* – tendency to believe that one has personal control over future events. This goes along with uncertainty intolerance.
  - *Example* – A doctor believes that if she can only explain the patient’s options using just the right words and using a very persuasive argument, she can control whether her patient will decide to come in for a surgery he needs.
  - *Contribution to worry and anxiety* – the doctor is likely to worry about all the things she can think about that could influence her patient’s future behavior as a strategy to help her control her patient’s behavior.
  
- **Metacognitions** – erroneous beliefs about worry that are barriers to treatment designed to disrupt the worry process.
  - **Types**
    - Worry is an effective problem solving strategy
      - *Example* – “Worrying helps me to solve problems. If I didn’t worry so much I wouldn’t be able to solve so many problems.”
      - *Dispelled* – Worry is not an effective problem-solving strategy and may get in the way of effectively solving problems.
    - Worry helps keep the future from being a surprise
      - *Example* – “If I worry about every possible outcome of something I dread then it won’t be a surprise when it happens.”
      - *Dispelled* – No one can predict the future.
    - Worry helps keep one’s mind off of really difficult things to think about
      - *Example* – “If I worry about little things like whether my car is clean then it distracts me from thinking about painful feelings.”
      - *Dispelled* – Distraction actually causes avoided feelings and images to keep popping up.
  - *Contribution to worry and anxiety* – Metacognitions keep the worry and anxiety process in place by preventing the worrier from wanting to learn different, effective strategies.

### Questioning Automatic Thoughts

1. What is the evidence?  
What is the evidence that supports this idea?  
What is the evidence against this idea?
2. Is there an alternative explanation?
3. What is the *worst* that can happen?  
Can I live with that?  
What is the best that can happen?  
What is the most realistic outcome?
4. What could be the effect of believing the automatic thought?  
What could be the effect of changing my thinking?
5. What should I do about it?
6. What would I tell \_\_\_\_\_ (a friend) if he or she were in the same situation?

### ***Problem-Solving Procedure***

- 1) Identify a specific solvable problem
  - 2) Brainstorm all the possible solutions to the problem, no matter how far fetched they might sound
  - 3) Come up with a plan based on the best solutions identified during the brainstorming
  - 4) Follow the plan and don't change it (or worry about whether it needs to be changed) for an identified realistic length of time (which depends on the nature of the problem, but 1-2 weeks is likely a good ballpark)
  - 5) After the designated time period, evaluate the plan. Is it working?
  - 6) Modify the plan if necessary. Does it need to be modified slightly to be more effective? Have you learned anything since you developed it that could be incorporated to make it more effective? Do you need more time to see if it is going to work? Do you need to do another brainstorming session to come up with more ideas?
  - 7) Follow the plan for another 2 week period
  - 8) Continue this process until the problem is no longer a problem
- 
- You can have different plans for more than one problem
  - Do not go back and forth between steps. Follow the process.
  - If you are having a hard time at any step, practice identifying your automatic thoughts. Are you having any cognitive distortions about problem-solving that are getting in the way of being able to solve the problem?

### *Overview of the Two Sessions*

- Learned about Worry and Anxiety from a cognitive behavioral perspective
  - Normal versus problematic worry
  - Worry as avoidance of strong emotions
  - Connection between thoughts, feelings, and behaviors
  
- Learned treatment techniques to disrupt the anxiety and worry cycle
  - Changing unbalanced thinking to become more realistic
  - Self-monitoring of your anxiety process to better understand how you experience worry and anxiety
  - Relaxation training to disrupt the anxiety process and learn another way to react
  - Exposing yourself to images that underlie your worry themes and coming up with alternatives
  - Problem-orientation to learn how you face a problem in ways that might contribute to anxiety
  - Problem-solving techniques to effectively deal with solvable problems

### **BIOGRAPHY OF THE AUTHOR**

Diana Higgins was born in Portsmouth, New Hampshire on April 25, 1978. She earned her Bachelor's degree from St. Francis Xavier University in 2001, where she graduated with highest honors in Psychology. She completed her graduate studies in Clinical Psychology at the University of Maine, earning a Master's degree in 2003 and fulfilling all requirements for the Doctoral degree in 2006. Diana was awarded a research grant from the Maine Economic Improvement Fund in 2004. She completed her predoctoral internship in Clinical Health Psychology at VA Connecticut Healthcare System-West Haven. She was recently awarded a postdoctoral fellowship through Massachusetts General Hospital/MGH Weight Center and Harvard Medical School. She has eight scholarly presentations at professional meetings. She is a member of the American Psychological Association (APA), of the APA's Division of Health Psychology, and Advancement of Behavioral and Cognitive Therapies. She has been appointed student council representative for APA's Division of Health Psychology for 2007. Diana is a candidate for the Doctor of Philosophy degree in Psychology from The University of Maine in August, 2006.