

MINDFULNESS VS. COGNITIVE RESTRUCTURING SKILLS IN ANXIETY

IMPACT OF ONE SESSION OF MINDFULNESS VS. COGNITIVE
RESTRUCTURING SKILLS ON WORRY AND ASSOCIATED SYMPTOMS IN
GENERALIZED ANXIETY DISORDER

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Abstract

Cognitive Behavioral Therapy (CBT) is recognized as an evidenced-based psychological treatment for Generalized Anxiety Disorder (GAD). Despite proven efficacy of CBT (i.e., large effect sizes), not everyone responds. One promising alternative approach is Mindfulness-based therapy, which has been shown to be effective in preliminary research in GAD. The purpose of this study was to directly compare a brief (1 hour) Mindfulness to CBT intervention to determine efficacy in reducing excessive worry and associated anxiety symptoms in a GAD population. Forty-five participants with a principal diagnosis of GAD were assessed by the Structured Clinical Interview for DSM Disorders (SCID-IV) and randomly assigned to one of three conditions: Mindfulness, CBT, or Information (control condition). Following the intervention, all participants completed daily practice for one week. Assessment consisted of self-report measures of worry and factors associated with GAD symptoms pre-and post-intervention. Overall findings did not support the main hypothesis that the brief interventions (Mindfulness and CBT) would be associated with a significant reduction in worry compared to the control group. However, group differences on factors associated with GAD were found. Individuals in the CBT condition reported a significant reduction in current level of general anxiety symptoms compared to the Mindfulness and Information conditions. Individuals in both CBT and Mindfulness conditions reported a significant reduction in current stress symptoms compared to the Information condition. In addition the CBT condition also demonstrated a trend for reduction in symptoms of depression compared to both Mindfulness and Information conditions. In summary, although a more intensive intervention may be

needed to affect chronic worry, the CBT intervention was associated with greater benefit than the mindfulness intervention and may be useful as a brief pre-treatment intervention for individuals on a waitlist for standard treatment.

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List of Abbreviations

- i. GAD - Generalized Anxiety Disorder
- ii. CBT - Cognitive Behavioral Therapy
- iii. MBCT - Mindfulness-based Cognitive Therapy
- iv. MBSR - Mindfulness-based Stress Reduction
- v. SCID - Structured Clinical Interview for Diagnostic Statistical Manual Disorders
- vi. DSM-IV - Diagnostic Statistical Manual of Disorders, Version 4
- vii. ATRC - Anxiety Treatment & Research Centre
- viii. ANOVA - Analysis of Variance
- ix. TEF - Therapy Evaluation Form
- x. GAD-7 - Generalized Anxiety Disorder 7-item
- xi. PSWQ - Penn State Worry Questionnaire
- xii. MWQ - Meta-Worry Questionnaire
- xiii. BMWS - Brief Measure of Worry Severity
- xiv. TCQ - Thought Control Questionnaire
- xv. MCQ-30 - Meta-Cognitions Questionnaire 30-item
- xvi. IUS - Intolerance of Uncertainty
- xvii. DASS-21 - Depression, Anxiety, Stress Scales 21-item
- xviii. PHQ-15 - Patient Health Questionnaire 15-item

Declaration of Academic Achievement

I am pleased to be declaring my research contribution in the form of my Master's Thesis to the field of psychology, as well as that of my supervisor, Dr. Randi McCabe, and collaborators, Dr. Brenda Key and Dr. Karen Rowa.

i. Introduction

Generalized Anxiety Disorder (GAD) is characterized by excessive, persistent, uncontrollable worry and maladaptive avoidance that interferes with everyday functioning (Greeson & Brantley, 2009). The constant worry of worry that is experienced by one with GAD creates affective and physiological stress, often resulting in poor emotion reactivity and regulation (Greeson & Brantley, 2009). Lifetime prevalence estimates of generalized anxiety disorder is reported to be 5.7% with a projected lifetime risk at 75 years of 8.3% (Kessler et al., 2005).

Various cognitive behavioral models have been proposed to enhance our understanding of the development and maintenance of GAD. These models place differential emphasis on key factors that may each have a role in understanding the disorder including conceptualizing worry as a form of avoidance (Thomas D. Borkovec, Alcaine, & Behar, 2004), the role of information-processing biases (MacLeod & Rutherford, 1992), intolerance of uncertainty (Dugas, Freeston, & Ladouceur, 1997), and meta cognition, including positive and negative beliefs about worry (Wells, 1995).

Recent research has been dedicated to the impact and effectiveness of various psychotherapeutic methods (e.g., Mindfulness-based Stress Reduction, Mindfulness-based Cognitive Therapy, Applied Relaxation) for alleviating levels of anxiety and worry amongst patients with generalized anxiety disorder (Butler, Chapman, Forman, & Beck,

2006; Hofmann, Sawyer, Witt, & Oh, 2010). Of these psychological interventions, Cognitive Behavioral Therapy (CBT) has been shown to be most effective.

Cognitive Behavioral Therapy: CBT is a psychological intervention based on the central idea that cognitive and behavioral factors influence emotional disturbance (Beck & Emery, 2005; Butler et al., 2006; Hofmann & Smits, 2008). CBT techniques include, cognitive restructuring and behavioral strategies (e.g., exposure, relaxation training, response prevention) (Hofmann & Smits, 2008). In GAD, CBT generally involves 12 weekly sessions from a treatment manual. The main goal of CBT for GAD is to reduce chronic, excessive, uncontrollable worry by helping patients develop greater tolerance for uncertainty in their everyday lives and by providing patients skills to detect anxiety cues, and employ strategies to manage psychological and somatic symptoms (Evans et al., 2008). The 12-week program consists of 1) psychoeducation and worry awareness training; 2) recognition of uncertainty and behavioral exposure; 3) re-evaluating the usefulness of worry; 4) problem-solving technique training; 5) imaginal exposure training; and 6) relapse prevention (Dugas, Francis, & Bouchard, 2009).

Several meta-analyses of controlled clinical trials provide support for the use and efficacy of CBT for GAD (Deacon & Abramowitz, 2004; DeRubeis & Crits-Christoph, 1998; Durham, Chambers, MacDonald, Power, & Major, 2003; Gould, Otto, Pollack, & Yap, 1997). Results from meta-analyses (Butler et al., 2006; Norton & Price, 2007) indicate that treatments using CBT techniques demonstrated significantly larger treatment

outcome effect sizes compared to no treatment or placebo across a range of anxiety disorders.

Specifically, large effects sizes were found in GAD in a review of meta-analyses (Butler et al., 2006). Gould et al. (1997) reported that CBT and pharmacotherapy showed similar levels of improvement from pre- to post-treatment ($ES_u = 0.70$ and 0.61 , respectively); in respect to long-term outcome, Gould et al. (1997) found that CBT treatment effect sizes were maintained through at least 6 months post-treatment ($ES_u = 0.05$). Similar findings were reported in several other GAD clinical trials looking at long-term outcome (T D Borkovec & Costello, 1993; DeRubeis & Crits-Christoph, 1998; Durham et al., 2003).

Despite proven efficacy of CBT (i.e., large effect sizes), not everyone responds. Some individuals may have partial response, or do not achieve full remission. For example, a study by Ninan (2001) reports that nearly twice as many patients in treatment for GAD achieve partial remission compared to those who achieve full remission, and the persistence of residual symptoms in many patients who respond to treatment is underscored (Ninan, 2001). Others may not complete treatment at all and drop-out early. For example, in a study conducted by Dugas and colleagues (2003), reports of 5 of 48 (10.4%) participants dropped out of the CBT condition (Dugas et al., 2003). Similar drop-out rates of an average of 8.3% were reported by Borkovec and colleagues (2002) (Thomas D. Borkovec, Newman, Pincus, & Lytle, 2002). Thus, there is a need for alternative and augmentative treatment options. Therapeutic interventions involving

Mindfulness-based approaches have been noted as a promising but less researched intervention for alleviating symptoms of anxiety. Mindfulness cultivates the skill to disengage from negative thoughts and dysfunctional cognitive routines by paying attention to the present moment, on purpose, and non-judgmentally (Segal, Williams, & Teasdale, 2002) rather than by changing one's cognitions.

Mindfulness-based Therapy: Mindfulness based interventions are based on the cultivation of skills to allow individuals to disengage from habitual, automatic, dysfunctional cognitive routines, by paying attention to the present moment, on purpose, and non-judgmentally (Kabat-zinn, 2003; Segal et al., 2002). Various mindfulness-based therapies have been developed over the years, including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT). Evidence from various studies examining the efficacy of MBSR and MBCT on GAD, suggests mindfulness based interventions may be helpful for decreasing anxiety symptoms in this clinical population (Evans et al., 2008; Hoge et al., 2013; Kim et al., 2009) and in a range of other anxiety disorders (e.g., (Evans et al., 2008; Miller, Fletcher, & Kabat-Zinn, 1995; Vøllestad, Sivertsen, & Nielsen, 2011). A central feature of anxiety disorders is cognitive and behavioral reactivity to internal experience. Specifically, the tendency toward negative self-focus accompanied by attempts to cope via maladaptive approaches (e.g., avoid, worry, control, or suppress) and control thoughts and emotions (Roemer, 2008) . In the most basic sense, Kabat-Zinn (2003) discussed the fundamental premise underlying mindfulness practices, which is not only to experience the present moment non-judgmentally and openly, but to do so on purpose so that an one can effectively counter

the effects of life stressors, because constant orientation towards past or future events when dealing with dysfunctional stress can be related to feelings of depression and anxiety. Furthermore, it is believed that by teaching one to respond to stressful events in a reflective vs. reflexive manner, mindfulness based therapies can effectively counter experiential avoidance strategies (i.e., attempts to alter intensity or frequency of unwanted internal experiences). The skill of reflecting, rather than reacting can be cultivated using the 3-minute breathing space meditative exercise. The exercise is designed to allow one to become aware of the present moment, gather one's full attention to breathing and tune one into a state of awareness, and to expand the field of one's awareness around breathing, creating objectivity between the self and one's automatic thoughts (Segal et al., 2002). Thus, mindfulness provides an alternate avenue, shifting from an automatic positive feedback loop consisting of excessive fear, worry and avoidance and negative emotions to, wise responsivity and behavioral flexibility.

In GAD, Mindfulness-based approaches (i.e., MBCT and MBSR) have traditionally followed a treatment manual approach. Typically, an MBCT or MBSR program is delivered by an experienced instructor. The program is companioned with a manual that includes psychoeducation about stress and meditation techniques, including body scan meditation, sitting meditation and mindful yoga (Evans et al., 2008; Kabat-zinn, 2003). Participants are also introduced to mindful eating and walking. Each weekly session follows an agenda and focuses on a specific formal and informal MBCT or MBSR technique. In addition to the mindfulness exercises, cognitive exercises are also

employed, including observing the associations between worry thoughts, feelings, and behavior, in which participants are then asked to engage in weekly homework practice.

The skills that are cultivated from various forms of Mindfulness-based therapies, as well as those developed from CBT are aimed to alleviate symptomology of GAD. However, not only does either therapeutic approach cultivate a different skill set, but less is known to what extent each one is efficacious in alleviating the symptomology of interest, the persistence of excessive worry.

To date there have been no studies directly comparing the relative efficacy of CBT to Mindfulness for GAD, which leaves the question of which approach is more efficacious for worry reduction. In an attempt to shed light on this question, the purpose of the present study was to directly compare a core CBT skill of cognitive restructuring to a core Mindfulness skill using a brief one-hour intervention/treatment session. An Information condition was chosen as the control because it was not expected to reduce worry symptoms and factors associated with GAD. Participants with a principal diagnosis of GAD were randomly assigned to one of three conditions: Mindfulness, CBT, or Information (control). Participants in all three conditions completed measures to assess worry frequency and severity, anxiety, and associated symptoms before and after the intervention. The following hypotheses were made:

Hypothesis 1. It was expected that both treatment intervention conditions would show a reduction in trait worry compared to the control condition.

Hypothesis 2. It was expected that both treatment interventions conditions would show reductions in factors associated with GAD, specifically: problematic beliefs, anxiety, depression and stress, and intolerance of uncertainty, compared to the control condition.

Hypothesis 3. It was expected that participants in both of the intervention conditions would similarly report that the interventions appeared credible and would have positive expectations about outcomes (as measured by the Therapy Evaluation Form).

ii. Method

Participants

Participants were patients recruited from the Anxiety Treatment and Research Centre (ATRC) at St. Joseph's Healthcare, Hamilton. In addition, advertisements for the study were also posted in different locations of the hospital to aid with study recruitment. All participants had a principal diagnosis of GAD as assessed using the Structured Clinical Interview (SCID) for the Diagnostic and Statistical Manual IV (DSM-IV) (First, Spitzer, Gibbon, & Williams, 1997). Assessments were conducted by clinicians at the ATRC and by the study investigator. Inclusion criteria for study participation included: 1) medication to be stable for at least 1 month; 2) aged 16-65; 3) willing and able to attend an intervention at ATRC focused on teaching either cognitive behavioral skills or mindfulness meditation skills; 4) did not have previous experience with mindfulness meditation specific to the treatment of GAD, or if had previous experience then had not

been practicing for at least one year, 5) did not have previous experience with formal cognitive behavioral therapy specific to the treatment of GAD, or if had previous experience then had not been practicing for at least one year. Forty-five patients with a principal diagnosis of GAD met study eligibility criteria and were randomly assigned to either the CBT, Mindfulness, or Information on GAD (control) condition. Subject numbers were randomized to one of the three conditions using a three-digit random number generator procedure. All assignments were computer based and not predictable. Participants were assigned to a number based on the order that they volunteered for the study. The clients were blinded during the pre-assessment but not during the administration of the treatment. The evaluators were not blinded to the treatment. Fig. 1 illustrates participant flow in the study.

Procedures and Study Design

The study involved two types of brief skills training/interventions: Mindfulness which includes psychoeducation specific to Mindfulness and practice of a 3-minute breathing space meditation exercise, and CBT which includes psychoeducation specific to CBT, with specific focus on cognitive restructuring, and practice of a thought record. The information/control group received psychoeducation specific to the development, causes, symptoms, and risk factors of GAD.

The study involved two visits separated by one week. Visit 1 consisted of all patients completing an initial assessment (pre-intervention assessment) self report questionnaire package measuring GAD symptom severity, and worry frequency and severity. All participants were then asked to participate in two cognitive tasks that will be reported in another study. Following both cognitive tasks, participants were randomly assigned to one of three conditions (i.e., CBT, Mindfulness, or Information/control). Participants in each condition attended a one-hour session and then completed assigned daily homework for one week. A follow-up/check-in telephone call was conducted at mid-week during the 7-day homework practice in order to follow-up on how participants were finding the practice and to remind participants to continue regular practice of the core skill. Visit 2 consisted of all participants attending a post-intervention assessment. During the post-intervention assessment, all participants were asked to repeat completion of a self report questionnaire package given at the pre-intervention assessment. Following completion of the post-intervention assessment questionnaire package, participants were asked to also repeat both cognitive tasks presented at visit 1. Participants in the intervention conditions (CBT and Mindfulness) completed the Therapy Evaluation Form at visit 1, following the brief intervention/treatment session.

Treatment

The three conditions (CBT, Mindfulness, and Information) were facilitated by a second year graduate student. The facilitator was from McMaster University in the Department of Psychology, Neuroscience & Behavior, working under the supervision of

two clinical psychologists. The intervention took place at the ATRC, St. Joseph's Healthcare, Hamilton. Both treatment and control conditions were tailored to patients with a specific diagnosis of generalized anxiety disorder. Personal symptoms and experiences with anxiety were discussed and used as examples in order to educate and provide skills training techniques to patients. A standardized script with details of the exercises used for each condition was utilized to ensure standardization of the delivery of each condition across participants (See Appendix I for brief treatment intervention scripts).

Cognitive Behavioral Therapy Intervention (Cognitive Restructuring - Thought Records):

The CBT intervention was one hour in duration and consisted of education and skills training, and home practice (at least once a day for seven days) with daily thought records. The education was derived from a number of sources on the meaning, philosophy, and practice of CBT, with specific focus on cognitive restructuring. The skills training closely followed the Thought Record protocol. A thought record is a journal in which one writes down negative thoughts and analyzes them systematically. A thought record gives one an opportunity to reflect on their way of thinking after that thinking has occurred, when one is not reacting out of distressing emotion, and has the opportunity to provide more adaptive alternative modes of thinking. Conclusively, a thought record is based upon the skill of cognitive restructuring. Where cognitive restructuring helps one to replace maladaptive coping skills (i.e., worry), cognitions,

emotions and behaviors with more adaptive ones, by challenging one's way of thinking and way of reacting to certain events or behaviors.

Mindfulness Intervention (3-minute Breathing Space): The Mindfulness intervention was one hour in duration and consisted of education and skills training, and home practice (at least once a day for seven days) with a CD of the 3-Minute Breathing Space. The education was derived from a number of sources on the meaning, philosophy, and practice of Mindfulness. The skills training closely followed Segal et al. (2002) MBCT Session 3: The 3-Minute Breathing Space - Basic Instructions protocol. In addition, to the 3-Minute Breathing Space, the Raisin Exercise (given by Kabat-Zinn, 2003) was used to provide a better understanding of greater present moment awareness and the experience of mindfulness. The 3-Minute Breathing space is a guided meditation aimed at cultivating greater present moment awareness by using the breath as an anchor to disengage from cognitions, creating space between the self and one's thoughts.

Information Condition (Psychoeducation on GAD): The Information condition was one hour in duration and consisted of education on GAD and home practice (keeping a daily report of GAD symptoms for seven days using the GAD-7). The education was derived from a number of sources on the definition, history, symptoms, and available treatments for GAD.

Instruments

Emotional and symptom assessment instruments

Penn State Worry Questionnaire (PSWQ). Trait worry level was measured using the PSWQ, this 16-item scale measures excessive and uncontrollable worry (Meyer, Miller, Metzger, & Borkovec, 1990). All items are rated on a 5-point Likert scale from 1 (*not at all typical of me*) to 5 (*very typical of me*), yielding a total score ranging from 16 to 80, with higher scores indicating greater worry levels. The PSWQ possesses high internal consistency, good short-term test-retest reliability, and convergent and criterion related validity (Brown, Antony, & Barlow, 1992; Meyer et al., 1990). The measure has been found to significantly discriminate between college samples who met all, some, or none of the DSM-III-R diagnostic criteria for GAD and who met criteria for GAD vs post traumatic stress disorder (Meyer et al., 1990). (See Appendix II)

Meta-Worry Questionnaire (MWQ). The MWQ was used to measure meta-worry. The MWQ is a 7-item scale assessing the danger aspect of meta-worry and assesses the frequency of meta-worry and belief level (Wells, 2005). This instrument was constructed as a means of testing the metacognitive model in the context of DSM-IV generalized anxiety disorder. The MWQ is meaningfully correlated with other measures of metacognition, showing significantly stronger positive correlations with negative beliefs about worry than with positive beliefs about worry measured with the MCQ. In terms of discriminative validity, the MWQ differentiated nonpatients meeting criteria for DSM-IV

GAD from two groups of individuals classified as having somatic anxiety or no anxiety (Wells, 2005). (See Appendix II)

Brief Measure of Worry Severity (BMWS). Trait worry was measured using the BMWS which assesses severity and dysfunctional worry (Gladstone et al., 2005). The measure consists of 8-items that are scored on a 0-3-scale, where 0 indicates (*not true at all*) to 3 indicating (*definitely true*), yielding a total score ranging from 0 to 24, with higher scores indicating greater severity and dysfunctional worry (Gladstone et al., 2005). Each item corresponds to a component of dysfunctional worry: impairment of interference, uncontrollability, associated mood disturbance, associated indecision: thwarted problem solving, associated anxiety, catastrophic cognitions, meta-cognitions: concern about excessive worrying, and negative emotional consequences (Gladstone et al., 2005). The BMWS demonstrates strong internal consistency and with good item-total correlations (Gladstone et al., 2005). (See Appendix II)

Thought Control Questionnaire (TCQ). Thought control was measured using the TCQ (Wells & Davies, 1994). This 30-item self-report scale assesses the effectiveness of strategies used for the control of unpleasant and intrusive thoughts. Items are scored on a 4-point rating scale with 1 (*never*) to 4 (*almost always*). The TCQ measures five factors that correspond to different strategies for controlling unpleasant and intrusive thoughts: distraction, social control, worry, punishment, and reappraisal. The TCQ subscales have

been shown to have good internal consistency and test-retest reliability (Wells & Davies, 1994). (See Appendix II)

Metacognitions Questionnaire 30 (MCQ-30). Metacognitions (i.e., beliefs about thinking) were measured using the MCQ-30 (Wells & Cartwright-Hatton, 2004). The MCQ-30 contains 30 self-report items measuring beliefs about thinking. Responses are indicated on a 4-point scale ranging from 1 (*do not agree*) to 4 (*agree very much*). A five-factor structure exists: (1) positive beliefs about worry; (2) negative beliefs about the uncontrollability of thoughts and corresponding danger; (3) cognitive confidence; (4) negative beliefs about thoughts in general/need to control thoughts; and (5) cognitive self-consciousness. The MCQ-30 total score and subscales have been shown to have good internal consistency (Wells & Cartwright-Hatton, 2004). (See Appendix II)

Intolerance of Uncertainty (IUS). Intolerance of uncertainty was measured using the IUS. This 27-item scale is related to the idea that uncertainty is unacceptable, reflects badly on a person, and leads to frustration, stress, and the inability to take action (Buhr & Dugas, 2002). Items are rated on a 5-point Likert scale ranging from 1 (*not at all characteristic of me*) to 5 (*entirely characteristic of me*). IUS is considered to be a very important construct involved worry (Buhr & Dugas, 2002). Factor analysis indicate that the IUS has a four-factor structure that represents the idea that uncertainty is stressful and upsetting, uncertainty leads to the inability to act, uncertain events are negative and should be avoided, and being uncertain is unfair (Buhr & Dugas, 2002). The IUS has excellent

internal consistency ($\alpha = .94$), good test-retest reliability over a 5-week period, and convergent and divergent validity when assessed with symptom measures of worry, depression, and anxiety (Buhr & Dugas, 2002). (See Appendix II)

Depression and Anxiety Stress Scales (DASS-21). Distress levels were measured using the DASS-21. This scale has 21 self-administered items, measuring distress along three axes: depression, anxiety (symptoms of psychological arousal), and stress (the more cognitive, subjective symptoms of anxiety) (Lovibond & Lovibond, 1995). Each scale consists of 7-items. Items are scored on a 0-3-scale, where 0 indicates (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*) (Lovibond & Lovibond, 1995). Its psychometric properties have been shown to be good in clinical (Antony, Bieling, Cox, Enns, & Swinson, 1998) and non-clinical (Crawford & Henry, 2003; Lovibond & Lovibond, 1995) populations. (See Appendix II)

Patient Health Questionnaire 15-Item Somatic Symptom Severity Scale (PHQ-15). The PHQ-15 is a somatic symptom subscale derived from the full Patient Health Questionnaire (PHQ) which is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-15 is comprised of 15 somatic symptoms from the PHQ. Items are scored from 0 (*not bothered at all*) to 2 (*bothered a lot*). The PHQ-15 is a continuous measure of somatic symptom severity and total score on this measure is divided into several categories. A score of 0-4 indicates minimal levels of somatic symptom severity, 5-9 indicates low levels of somatic symptom severity, 10-14

indicates medium levels of somatic symptom severity, and 15-30 indicates high levels of somatic symptom severity. The PHQ-15 exhibits significant internal consistency, and test re-test reliability (Han et al., 2009). (See Appendix II)

Homework Log. In order to monitor adherence to the brief skills training/intervention, participants were asked to complete a homework log reporting the total minutes of meditation (or number of times they practiced the *thought record*) they practiced for homework each day, a rating of their practice, whether they completed their homework and a rating of factors that interfered if they did not complete their homework. (See Appendix II)

Therapy Evaluation Form (TEF). The TEF is a 6-item self-report questionnaire used as a measure of treatment expectancy and rationale credibility for use in clinical outcome studies. It is suggested that results from this measure derive two predicted factors (cognitively based credibility and relatively more effectively based expectancy) and that these factors are stable across populations (Deville & Borkovec, 2000). This self-report measure demonstrates high internal consistency within each factor and good test-retest reliability (Deville & Borkovec, 2000). The credibility and expectancy factor composite scores also produced high test-retest reliability (Deville & Borkovec, 2000). Since the TEF utilizes two rating scales, one from 1 to 9 and another from 0% to 100% in steps of 10% (Appendix of the TEF), it needs to be standardized first prior to forming the composite scores. The raw scores were first converted to z-scores, then the z-scores from

question 1 to 3 were summed to form the credibility composite score and questions 4 to 6 were summed to form the expectancy composite score. All questions were assigned equal weight since each question had similar loadings by factor analysis (Deville & Borkovec, 2000). (See Appendix II)

Generalized Anxiety Disorder 7-Item (GAD 7). The GAD 7 is used as a screening tool and severity measure of generalized anxiety disorder. Scores are calculated by assigning 0-3 to response categories, "not at all," "several days," "more than half the days," and "nearly every day." Then all 7 scores are added together to create a total score. A score of 5 indicates mild, 10 indicates moderate, and 15 indicates severe anxiety. Scores of 5, 10, and 15 are taken as the cut off points for mild, moderate, and severe anxiety, respectively. When used as a screening tool, further evaluation is recommended when the score is 10 or greater. Evidence supports reliability and validity of the GAD-7 as a measure of anxiety in the general population (Lowe et al., 2008). For the purposes of the current study, the GAD-7 was used as a required daily symptom report measure over the course of seven days for the information condition, in place of the practice given by both treatment conditions (CBT or Mindfulness condition). (See Appendix II)

Data Analysis

Power Analysis

In selecting a sample size for this study, the goal was to have 80% power to test the primary hypothesis regarding the ability of a brief 1-hour treatment intervention of either

CBT or Mindfulness to reduce worry and factors associated with GAD in comparison to a control condition (i.e., Information condition). The criterion for statistical significance was $\alpha = .05$ (two-tailed) and a small effect size was expected given the very brief duration of the intervention (one-session). A sample size calculator was used to conduct sample size power (DSS Research, 2013) based on a study comparing MBSR to CBSR (Smith et al, 2008). A total sample of 45 participants were recruited to participate in the study (15 per condition).

Statistical Analysis

Baseline group differences were examined using a series of one-way Analysis of Variance (ANOVAs) for continuous variables and Chi Square analyses for categorical variables. To test the differential efficacy of each approach, mixed model analyses of variance (ANOVAs) with one within subject factor (time: pre, post) and one between subject factor (condition: CBT, Mindfulness, Information) were used for each outcome measure. Significant interactions were examined using t tests to examine a priori hypotheses and post hoc Tukey HSD multiple comparisons to explore significant effects were there were no a priori hypotheses.

Data Analytic Approach

Hypothesis 1. The prediction that both treatment interventions would show a reduction in worry (as measured by the PSWQ) compared to the control condition, was tested using a 3 (Condition: Mindfulness, CBT, Information) X 2 (Time: Time 1, Time 2) mixed model ANOVA for worry (as measured by the PSWQ).

Hypothesis 2. A series of 3 (Condition: Mindfulness, CBT, Information) X 2 (Time: Time 1, Time 2) mixed model ANOVAs for each of the symptom measures (MCQ-30, DASS-21, IUS) was used to evaluate the prediction that both treatment interventions would show reductions in factors associated with GAD, specifically: in problematic beliefs (MCQ-30), depression, anxiety and stress (DASS-21) and intolerance of uncertainty (IUS), compared to the control condition.

Hypothesis 3. The prediction that participants in both of the intervention conditions would similarly report that the interventions appeared credible and would have positive expectations about outcome (as measured by the Therapy Evaluation Form), was tested using a t-test comparing total scores on the TEF between the Mindfulness and CBT conditions.

iii. Results

Baseline characteristics

Patient characteristics and diagnostic information are presented in Tables 1 and 2. All participants in the sample had a primary diagnosis of GAD. Twenty-one participants (47%) had a comorbid mood disorder, while twenty-six participants (58%) had at least one comorbid anxiety disorder. ANOVAs as well as independent samples *t*-tests and chi-square tests, were used to compare the conditions on demographic variables and outcome variables at baseline. At baseline, there was no significant difference between the conditions on gender (71% female and 29% male of complete sample ($X^2(2, N = 45) = 1.514, p = .469$), race ($X^2(2, N = 45) = 2.045, p = .360$) (note that 97% of participants were Caucasian), or onset age ($M = 21.53, SD = 11.980$) ($F(2, 42) = 0.988, p = .381$) (Table 1). Significant between group differences were found on the following baseline outcome measures examining worry, and factors associated with GAD: DASS-21 (Depression): $F(2,42) = 36.163, p = .004$; DASS-21 (Anxiety): $F(2,42) = 5.869, p = .006$; DASS-21 (Stress): $F(2,42) = 3.218, p = .050$; PSWQ: $F(2,42) = 4.514, p = .017$; MWQ: $F(2,42) = 4.195, p = .022$; BMWS: $F(2,42) = 4.273, p = .020$; IUS $F(2,42) = 3.214, p = .050$; and MCQ_30 (Negative beliefs about uncontrollability of thoughts and danger subscale), $F(2,42) = 4.095, p = .024$ (Table 2). Where significant differences were detected between groups at baseline, further analysis using Tukey HSD multiple comparisons were conducted. These analyses revealed significant baseline differences between the CBT and Mindfulness conditions in BMWS (mean difference +4.400, $p = .022$) with the CBT group showing higher scores on the BMWS compared to the mindfulness group at baseline, higher scores on the PSWQ (mean difference +8.667, $p = .021$), higher scores on the DASS-21 depression subscale (mean difference +6.533, $p =$

.007), higher scores on the DASS-21 anxiety subscale (mean difference +3.800, $p = .028$). Higher scores on the DASS-21 depression subscale (mean difference +5.800, $p = .018$) was found between CBT and Information, as well as higher scores on the DASS-21 anxiety subscale (mean difference +4.533, $p = 0.007$), MWQ (mean difference +5.467, $p = .020$), and MCQ30 negative subscale (mean difference +4.000, $p = .018$). In summary, the results indicate that the CBT group reported more severe symptoms of worry, depression, anxiety, and stress compared to the mindfulness and information groups at baseline.

Attrition and adherence to treatment

Of the 49 patients recruited for the present study, four (8%) patients did not return for the post-treatment assessment. There is no known reason as to why all four participants did not show for the post-treatment assessment.

Of the 45 study completers, every participant was able to provide a completed homework log. Participants recorded that they practiced their CBT or mindfulness practice at least once per day over a one-week period, with most participants reporting more than the required practice.

Treatment effect on reducing worry and associated anxiety symptoms

Hypothesis 1. Mixed model-ANOVA analysis indicated a significant main effect of treatment condition on trait worry ($F(2, 42) = 4.758, p = .014$). There was no

significant main effect of time ($F(1, 42) = 0.620, p = .436$). Last, there was no significant interaction effect between condition and time on trait worry ($F(2, 42) = 1.959, p = .154$). However, further follow-up independent t-tests were conducted to examine differences between conditions (CBT, Mindfulness, Information) at testing session one and testing session two on trait worry (PSWQ). Results revealed that there was a significant difference in worry between CBT ($M = 73.27, SD = 6.330$) and Mindfulness ($M = 64.60, SD = 10.013$) conditions at testing session one: $t(15) = 2.834, p = .008$; and at testing session two: CBT ($M = 71.13, SD = 6.163$) and Mindfulness ($M = 61.93, SD = 11.967$): $t(15) = 2.647, p = .013$. There was also a significant difference between CBT ($M = 73.27, SD = 6.330$) and Information ($M = 65.93, SD = 8.762$) condition at testing session one: $t(15) = 2.627, p = .014$, but not at testing session two. Overall, it appears that the CBT condition reported higher worry severity at both testing sessions compared to Mindfulness and higher worry severity at testing session one compared to the Information condition. (Table 2). Overall, there is no difference among groups on trait measure of worry from testing session one to testing session two.

Hypothesis 2. Mixed model-ANOVA analyses showed a significant interaction on some factors associated with GAD (DASS-21, IUS, MCQ-30 Negative sub-scale) as well as some significant main effects of condition, and main effects of time (Table 3). These results were then explored in detail.

DASS-21 (Depression).

There was a significant main effect of treatment condition on symptoms of depression, ($F(2,42) = 4.344, p = .019$). There was no significant main effect of time, ($F(1,42) = 3.716, p = .061$). There was a trend for an interaction, ($F(2,42) = 3.053, p = .058$). To explore the interaction, further follow-up independent t-tests were conducted to examine differences between conditions (CBT, Mindfulness, Information) at testing session one and testing session two on symptoms of depression (DASS-21 - Depression subscale). Results revealed that there was a difference in symptoms of depression between CBT ($M = 12.07, SD = 6.181$) and Information ($M = 6.27, SD = 5.147$) conditions at testing session one: ($t(15) = 2.793, p = .009$) but not at testing session two. There was also a difference between CBT ($M = 12.07, SD = 6.181$) and Mindfulness ($M = 5.53, SD = 5.370$) conditions at testing session one on symptoms of depression: ($t(15) = 3.090, p = .004$) but not at testing session two. There was no difference between Mindfulness and Information conditions at both testing sessions on symptoms of depression. To examine the interaction, further follow-up paired-samples t-tests showed that the CBT condition, the DASS-21 depression subscale demonstrated a trend for mean reduction of [$3.000 \pm 5.782 (t(14) = 2.010, p = .064)$] from testing session one to testing session two. The changes in the Mindfulness condition [$.067 \pm 1.580 (t(14) = .163, p = .872)$] and the Information condition [$.133 \pm 2.326 (t(14) = .222, p = .827)$] from testing session one to testing session two were not significant. Overall, the CBT condition reported greater depression symptom severity at testing session one compared to both Mindfulness and Information conditions but showed improvement in session two.

DASS-21 (Anxiety).

There was a trend for main effect of treatment condition on symptoms of anxiety ($F(2, 42) = 3.173, p = .052$). There was a significant main effect of time on symptoms of anxiety ($F(1, 42) = 6.065, p = .018$) and there was a significant interaction of time x treatment condition ($F(2,42) = 5.353, p = .008$). To examine the interaction, further follow-up paired-samples t-tests showed that the CBT condition, the DASS-21 anxiety subscale demonstrated a significant mean reduction of 2.933 ± 3.494 ($t(14) = 3.251, p = .006$) from testing session one to testing session two. The changes in the mindfulness condition [933 ± 2.712 ($t(14) = 1.333, p = .204$)] and the information condition [$-.600 \pm 2.613$ ($t(14) = -.889, p = .389$)] from testing session one to testing session two were not significant. Thus, the CBT condition demonstrated a significant within group difference from testing session one to testing session two on reducing symptoms of anxiety. These findings were confirmed by the large effect size seen in the results of the DASS-21 anxiety subscales in the CBT condition but not Mindfulness or Information conditions (Cohen's $d = .74$ for the CBT condition, $.28$ for the Mindfulness condition, and $-.15$ for the Information condition; Table 5).

DASS-21 (Stress)

There were no significant main effect of treatment conditions on symptoms of stress ($F(2, 42) = 2.269, p = .116$). However, there was a significant main effect of time ($F(1, 42) =$

9.823, $p = .003$) and a significant interaction of time x treatment condition ($F(2,42) = 4.843, p = .013$). To examine the interaction, follow-up paired-samples t-tests showed that both the CBT group [3.200 ± 4.313 ($t(14) = 2.874, p = 0.012$)] and the mindfulness group [2.600 ± 3.542 ($t(14) = 2.843, p = .013$)] reported a significant reduction in symptoms of stress compared to the information condition [$-.667 \pm 3.016$ ($t(14) = -.856, p = .406$)]. These findings were confirmed by the large effect size seen in the results of the DASS-21 stress subscales in the CBT condition but not Mindfulness or Information conditions (Cohen's $d = .78$ respectively for the CBT condition, $.50$ for the Mindfulness condition, and $-.17$ for the Information condition; Table 5). Overall, there were differences among groups on symptoms of stress from testing session one to testing session two, with both CBT and Mindfulness conditions reporting decreases in symptoms of stress and the Information condition reporting a slight increase in symptoms of stress.

IUS

There was a trend for a main effect of treatment condition on level of intolerance of uncertainty ($F(2, 42) = 2.696, p = .079$). There was no significant main effect of time on level on intolerance of uncertainty ($F(1, 42) = 0.089, p = .766$). There was a trend for an interaction of time x treatment condition ($F(2,42) = 2.643, p = .083$). To examine the trend for interaction, follow-up paired-samples t-tests showed that from time 1 to time 2, neither the CBT condition [2.667 ± 9.715 ($t(14) = 1.063, p = .306$)] nor the mindfulness condition [3.600 ± 12.894 ($t(14) = 1.081, p = .298$)] reported significant differences in

intolerance of certainty There was a trend for the information condition to report an increase in intolerance of uncertainty from time 1 to time 2 [-4.800 ± 10.016 ($t(14) = -1.856, p = .085$)]. Overall, there were no significant differences among groups on levels of intolerance of uncertainty from testing session one to testing session two with a trend for the information condition to have a worsening of intolerance of uncertainty over time.

MCQ-30 (Negative sub-scale)

There was a significant main effect of treatment condition on negative beliefs about uncontrollability of thoughts and danger ($F(2, 42) = 3.761, p = .031$). There was no significant main effect of time ($F(1, 42) = 0.228, p = .635$). There was a significant interaction of time x treatment condition ($F(2, 42) = 3.296, p = .047$). To examine the interaction, follow-up paired-samples t-tests showed while the CBT condition [$.667 \pm 3.132$ ($t(14) = .824, p = .424$)] and the mindfulness condition [1.600 ± 3.996 ($t(14) = 1.551, p = .143$)] reported no significant change from time 1 to time 2, there was a trend for the information condition to have a worsening of negative beliefs [-1.533 ± 3.090 ($t(14) = -1.921, p = .075$)] on the MCQ-30 subscale.

MWQ

There was a significant main effect of treatment condition on meta-worry (i.e., thoughts about worry) ($F(2, 42) = 4.751, p = .014$). There was no significant main effect of time ($F(1, 42) = 0.391, p = .535$). There was no significant interaction of time x treatment

condition ($F(2, 42) = 1.131, p = .332$). However, further follow-up independent t-tests were conducted to examine differences between conditions (CBT, Mindfulness, Information) at testing session one and testing session two on meta-worry (MWQ). Results revealed that there was no significant difference in meta-worry between CBT ($M = 20.60, SD = 6.080$) and Mindfulness ($M = 16.73, SD = 5.444$) conditions at testing session one: ($t(28) = 1.835, p = .077$); but there was a significant difference at testing session two: CBT ($M = 20.07, SD = 5.496$) and Mindfulness ($M = 15.53, SD = 4.596$): ($t(28) = 2.451, p = .021$). There was also a significant difference between CBT ($M = 20.07, SD = 5.496$) and Information ($M = 15.13, SD = 8.762$) condition at testing session one: ($t(28) = 2.852, p = .008$), and at testing session two, CBT, ($M = 15.13, SD = 8.762$), Information ($M = 15.13, SD = 8.762$), ($t(28) = 2.451, p = .021$). There were no differences between Mindfulness and Information conditions at both testing sessions. Overall, it appears that the CBT condition reported higher meta-worry at both testing sessions compared to Information and higher meta-worry at testing session two compared to the Mindfulness condition. (Table 2). Overall, there is no difference among groups on meta-worry from testing session one to testing session two.

BMWS

There was a significant main effect of treatment condition on worry severity ($F(2, 42) = 6.682, p = .003$). There was a significant main effect of time ($F(1, 42) = 5.678, p = .022$). There was no significant interaction of time x treatment condition ($F(2, 42) = .362, p = .698$). However, further follow-up independent t-tests were conducted to examine

differences between conditions (CBT, Mindfulness, Information) at testing session one and testing session two on worry severity (BMWS). Results revealed that there was a significant difference in worry severity between CBT ($M = 20.93$, $SD = 4.044$) and Mindfulness ($M = 16.53$, $SD = 4.438$) conditions at testing session one: ($t(28) = 2.838$, $p = .008$); and a significant difference at testing session two: CBT ($M = 20.27$, $SD = 3.262$) and Mindfulness ($M = 14.80$, $SD = 5.171$): ($t(28) = 3.463$, $p = .002$). There was also a significant difference between CBT ($M = 20.93$, $SD = 4.044$) and Information ($M = 17.47$, $SD = 4.533$) condition at testing session one: ($t(28) = 2.210$, $p = .035$), and at testing session two, CBT, ($M = 20.27$, $SD = 3.262$), Information ($M = 16.20$, $SD = 3.649$), ($t(28) = 3.218$, $p = .003$). There were no differences between Mindfulness and Information conditions at both testing sessions. Overall, it appears that the CBT condition reported higher worry severity at both testing sessions compared to both Information and the Mindfulness condition. (Table 2). Overall, there is no difference among groups on worry severity from testing session one to testing session two.

PHQ-15

There was a significant main effect of treatment condition on somatic symptoms ($F(2, 42) = 1.378$, $p = .963$). There was no significant main effect of time ($F(1, 42) = 9.028$, $p = .004$). There was no significant interaction of time x treatment condition ($F(2, 42) = 1.932$, $p = .158$). However, further follow-up independent t-tests were conducted to examine differences between conditions (CBT, Mindfulness, Information) at testing session one and testing session two on somatic symptoms (PHQ-15). To examine the

main effect of time, follow-up paired-samples *t*-tests showed that only the Mindfulness condition [2.000 ± 2.952 ($t(14) = 2.624$, $p = .020$)] reported a significant reduction in somatic symptoms compared to both CBT [1.467 ± 3.044 ($t(14) = 1.866$, $p = .083$)] and Information conditions [$.133 \pm 1.885$ ($t(14) = .274$, $p = .788$)]. Overall, it appears that the Mindfulness condition reported differences on reports of somatic symptoms from testing session one to testing session two compared to both CBT and Information conditions. (Table 2). Overall, there is no difference among groups on reports of somatic symptoms from testing session one to testing session two.

MCQ-30 (Overall) and TCQ

There were no significant main effects of treatment condition or time as well as no significant time by condition interaction effects for these outcomes variables. Means and standard deviations are reported in Table 2. The results of these ANOVAs are reported in Table 3 .

Hypothesis 3. The overall group means for the CBT condition for the credibility (measuring levels of credibility of treatment) subscale were ($M = -.4780$, $SD = 3.139$), and for the Mindfulness condition ($M = .4780$, $SD = 1.843$). The overall group means for the CBT condition on the expectancy subscale (measuring levels of expected treatment gains) were ($M = .3420$, $SD = 2.466$), and for the Mindfulness condition ($M = -.3420$, $SD = 2.895$). The independent *t*-test analyses indicated that there were no significant differences between the Mindfulness and CBT conditions in terms of reported

intervention credibility with mean difference of $-.956 \pm .939$, ($t(28) = -1.017$, $p = .320$) and expectancy with mean difference of $.684 \pm .981$, ($t(28) = .696$, $p = .492$). Overall, both treatment conditions found the brief 1-hour treatment intervention to be both credible and expected to see improvement change in symptoms.

iv. Discussion

To our knowledge this is the first randomized controlled trial employing an active control condition (Information condition) to examine the effects of a brief one hour treatment intervention of either CBT or Mindfulness on GAD.

In hypothesis 1 we explored the differential efficacy of the treatment interventions (CBT and Mindfulness) on reducing trait worry, and found that both treatment conditions showed no significant reductions in worry (as measured by the PSWQ) compared to the control condition. It may be that the intervention was too brief to significantly impact chronic worry. In fact, standard treatments for GAD having major impact on chronic worry tend to be 12 sessions and thus more intensive intervention may be needed beyond the one session approach used in this study.

In hypothesis 2 we explored whether the two brief treatment interventions (CBT and Mindfulness) had a significant impact on symptoms associated with GAD including state levels of depression, anxiety, and stress, intolerance of uncertainty, problematic beliefs, meta-worry, worry severity, and physical symptoms. The brief CBT intervention was associated with a significant reduction in both state anxiety and state depression

compared to the mindfulness and control conditions. Both the brief CBT and mindfulness conditions were associated with significant reductions in state stress compared to the control condition. These findings are encouraging and suggest that both the CBT and mindfulness interventions were associated with some benefit in levels current stress symptoms with CBT having a stronger impact with additional improvement in current levels of general anxiety. The increased efficacy of CBT to affect current general anxiety, stress and depression compared to mindfulness may suggest that cognitive restructuring (where one methodically addresses potential worries directly by considering alternative perspectives using concrete evidence) is a more effective skill to directly affect mood state. Although the mindfulness intervention was associated with improvements in current stress, it may require a greater length of time to develop the skill set of disengaging from worries and cultivating a non judgmental and compassionate approach to managing anxiety.

The CBT and mindfulness interventions did not have a significant impact on other outcome measures of interest including intolerance of uncertainty, worry severity, problematic beliefs, and somatic concerns. It may be that a longer intervention period is required to affect change in these areas.

In hypothesis 3 we examined treatment intervention credibility and expectancy of treatment intervention outcome, results demonstrate that there were no significant differences between CBT and Mindfulness conditions in terms of reported intervention credibility and expectancy. It appears that participants in both treatment interventions subjectively found treatments to have potential utility and reported

motivation to see change. Both CBT and Mindfulness conditions were found to be credible and expectations of treatment intervention outcome were consistent to the participants before and after the brief one-hour therapeutic session.

The study has several limitations. First, the sample size was relatively small, though powered adequately. Larger-scale replications of the study in other settings and environments are needed, particularly since a number of the analyses showed trends for significance. Replication will enhance the generalizability of the above findings and take unknown potential confounders into account. Another study limitation was the higher baseline reported severity of worry and factors associated with GAD in the CBT condition compared to both Mindfulness and the Information conditions such that the groups were not equivalent at baseline despite randomization. This factor also may influence the findings and thus replication is needed. Third, the study included participants who were actively taking psychiatric medication. Although this factor was not controlled for across groups (i.e., there was random assignment), it was a requirement that participants taking medication be on a stable dose so that observed symptom changes could be interpreted as due to the intervention rather than the medication. Last, the present study lacked a short-term or long-term follow-up assessment. Including a follow-up of 3-, 6- and 12-months would have allowed for analysis of maintenance and sustainability of brief treatment outcome. We would hypothesize that the mindfulness condition may have been associated with delayed gains due to the practice required to develop the skill set.

In conclusion, findings from the present study suggest that although neither of the brief interventions was associated with a reduction in chronic worry, both CBT and mindfulness were associated with a significant reduction in current stress levels and the CBT condition had greater efficacy as it was also associated with a significant reduction in level of current general anxiety. It is likely that a more intensive intervention is required to shift levels of chronic worry. A case for brief intervention may not lead to significant reduction but may serve the purpose of maintaining the symptoms of GAD at a tolerable level, whereas, if left untreated worsen overtime. Indeed, on some measures such as intolerance of uncertainty, the control group showed a worsening of symptoms from time 1 to time 2. The results of this study suggest that CBT would be a better choice over mindfulness if one were planning a brief treatment option for reducing current symptoms of stress, anxiety, and depression for patients on a wait-list for a full-course of treatment. Although broader literature on brief treatment interventions has not been examined in populations with GAD. Similar brief treatment interventions of a one-hour session of CBT have been conducted in populations with specific phobias (Ollendick et al., 2009; Öst, Svensson, Hellström, & Lindwall, 2001) and cannabis use disorders (Copeland, Swift, Roffman, & Stephens, 2001). Results from these studies have demonstrated treatment gains from pre- to post-treatment intervention and maintenance at one-year follow-up (Ollendick et al., 2009; Öst et al., 2001). These promising findings shed light on the effectiveness and use of such brief treatment interventions to help alleviate discomforting symptoms.

Future studies should investigate comparing both treatment interventions in a more in-depth fashion, where both CBT and mindfulness meditation are taught on a larger scale, incorporating more material, instruction time, and practice time. This study used only one piece of each intervention and thus, does not represent a true test of the differential efficacy of the two approaches. It is possible that a subset of patients not responding to CBT for GAD may benefit from mindfulness meditation. Alternatively, the subset of patients who did not entirely benefit from the mindfulness meditation may consider some brief treatment/skills training from CBT. Replication of this study in a different setting with a larger sample size, using randomized controlled methods to compare both full scale treatments would be a logical next step. This approach will permit examination of the determinants of success in comparing two promising approaches to reducing worry and factors associated with GAD.

v. References

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Table 1.

Patient characteristics and diagnostic information of completer sample.

	CBT (<i>n</i> = 15)		Mindfulness (<i>n</i> = 15)		Information (<i>n</i> = 15)	
	n	%	n	%	n	%
Gender						
Female	12	80.0	11	73.3	9	60.0
Male	3	20.0	4	26.7	6	40.0
Marital status						
Single/divorced	9	60.0	7	46.7	6	40.0
Married/common law	6	40.0	8	53.3	9	60.0
Primary diagnosis						
GAD	15	100.0	15	100.0	15	100.0
Comorbid mood disorder	10	66.7	7	46.7	4	26.7
Comorbid anxiety disorder	10	66.7	7	46.7	9	60.0
Medication	10	66.7	12	80.0	8	53.3
	Mean	SD	Mean	SD	Mean	SD
Onset age	19.1	12.2	25.0	13.7	20.5	9.8

Abbreviations: GAD = Generalized Anxiety Disorder.

Table 2.

Means and standard deviations of treatment groups pre- and post-intervention.

Variables	CBT (<i>n</i> = 15)		Mindfulness (<i>n</i> = 15)		Information (<i>n</i> = 15)	
	M	SD	M	SD	M	SD
PSWQ						
Pre-treatment	73.27	6.330	64.60	10.013	65.93	8.762
Post-treatment	71.13	6.163	61.93	11.967	68.13	7.999
MWQ						
Pre-treatment	20.60	6.080	16.73	5.444	15.13	4.257
Post-treatment	20.07	5.496	15.53	4.596	15.87	3.720
BMWS						
Pre-treatment	20.93	4.044	16.53	4.438	17.47	4.533
Post-treatment	20.27	3.262	14.80	5.171	16.20	3.649
TCQ						
Pre-treatment	61.40	10.041	62.33	8.591	58.47	9.311
Post-treatment	60.80	9.182	63.00	9.820	61.87	7.405
MCQ-30						
Pre-treatment	73.73	12.268	68.27	10.767	65.40	11.319
Post-treatment	73.67	12.063	64.67	13.756	68.67	9.217
*MCQ-30 Neg						
Pre-treatment	19.60	3.224	17.20	4.475	15.60	3.756
Post-treatment	18.93	2.737	15.40	4.837	17.13	2.924
IUS						
Pre-treatment	91.33	22.563	72.47	25.335	72.53	22.465
Post-treatment	88.67	23.763	68.87	25.958	77.33	27.015
*DASS-21(depression)						
Pre-treatment	12.07	6.181	5.53	5.370	6.27	5.147
Post-treatment	9.07	5.216	5.47	5.693	6.13	4.868
*DASS-21 (anxiety)						
Pre-treatment	9.07	4.267	5.27	2.890	4.53	4.340
Post-treatment	6.13	3.642	4.33	3.697	5.13	3.758

***DASS-21**

(stress)

Pre-treatment	14.73	3.712	11.27	5.106	11.13	4.291
Post-treatment	11.53	4.438	8.67	5.246	11.80	3.764

PHQ-15

Pre-treatment	10.07	5.120	9.93	4.114	9.07	5.203
Post-treatment	8.60	3.501	7.93	3.432	8.93	5.007

Abbreviations: CBT = Cognitive behavioral therapy group; PSWQ = Penn State Worry Questionnaire; MWQ = Meta-Worry Questionnaire; BMWS = Brief Measure of Worry Severity; TCQ = Thought Control Questionnaire; MCQ-30 = Metacognitions Questionnaire-30 (total score); MCQ-30 Neg (subscale) = Negative beliefs about uncontrollability of thoughts and danger subscale; IUS = Intolerance of Uncertainty Scale; DASS-21 = Depression Anxiety Stress Scale-21); PHQ-15 = Patient Health Questionnaire-15.

* $p < .05$ indicate significant interaction effect

Table 3.
Hypothesis 1 & 2: Change in worry and factors associated with GAD by Condition
 Statistical Analyses
 ANOVA Results

Outcome Measure	Time Effect		Condition Effect		Interaction Effect	
PSWQ	$F(1, 42) = 0.620$	$p = .436$	$F(2, 42) = 4.758$	$p = .014^*$	$F(2, 42) = 1.959$	$p = .154$
DASS-21 Depression	$F(1, 42) = 3.716$	$p = .061$	$F(2, 42) = 4.344$	$p = .019^*$	$F(2, 42) = 3.053$	$p = .058$
DASS-21 Anxiety	$F(1, 42) = 6.065$	$p = .018^*$	$F(2, 42) = 3.173$	$p = .052$	$F(2, 42) = 5.353$	$p = .008^*$
DASS-21 Stress	$F(1, 42) = 9.823$	$p = .003^*$	$F(2, 42) = 2.269$	$p = .116$	$F(2, 42) = 4.843$	$p = .013^*$
IUS	$F(1, 42) = 0.089$	$p = .766$	$F(2, 42) = 2.696$	$p = .079$	$F(2, 42) = 2.643$	$p = .083$
MCQ-30 Negative Thoughts	$F(1, 42) = 0.228$	$p = .635$	$F(2, 42) = 3.761$	$p = .031^*$	$F(2, 42) = 3.296$	$p = .047^*$
MCQ-30 (Total Score)	$F(1, 42) = 0.008$	$p = .930$	$F(2, 42) = 2.204$	$p = .123$	$F(2, 42) = 1.729$	$p = .190$
MWQ	$F(1, 42) = .391$	$p = .535$	$F(2, 42) = 4.751$	$p = .014^*$	$F(2, 42) = 1.131$	$p = .332$
BMWS	$F(1, 42) = 5.678$	$p = .022^*$	$F(2, 42) = 6.682$	$p = .003^*$	$F(2, 42) = .362$	$p = .698$
TCQ	$F(1, 42) = 1.383$	$p = .246$	$F(2, 42) = .333$	$p = .719$	$F(2, 42) = 1.443$	$p = .248$
PHQ-15	$F(1, 42) = 9.028$	$p = .004^*$	$F(2, 42) = 1.378$	$p = .963$	$F(2, 42) = 1.932$	$p = .158$

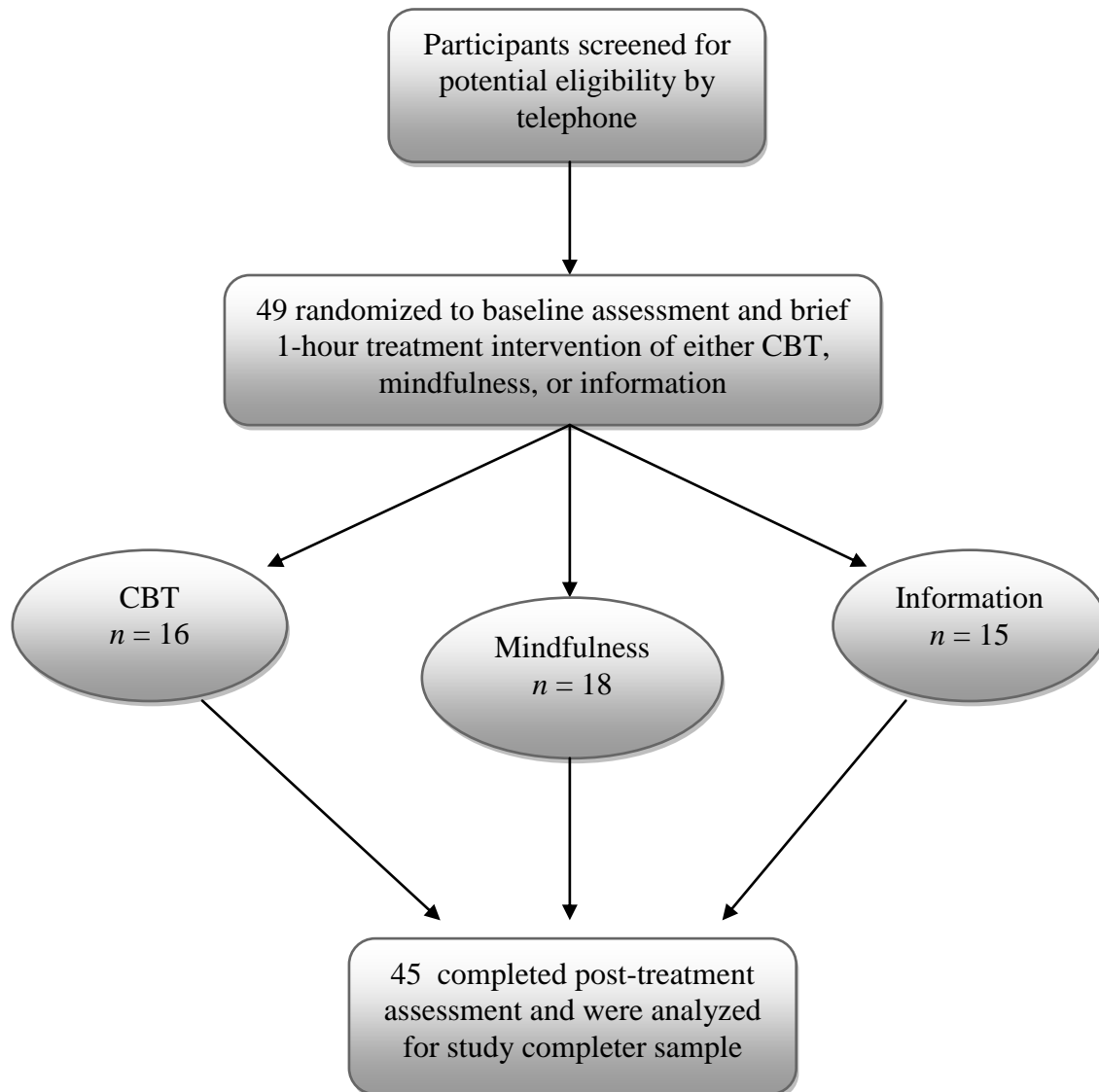
* $p < .05$ = significant effect and/or interaction

Table 4.
Effect Size: Change from testing session one to testing session two by Condition

Outcome Measure	Effect Size by Condition		
	CBT	Mindfulness	Information
PSWQ	0.34	0.24	-0.26
DASS-21	0.52	0.01	0.03
Depression			
DASS-21	0.74	0.28	-0.15
Anxiety			
DASS-21	0.78	0.50	-0.17
Stress			
IUS	0.11	0.14	-0.19
MCQ-30	0.22	0.34	-0.46
Negative beliefs about worry concerning uncontrollability and danger subscale			

Note. Cohen's d effect size was calculated comparing testing session one values vs. testing session two values within each of the conditions. Negative effect size indicates that the direction of change reflects a decline in functioning. Trait worry was indexed by the Penn State Worry Questionnaire, factors associated with GAD were indexed by the Depression Anxiety Stress Scales to measure symptoms of depression, anxiety and stress; Intolerance of Uncertainty scale used to measure levels of tolerance for uncertainty; and the Meta-Cognitions Questionnaire-30 used to measure individual differences in a selection of beliefs, judgments, monitoring tendencies considered important in the metacognitive model of psychological disorders (Negative beliefs about worry concerning uncontrollability and danger subscale).

Figure 1. Participant flow chart.



Appendix I

Script Cognitive Behavioral Therapy

The focus of our session today is on Cognitive Behavioral Therapy (CBT) for treatment of chronic worry.

Have you heard of CBT before?

[If yes] *What is your understanding of how CBT works?*

HOW CBT WORKS

It is very difficult to just change how you feel directly. *Have you ever had someone tell you “just relax”?* *How helpful was that for managing your worries?* One way we can change how we feel is to change how we think about a situation as well as how we respond. This is the basic premise behind CBT. Our thoughts, feelings and behaviours are interconnected so that if you change one you can influence the other.

APPLICATION

Tell me about a recent worry that you had. What was the situation or trigger? How did you feel? What did you think? What did you do?

[Illustrate how the three components interact – that they can interact to increase or reduce anxiety]

GAD: CURRENT VS. POTENTIAL PROBLEMS

In GAD, people may worry about current problems or anticipated problems. It is helpful to distinguish the two types of problems because they require different strategies to manage them.

Current problems are problems that exist RIGHT NOW such as a test you have to write, an interview you have to go to, figuring out how to get to an appointment, dealing with a stressful situation at work, making a decision, or coping with bad news. Current problems require problem solving and developing an action plan. Potential problems are problems that do not currently exist but that you are worried about happening. It is often a scary outcome you are anticipating or predicting. Potential problems often take the form of “What if...” questions in your mind. For example, what if this terrible thing happens...what if I get in an accident...what if I mess up my presentation, what if something happens to someone I am close too...?

People with GAD may find they get stuck in a worry loop as one question leads to the next and to the next and with each worry, anxiety increases.

Let's review the previous example you gave. *What type of problem were you worrying about?*

COGNITIVE RESTRUCTURING

The strategy we use to address worries that are "potential problems" is called cognitive restructuring. Cognitive restructuring involves shifting your thinking about a particular situation to consider alternate perspectives that are based on available evidence. As people shift their thoughts, their anxiety is reduced and they feel more confident about their coping abilities.

The rest of the session we will focus on learning the skill of cognitive restructuring using a Worry Record. *Do you have any questions so far?*

STEP ONE: FEELINGS

The first step is to notice when you are feeling anxious or a strong negative emotion (scared, upset, and stressed). Identify your feeling and rate the intensity (0-100) where 0 is "not at all" and 100 is "very severe".

STEP TWO: SITUATIONAL TRIGGER

Step two is to note the situation you are in or the trigger of your current feeling.

STEP THREE: AUTOMATIC THOUGHTS

Next, write down the thoughts that are going through your mind about the situation. We call these "automatic" thoughts because they happen so fast that sometimes people don't even notice that they had a particular thought. These thoughts often take the form of a question such as "What if...". In recording the thought, try and rephrase any questions into statements. For example, "what if I get lost" would be recorded as "I will get lost".

Beside each thought record whether it is a current problem or an anticipated problem in brackets.

STEP FOUR: ALTERNATIVE PERSPECTIVE

Consider alternative ways of viewing the situation that are based on actual evidence of facts. Are you focusing on the negatives and minimizing other aspects or your

coping skills? What would a friend say to you about this situation? How would your friend respond to this situation? The goal of this step is to develop an alternative, more realistic and balanced view of the situation that considers the evidence as well as your coping abilities.

STEP FIVE: BEHAVIOUR/RESPONSE

Given this new alternative perspective on the situation, how will you respond differently? Note your action plan.

STEP SIX: EMOTIONAL RESPONSE

Now that you have considered an alternative perspective on the situation and developed your action plan, *how do you feel now?* Rate your feelings and note any changes from how you felt initially (column one of the worry record).

WORRY RECORD: EXAMPLE

Now let's work through the worry record using the example you gave earlier. [Have person fill in the columns with your assistance].

Do you have any questions? What do you think of this strategy? We know that it is hard to shift your feelings right away. As people practice this technique they report that their anxiety and worry is significantly reduced.

HOMEWORK

Over the next week, we will ask you to use this technique at least once a day -- Whenever you notice yourself feeling anxious or worrying. You can practice more if you like. The more people practice the easier it becomes to shift anxious thought patterns.

CHECK-IN

Mid-way through the week I will give you a call to check in and see how you are doing with the practice.

Do you have any questions?

Worry Record

Anxiety (0-100)	Place/Situation	Worry Thoughts	Alternative Perspective	Behavior/Response	Rate Anxiety/Feelings

Script **Mindfulness-based Therapy**

(adapted from Mindfulness-Based Cognitive Therapy for Depression by Zindel V. Segal, J. Mark G. Williams, & John D. Teasdale and Calming your Anxious Mind by Jeffery Brantley)

We will start by discussing what mindfulness is. Mindfulness in the most basic sense is paying attention to the present moment, on purpose, and non-judgmentally.

Often, we spend much of our lives either reliving the past or planning for the future and tend to miss the only time that we actually do our living – the present.

From the point of view of mindfulness, everything happens in the present moment. All we have is the present moment. What we call the past is a memory that actually occurs in the present moment, and what we call the future is something we are imagining or planning now—in the present moment. This present-moment focus is crucial to understanding all our experiences, including anxiety. If you desire to teach yourself a better way to manage anxiety, then the lesson must begin with what is happening in the present moment.

Through mindfulness practice, you can learn to establish and maintain attention in the present moment. Mindfulness can teach us to simply BE where we are, rather than in the past or future. This base of attention and awareness can also produce greater clarity and help us take constructive action where needed.

How Does Mindfulness Work?

Research has shown that mindfulness practice can help reduce symptoms of a range of anxiety disorders.

Based on what you know so far about mindfulness, and your experience of anxiety, why do you think that mindfulness practice would be helpful for anxiety and worry? Why would learning to be more in the present moment and less judgmental be helpful? Can you think of any other ways that mindfulness may be helpful?

- Mindfulness can cultivate greater present moment awareness and since worry is very future oriented, being in the present moment can leave less room in your life for worry
- Mindfulness can help you see when you are starting in on a cycle of worry and help you step back and disengage from the treadmill of worry that can sometimes seem endless

- Worry is sometimes used as an avoidance strategy, avoiding feeling emotions, avoiding being disappointed by what happens in the future. Mindfulness can help you get more comfortable with accepting emotions in the present moment and learning you can cope with the present
- Mindfulness practice may lead to an overall decrease in general stress levels and this may lead to decreased anxiety

The Raisin Exercise

In order to get a better understanding of the practice of mindfulness and what paying attention to the present moment feels like, we will begin this session with an exercise:

I'm going to place an object in front of you. Now, what I would like you to do is focus on one of the objects and just imagine that you have never seen anything like it before. Imagine you have just dropped in from Mars this moment and you have never seen anything like it before in your life.

Note. There is at least a 10-second pauses between phrases, and the instructions are delivered in a matter-of-fact way, at a slow but deliberate pace, asking the participant to do the following:

Taking one of these objects and holding it in the palm of your hand, or between your finger and thumb. *(Pause)*

Paying attention to seeing it. *(Pause)*

Looking at it carefully, as if you have never seen such a thing before. *(Pause)*

Turning it over between your fingers. *(Pause)*

Exploring its texture between your fingers. *(Pause)*

Examining the highlights where the sun shines...the darker hollows and folds. *(Pause)*

Letting your eyes explore every part of it, as if you had never seen such a thing before. *(Pause)*

And if, while you are doing this, any thoughts come to mind about "what a stranger thing we are doing" or "what is the point of this" or "I don't like these," then just noting them as thoughts and bringing your awareness back to the object. *(Pause)*

And now smelling the object, taking it and holding it beneath your nose, and with each in breath, carefully noticing the smell of it. (*Pause*)

And now taking another look at it. (*Pause*)

And now slowly taking the object to your mouth, maybe noticing how your hand and arm know exactly where to put it, perhaps noticing your mouth watering as it comes up. (*Pause*)

And then gently placing the object in the mouth, noticing how it is "received," without biting it, just exploring the sensations of having it in your mouth. (*Pause*)

And when you are ready, very consciously taking a bite into it and noticing the tastes that it releases. (*Pause*)

Slowly chewing it, ... noticing the saliva in the mouth,... the change in consistency of the object. (*Pause*)

Then, when you feel ready to swallow, seeing if you can first detect the intention to swallow as it comes up, so that even this is experienced consciously before you actually swallow it. (*Pause*)

Finally, seeing if you can follow the sensations of swallowing it, sensing it moving down to your stomach, and also realizing that your body is now exactly one raisin heavier.

Note. After the raisin exercise is completed, leave a space of time to discuss the experience of the raisin exercise by asking open-ended questions:

Discussion Questions:

1. What was your experience like? How is that different from how you normally eat?
2. Would you be able to say what kind of thoughts went through your mind?
3. If you had any thoughts about the raisin - where did those thoughts take you?

The exercise is one where we're trying to focus our attention in the here and now, in this moment and then our mind takes us to other types of thoughts. The mind goes off on it's own. This is a very important thing to notice. Our mind is programmed to automatic pilot mode, where much of the time we are actually not getting our moments' worth. For example, in the raisin exercise we just did, we experience taste, all that smell, all the visual patterns of the texture - these experiences disappear when we grab a handful and eat them. In automatic pilot mode we are not really

there for these interesting experiences. But we can have these experiences if we switch off our automatic pilot mode and bring our awareness to experiences in a different way.

This exercise is an example of a lot of what you will be doing over the next week. You will practice bringing your awareness to your everyday activities, so that you know what is going on and can actually change the nature of the experience. If you are fully aware of thoughts, feelings, sensations in the body, in the sense that you may have glimpsed in the raisin exercise, you can actually change the nature of the experience; you have got more choices, more freedom.

The aim of this practice is to increase awareness so that we can respond to situations with choice rather than react automatically. We do that by practicing to become more aware of where our attention is, and deliberately changing the focus of attention, over and over again.

Do you have any questions?

Mindfulness and Planning

Being mindful doesn't mean that you never think about the future. There is still room for purposeful planning and preparation in mindfulness. Often our thoughts about the future are done on automatic pilot and are more like ruminating and worrying rather than active planning and problem solving. Mindfulness practice can help you recognize when you are getting into ruminating and worrying instead of active planning and help you disengage from an unhelpful thinking spiral.

Judgemental Mind

Another important aspect of mindfulness beyond simply paying attention to the present moment is bringing an attitude of non-judgement to this awareness. Our automatic tendency to judge our experience as being not right in some way takes us away from being fully present. If we are busy judging the experience we are not able to pay attention to the moment. These judgements can lead to a sequence of thoughts about what needs to be changed or how things should be different. Often these thoughts will, quite automatically take us down a well worn path in our mind. In this way we lose awareness of the present moment and also the freedom to choose what, if any, actions need to be taken.

We can regain our freedom if, as a first step, we simply acknowledge the actuality of our situation without immediately being hooked into automatic tendencies to judge, fix, or want things to be other than they are. Mindfulness meditation exercises provides an opportunity to practice simply bringing an interested friendly

awareness to the way things are in each moment, without having to do anything to change things. There is no goal to be achieved other than to bring awareness to the moment. Achieving some special state of relaxation is not a goal of mindfulness. In order to practice this kind of mindful awareness, we will go through a 3-minute breathing exercise. This exercise is a mindfulness meditation exercise aimed to bring our awareness to our breath and to use this as an anchor to bring us back into the present moment.

Do you have any questions?

The 3-Minute Breathing Space - Basic Instructions:

1. Awareness

Bring yourself into the present moment by deliberately adopting an erect and dignified posture. If possible, close your eyes. *Then ask:*

"What is my experience right now... in thoughts...in feelings...and in bodily sensations?"

Acknowledge and register your experience, even if it is unwanted.

2. Gathering

Then, gently redirect full attention to breathing, to each inbreath and to each outbreath as they follow, one after the other.

Your breath can function as an anchor to bring you into the present and help you tune into a state of awareness and stillness.

3. Expanding

Expand the field of your awareness around your breathing, so that it includes a sense of the body as a whole, your posture, and facial expression.

Note. Leave some time after the 3-Minute Breathing Space to discuss what their experience was like.

How does it compare to the raisin exercise?

Discussion Questions:

1. What did you think about that experience?
2. How did you find staying in tune with the breath?

3. When do you think it might be helpful for you to stop and practice this exercise?
And why do you think it might be helpful for you to stop and practice this exercise?

4. How do you think mindfulness practice could be helpful for dealing with worry?
The breathing space provides a way to step out of automatic pilot mode and reconnect with the present moment.

Homework:

Now that we have gone through an introduction on what mindfulness is and some of the tools we use in mindfulness practice to switch our awareness from automatic pilot mode. I now would like you to try and apply this practice of the 3-Minute Breathing space to your worry. For the next seven days, I would like you to try and practice the 3-Minute Breathing Space at least once a day (additional practice of you would like for coping) at a scheduled time and additional practice when you notice a worry cycle. When do you think you could schedule a practice in? Do you think you will be able to practice regularly? Will anything get in the way? Do you think that this may be helpful for your worry?

Each day you practice I would like you to keep a record on this homework log sheet I will provide you with. On this form you can fill out what time of day you practiced the exercise, how you felt during the exercise, and how you felt before and after the exercise.

Information About Generalized Anxiety Disorder Script

Generalized anxiety disorder (GAD) is defined as constant and excessive worry and anxiety over many situations and events. It is common to feel anxious sometimes, everybody at some point feels anxious, experiences fear or is scared. In situations where you are actually in danger, fear is a healthy way of protecting yourself. Fear will let you know when you are being threatened and will allow you to react quickly (such as fight or flight). When you become anxious, you tend to worry about things that may happen (i.e., future events) or may not happen at all. Being excessively worried and/or fearful can become a burden over time.

When you are anxious, the hormone adrenaline is released. It speeds up your body's functions so that you are vigilant and ready to react. The heart beats faster, and breathing can become more shallow and rapid. If this state of alarm lasts too long, you can feel lightheaded, nervous and easily agitated. This makes being worried all the time exhausting.

People can reach a point in their life when their worries and fears become unbearable and chronic. These people have developed a disorder called "generalized anxiety disorder" (GAD). Those diagnosed with GAD are in a state of fear most of the time, and this lasts for a period of more than 6 months. You are for the most part aware that your fears are disproportionate, and that you cannot control them – which in itself might be causing you to worry even more.

Causes, Incidences, and Risk Factors:

GAD is a common disorder and can develop due to many different reasons. Sometimes genes can play a role in the development of GAD. Stressful life events and/or stress itself can cause GAD.

GAD can develop at any age, even children can develop GAD. Those who have been diagnosed with GAD often report feeling excessive worry and anxiety for quite some time.

Symptoms:

The main symptom of GAD is the persistent excessive worry or tension, even when there is little or no cause. Excessive worry is worry that occurs very frequently and in an intense fashion (Antony, 2003), it is important to note that the act of worrying is normal and common, it is only when it becomes excessive and interferes with your daily functioning that it becomes unhealthy. Worries seem to develop into additional worries, leading to a constant cycle of worrying. Worries can develop from a number situations, problems or events. Some examples of worry content fall into the following categories:

1. Minor matters (e.g. driving routes, punctuality, small repairs)

2. Work/School (e.g. getting work done, job security, performance)
3. Activities of relatives, family or friends
4. Finances/Money
5. Illness, Health, Injury (self)
6. Health/Safety (significant others)
7. Community/World Affairs (e.g., politics)
8. Future (e.g., personal goals, family, career)
9. Physical Appearance
10. Relationships

Do any of these categories feel personally relevant to you? Do you worry about any of these topics? How do these worries interfere with your life?

Even though you may develop a great awareness that your worries or fears are excessive than needed, you may feel that you still have difficulty controlling them.

There are other symptoms of GAD and feelings associated with worry, some may include:

1. Difficulty concentrating
2. Fatigue
3. Irritability
4. Sleep disturbance (trouble staying asleep or falling asleep)
5. Restlessness, or on edge

Along with experiencing worries, anxieties, and the mentioned feelings, there are a number of physical symptoms that may also be present, including muscle tension (neck and shoulders), the shakes, headaches, stomach problems (nausea or diarrhea).

Do you experience any of these feelings and/or physical symptoms? Is there any one of these symptoms that you find affects you the most?

Treatments:

The goal of treatment is to help you function well during day-to-day life. There are many different types of treatments available for GAD, some approaches include:

- Cognitive Behavioral Therapy (individual or group)
- Mindfulness-based Cognitive Therapy (individual or group)
- Acceptance-based Therapy
- Talk Therapy

Have you ever completed any of these treatments? Would you consider trying one of these therapeutic treatments? What treatments have you tried?

There are also medications that can be prescribed to help with GAD. Some medications that may be prescribed by your family physician or psychiatrist may include:

Selective serotonin reuptake inhibitors (SSRIs) as well as a serotonin-norepinephrine reuptake inhibitors (SNRIs) are common medication choices. There are also other types of medications that can be prescribed such as benzodiazepines.

There are also some other actions you may take to help with your anxiety. Avoiding such things as caffeine, diet pills, or other medicines may help to reduce symptoms.

Have you tried to avoid any of these?

Living a healthy lifestyle can help reduce the impact of anxiety, some of these healthy living choices can include, exercise, enough rest, and good nutrition.

Have you tried to incorporate any of these suggestions into your daily routine?

GAD-7

I will now go over this self-report questionnaire with you. This questionnaire contains questions related to the symptoms you experience because of your condition. This questionnaire will let us know how severe your symptoms are.

Appendix II

Patient Name: _____

Date: _____

The Penn State Worry Questionnaire (PSWQ)

Instructions: Rate each of the following statements on a scale of 1 ("not at all typical of me") to 5 ("very typical of me"). Please do not leave any items blank.

	Not at all typical of me		Very typical of me		
1. If I do not have enough time to do everything, I do not worry about it.	1	2	3	4	5
2. My worries overwhelm me.	1	2	3	4	5
3. I do not tend to worry about things.	1	2	3	4	5
4. Many situations make me worry.	1	2	3	4	5
5. I know I should not worry about things, but I just cannot help it.	1	2	3	4	5
6. When I am under pressure I worry a lot.	1	2	3	4	5
7. I am always worrying about something.	1	2	3	4	5
8. I find it easy to dismiss worrisome thoughts.	1	2	3	4	5
9. As soon as I finish one task, I start to worry about everything else I have to do.	1	2	3	4	5
10. I never worry about anything.	1	2	3	4	5
11. When there is nothing more I can do about a concern, I do not worry about it any more.	1	2	3	4	5
12. I have been a worrier all my life.	1	2	3	4	5
13. I notice that I have been worrying about things.	1	2	3	4	5
14. Once I start worrying, I cannot stop.	1	2	3	4	5
15. I worry all the time.	1	2	3	4	5
16. I worry about projects until they are all done.	1	2	3	4	5

DASS-21

Please read each statement and circle a number 0, 1, 2, or 3 which indicates how much the statement applied to you over *the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

1. I found it hard to wind down	0	1	2	3
2. I was aware of dryness of my mouth	0	1	2	3
3. I couldn't seem to experience any positive feeling at all	0	1	2	3
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5. I found it difficult to work up the initiative to do things	0	1	2	3
6. I tended to over-react to situations	0	1	2	3
7. I experienced trembling (e.g., in the hands)	0	1	2	3
8. I felt that I was using a lot of nervous energy	0	1	2	3
9. I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10. I felt that I had nothing to look forward to	0	1	2	3
11. I found myself getting agitated	0	1	2	3
12. I found it difficult to relax	0	1	2	3
13. I felt down-hearted and blue	0	1	2	3
14. I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15. I felt I was close to panic	0	1	2	3
16. I was unable to become enthusiastic about anything	0	1	2	3
17. I felt I wasn't worth much as a person	0	1	2	3
18. I felt that I was rather touchy	0	1	2	3
19. I was aware of the action of my heart in the absence of physical	0	1	2	3

exertion (e.g., sense of heart rate increase, heart missing a beat)				
20. I felt scared without any good reason	0	1	2	3
21. I felt that life was meaningless	0	1	2	3

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 is characteristic of you. Please *circle* a number (1 to 5) that describes you best.

	Not at all characteristic of me		Somewhat characteristic of me		Entirely characteristic of me
1. Uncertainty stops me from having a firm opinion.	1	2	3	4	5
2. Being uncertain means that a person is disorganized.	1	2	3	4	5
3. Uncertainty makes life intolerable.	1	2	3	4	5
4. It's unfair not having any guarantees in life.	1	2	3	4	5
5. My mind can't be relaxed if I don't know what will happen tomorrow.	1	2	3	4	5
6. Uncertainty makes me uneasy, anxious, or stressed.	1	2	3	4	5
7. Unforeseen events upset me greatly.	1	2	3	4	5
8. It frustrates me not having all the information I need.	1	2	3	4	5
9. Uncertainty keeps me from living a full life.	1	2	3	4	5
10. One should always look ahead so as to avoid surprises.	1	2	3	4	5
11. A small unforeseen event can spoil everything, even with the best of planning.	1	2	3	4	5
12. When it's time to act, uncertainty paralyzes me.	1	2	3	4	5
13. Being uncertain means that I am not first rate.	1	2	3	4	5
14. When I am uncertain, I can't go forward.	1	2	3	4	5
15. When I am uncertain I can't function very well.	1	2	3	4	5
16. Unlike me, others always seem to know where they are going in their lives.	1	2	3	4	5
17. Uncertainty makes me vulnerable, unhappy, or sad.	1	2	3	4	5
18. I always want to know	1	2	3	4	5

	what the future has in store for me.					
19.	I can't stand being taken by surprise.	1	2	3	4	5
20.	The smallest doubt can stop me from acting.	1	2	3	4	5
21.	I should be able to organize everything in advance.	1	2	3	4	5
22.	Being uncertain means that I lack confidence.	1	2	3	4	5
23.	I think it's unfair that other people seem sure about their future.	1	2	3	4	5
24.	Uncertainty keeps me from sleeping soundly.	1	2	3	4	5
25.	I must get away from all uncertain situations.	1	2	3	4	5
26.	The ambiguities in life stress me.	1	2	3	4	5
27.	I can't stand being undecided about my future.	1	2	3	4	5

Brief Measure of Worry Severity (BMWS)

Below is a list of statements about worrying. Please read each statement and indicate how true each one is in describing your general/usual experience of worrying. Please tick the **one** option that most likely applies to you.

1. When I worry, it interferes with my day-to-day functioning (e.g. stops me getting my work done, organizing myself or activities).

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

2. When I think I should be finished worrying about something, I find myself worrying about the same thing, over and over.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

3. My worrying leads me to feel down and depressed.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

4. When I worry, it interferes with my ability to make decisions or solve problems.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

5. I feel tense and anxious when I worry.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

6. I worry that bad things or events are certain to happen.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

7. I often worry about not being able to stop myself from worrying.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

8. As a consequence of my worrying, I tend to feel emotional unease or discomfort.

Not true at all ₀ Somewhat true ₁ Moderately true ₂ Definitely true ₃

Thought Control Questionnaire (TCQ)

Most people experience unpleasant and/or unwanted thoughts (in verbal and/or picture form). Which can be difficult to control. We are interested in the techniques that you *generally* use to control such thoughts.

Below are a number of things that people do to control these thoughts. Please read each statement carefully, and indicate how often you use each technique by *circling* the appropriate number. There are no right or wrong answers. Do not spend too much time thinking about each one.

When I experience an unpleasant/unwanted thought:

	Never	Sometimes	Often	Almost always
1. I call to mind positive images instead	1	2	3	4
2. I tell myself not to be so stupid	1	2	3	4
3. I focus on the thought	1	2	3	4
4. I replace the thought with a more trivial bad thought	1	2	3	4
5. I don't talk about the thought to anyone	1	2	3	4
6. I punish myself for thinking the thought	1	2	3	4
7. I dwell on other worries	1	2	3	4
8. I keep the thought to myself	1	2	3	4
9. I occupy myself with work instead	1	2	3	4
10. I challenge the thought's validity	1	2	3	4
11. I get angry at myself for having the thought	1	2	3	4
12. I avoid discussing the thought	1	2	3	4
13. I shout at myself for having the thought	1	2	3	4
14. I analyze the thought rationally	1	2	3	4
15. I slap or pinch myself to stop the thought	1	2	3	4
16. I think pleasant thoughts instead	1	2	3	4
17. I find out how my friends deal with these thoughts	1	2	3	4
18. I worry about more minor things instead	1	2	3	4
19. I do something that I enjoy	1	2	3	4
20. I try to reinterpret the thought	1	2	3	4
21. I think about something else	1	2	3	4
22. I think more and the more minor problems I have	1	2	3	4
23. I try a different way of thinking about it	1	2	3	4
24. I think about past worries instead	1	2	3	4
25. I ask my friends if they have similar thoughts	1	2	3	4
26. I focus on different negative thoughts	1	2	3	4
27. I question the reasons for having the thought	1	2	3	4
28. I tell myself something bad will happen if I think the thought	1	2	3	4
29. I talk to a friend about the thought	1	2	3	4
30. I keep myself busy	1	2	3	4

Patient Health Questionnaire (PHQ-15)

During the past week, how much have you been bothered by any of the following problems?

	Not bothered at all (0)	Bothered a little (1)	Bothered a lot (2)
1. Stomach pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Back pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pain in your arms, legs, or joints (knees, hips, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Menstrual cramping or other problems with your periods <i>WOMEN ONLY</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Headaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Chest pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Dizziness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Fainting spells	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Feeling your heart pound or race	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Shortness of breath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Pain or problems during sexual intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Constipation, loose bowels, or diarrhea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Nausea, gas, or indigestion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Feeling tired or having low energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Trouble sleeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Therapy Evaluation Form

We would like you to indicate below how much you believe, *right* now, that the therapy you are receiving will help to reduce your anxiety. Belief usually has two aspects to it: (1) what one *thinks* will happen and (2) what one *feels* will happen. Sometimes these are similar; sometimes they are different. Please answer the questions below. In the first set, answer in terms of what you *think*. In the second set answer in terms of what you really and truly *feel*.

Set I

1. At this point, how logical does the therapy offered to you seem?

1 2 3 4 5 6 7 8 9
not at all logical somewhat logical very logical

2. At this point, how successfully do you think this treatment will be in reducing your worry symptoms?

1 2 3 4 5 6 7 8 9
not at all useful somewhat useful very useful

3. How confident would you be in recommending this treatment to a friend who experiences similar problems?

1 2 3 4 5 6 7 8 9
not at all confident somewhat confident very confident

4. By the end of the therapy period, how much improvement in your worry symptoms do you think will occur?

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Set II

For this set, close your eyes for a few moments, and try to identify what you really *feel* about the therapy and its likely success. Then answer the following questions.

1. At this point, how much do you really *feel* that therapy will help you to reduce your worry symptoms?

1 2 3 4 5 6 7 8 9

not at all

somewhat

very much

2. By the end of the therapy period, how much improvement in your worry symptoms do you really *feel* will occur?

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%