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The Relationship Between the Contrast Avoidance Model and Dysfunctions of Generalized Anxiety Disorder

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THE RELATIONSHIP BETWEEN THE CONTRAST AVOIDANCE MODEL AND

DYSFUNCTIONS OF GENERALIZED ANXIETY DISORDER

by
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Abstract

Generalized Anxiety Disorder (GAD) features excessive worry, with additional symptoms including sleep disturbances, muscle tension, concentration issues, fatigue, and irritability (APA, 2013). The Contrast Avoidance Model (CAM) posits that those with GAD maintain worry to avoid emotional shifts by engaging in contrast avoidance (CA) tendencies (Newman & Llera, 2011). Additionally, chronic worry is associated with dysfunctional outcomes of GAD such as sleep difficulties and quality of life (QoL; Henning et al., 2007; Smith et al., 2000). Although both CA tendencies and these dysfunctional outcomes of GAD have shown to be related to worry, CA tendencies have yet to be explored in relation to sleep difficulties and QoL among those with GAD. However, an association between these variables may further explain the perpetuation of adverse outcomes in GAD. The current study assessed associations between GAD severity, CA tendencies, sleep difficulties, and QoL among adults who endorsed anxiety. It was hypothesized that CA tendencies would be significantly correlated with sleep difficulties and poor QoL, and that CA tendencies would mediate the association between GAD severity and both sleep difficulties and QoL. This study was conducted through CloudResearch (Litman et al., 2017), where participants were recruited from a panel of individuals who endorsed anxiety symptoms. The sample included 255 individuals (M_{age} = 38.33; SD = 10.86), who were predominately White (88.2%) and female (70.6%). Participants completed self-report measures of GAD severity (GAD-Q-IV; Newman et al., 2002), CA tendencies (CA Questionnaire General Emotion [CAQ-GE]; Llera & Newman, 2017), sleep difficulties (Insomnia Severity Index [ISI]; Bastien et al., 2001), and QoL (Q-LES-Q-SF; Mendlowicz & Stein, 2000). Within the sample, 72.5% of participants reported GAD symptoms at or above the clinical cutoff on the GAD-Q-IV. As predicted, significant correlations were observed between

CA tendencies and sleep difficulties ($r = $ .43) and QoL ($r = $ -.34). Two mediation analyses were conducted using PROCESS Macro to estimate the indirect effect of CA tendencies (Hayes, 2022). The overall models were significant for both sleep difficulties ($F = 53.81$, $p < .001$) and QoL ($F = 138.72$, $p < .001$), accounting for 30% and 20% of the variance, respectively. As predicted, CA significantly mediated the link between GAD severity and sleep difficulties, ($B = 0.16$, 95% CI[0.023, 0.291]), but not QoL, ($B = -0.11$, 95% CI[-.254, 0.029]); however, CA tendencies was significantly negatively correlated with QoL ($r = -.34$, $p < .001$). The results replicate prior work by demonstrating the role of CA tendencies on GAD severity and the effect of GAD severity on dysfunctional outcomes. These results expand our understanding of how CA tendencies relate to the development of dysfunctional outcomes of GAD, indicating that CA may be important to consider when examining sleep difficulties among those with GAD symptoms. Additionally, these findings suggest the potential benefit of screening for CA tendencies in populations struggling with severe sleep difficulties, particularly insomnia.

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Introduction

Generalized Anxiety Disorder (GAD) is a complex disorder that features excessive worry and anxiety about a variety of everyday events and activities (Cuijpers et al., 2014), with symptoms occurring more days than not for at least six months (American Psychiatric Association [APA], 2013). Key symptoms of GAD also include physiological responses such as restlessness, muscle tension, sleep disturbances, concentration issues, fatigue, and irritability (APA, 2013). As the central feature of GAD, a constant state of chronic worry (Anxiety & Depression Association of America [ADAA], 2021) about multiple domains such as family, health, future, and finance (Munir et al., 2019) is sustained and causes severe dysfunction. This dysfunction disrupts several activities such as daily chores, tasks, and job responsibilities, as well as causes problems for one's physical health, relationships, and workplace performance (Hoffman et al., 2008; Martens et al., 2010; Yoon & Zinbarg, 2007). According to ADAA (2021), an estimated 6.8 million adults in the United States are diagnosed with GAD annually. The age of onset for GAD ranges from 23 to 27 years old, and women are twice as likely as males to be diagnosed (APA, 2013; Kessler et al., 2012). Despite the great number of people affected by this disorder, GAD treatment has a noticeably lower efficacy rate in terms of cognitive behavioral therapy (CBT) than other anxiety disorders (Crouch et al., 2017), and the psychotherapy dropout rates among GAD patients are approximately 20%, resulting in poor treatment outcomes (Gersh et al., 2017).

The complexities of worry likely contribute to the ineffectiveness of GAD treatment; thus, understanding worry in relation to treatment outcomes is an important topic of research. Albeit a key feature of GAD, worry is not inherently dysfunctional. Typical worry is a cognitive function that individuals engage in when anticipating future negative or uncertain occurrences

(Hirsch & Matthews, 2012; Hirsch et al., 2013). At its core, worry is the predominance of negative verbal thought activity, particularly regarding negative events that are thought or imagined to occur in the future (Borkovec et al., 1998). Further, worry exists on a spectrum, ranging from mild and useful to extreme and maladaptive (Hirsch et al., 2013; Rinner & Gloster, 2020). "Low" or normal worry is a useful cognitive function and is typically associated with problems that are real or likely to exist (e.g., preparing for an important presentation; Gladstone & Parker, 2003). Those with "normal" worry reported several benefits of worry such that it helps initiate action and aids in problem-solving (Gladstone & Parker, 2003). However, clinical or chronic worry differs significantly from "normal" worry in terms of frequency, control, and content (Gladstone & Parker, 2003). As opposed to worry as a normal and adaptive cognitive function, those with GAD experience worry at a higher frequency and intensity with less ability to control that worry (Davey & Meeten, 2016). Regarding pathological worry, some models of GAD focus on the metacognitive beliefs of worry, referred to as meta-worry (Wells, 2005). In brief, these metacognitive beliefs consist of worried thoughts about the cognitive act of worrying itself, believing that worry is detrimental and uncontrollable (Wells, 2005). This model suggests that individuals with GAD have positive beliefs of worry as well, such that worry can serve as a coping tool for non-cognitive, external occurrences (e.g., an upcoming social event; Wells, 2005). Thus, this model attributes negative and positive beliefs about worry to the perpetuation of chronic or maladaptive worry in those with GAD (Wells, 2005). In using worrying as a coping mechanism for possible negative future occurrences, worry is actively perceived as an adequate tool to cope with perceived threat. Thus, by functioning as a coping tool, worry is perceived helpful by those with GAD.

Perceived as a helpful tool among those with GAD, chronic worry is conceptualized as a behavioral response that people with GAD purposefully engage in rather than an unavoidable symptom of GAD (Stapinski et al., 2010). As such, excessive worry serves as a maladaptive strategy to manage emotional experiences and distress. Individuals with GAD perceive worry to have multiple functions such as problem-solving and preventing and/or preparing for negative future occurrences or perceived potential threats (Newman & Llera, 2011; Rinner & Gloster, 2020). Individuals with GAD who possess these perceptions of worry tend to hold beliefs that worrying provides positive outcomes (Francis & Dugas, 2004). In addition to the positive belief that worry aids in avoiding future negative emotions, other positive beliefs assert that worry is helpful for problem-solving and motivation (Behar et al., 2008). By perceiving worry in a positive light and securing the perceived benefits (i.e., preparation and prevention of a feared stimulus), worry is continually perpetuated (Newman & Llera, 2011). Another perceived function of worry is the avoidance of aversive somatic and emotional experiences (Behar et al., 2008). Previous research suggests that worrying prior to exposure to aversive stimuli suppresses an appropriate physiological response to the aversive stimuli, such as increased heart rate (Borkovec & Hu, 1990; Borkovec et al., 1993). As such, people who engage in worry experience decreased levels of unpleasant somatic arousal, thus "preparing" themselves for potentially negative events (Borkovec & Roemer, 1995). Because of this cessation of unpleasant somatic experiences contingent on engaging in worry, it is purported that worry is consequently negatively reinforced (Borkovec et al., 1998).

Despite the positive beliefs of worry in which those with GAD may perceive worry as a short-term solution or benefit, worry contributes to emotional distress in the long-term (Salters-Pedneault et al., 2006). Engaging in worry and suppressing negative thoughts and emotions can

ultimately intensify an individual's emotional responses and cause greater distress (Salters-Pedneault et al., 2006). Consequently, worry has been found to be associated with greater depression (Bauer et al., 2020). Chronic worry produces distress, and subsequently helps cause and maintain the many symptoms associated with GAD such as restlessness, fatigue, difficulty concentrating, irritability, muscle tension, and sleep disturbances (Behar et al., 2008). Not only does chronic worry create and maintain negative physical symptoms, but it also causes impairment in social, work, and family settings (Davey & Meeten, 2016).

In addition to the physiological and social impairment that pathological worry causes and maintains, those with GAD also experience severe emotion regulation deficits. Studies have shown that individuals with GAD experience emotions as intense, unclear, and aversive compared to those without GAD (Mennin et al., 2005; Salters-Pedneault et al., 2006). Thus, the perspective of GAD as a disorder of emotional dysregulation has gained considerable momentum. One such model, known as the Avoidance Theory, postulates that those with GAD engage in worry to avoid distressing emotional experiences such as aversive images and autonomic arousal (Borkovec et al., 2004). Although there is merit to this, other researchers have noted that this theory fails to explain the underlying process that explains why this emotional experience is so distressing such that it would require avoidance (Mennin et al., 2005). Research has identified the specific deficits that underly this emotional process including a heightened emotional intensity, poor understanding of emotions, negative reactivity to one's emotional state, and maladaptive emotional management responses; these deficits result in emotion dysregulation (Mennin et al., 2005). Thus, as an attempt to regulate emotions, those with GAD use worry as an emotion regulation strategy. Due to the complex nature of the underlying mechanisms of GAD

as a disorder of emotion dysregulation, several new models have surfaced that attempt to explain this process.

Contrast Avoidance Model

Due to the dysfunctional and complex nature of chronic worry as an attempt to regulate emotions within GAD, it is important to examine a model of GAD that also focuses on this aspect of worry as an emotion regulation strategy. The Contrast Avoidance Model (CAM) posits that worry does not necessarily function as an avoidance of negative emotion per se, but rather as an avoidance of sharp contrasts in emotion (Newman & Llera, 2011). This model suggests that those with GAD prefer to experience constant, negative, and stable emotionality rather than experience a sudden sharp increase in negative emotionality upon exposure to a feared stimulus (Bosley et al., 2020; Newman & Llera, 2011). A somatic and emotional experience is maintained through a constant state of worry, which provides a coping strategy for adverse events (Behar et al., 2008). A stable level of worry eliminates the unpleasant experience of sharp changes in emotional intensities, and consequently, individuals are more likely to engage in worry maintenance in the future. Since this unpleasant experience is being taken away, the behavior of worry is negatively reinforced, and thus, perpetuated (Bauer et al., 2020; Newman et al., 2019). This inflexibility in negative emotions however is not replicated in regards to positive emotions (Llera & Newman, 2010). This suggests that despite engaging in worrisome thoughts, those with GAD who engage in worry are not negatively affected when exposed to positive emotional experiences in terms of inhibiting positive emotions. Even when engaging in worry, those with GAD are still able to experience positive emotions upon exposure to positive stimuli (Llera & Newman, 2010). In other words, because those with GAD experience positive emotions despite engaging in worry, they are likely to engage in worry in the future. Thus, by experiencing the

pleasant outcomes of positive emotionality followed by worry, worry is also positively reinforced.

The CAM is a recent contribution to the theoretical literature; yet, multiple studies have provided support for its tenets. Llera and Newman (2010) proposed that when anticipating a feared stimulus, people with GAD engage in and maintain a state of worry in order to avoid a sharp shift in emotional states. In their study involving exposure to sadness and fear stimuli, Llera and Newman (2010) found that relaxation and neutral inductions given prior to a sad clip led to an increase in sad affect, whereas prior worry inductions led to decreased sadness during the sad clip. Additionally, in the GAD sample, the level of worry that participants experienced before, during, and after exposure to a fearful clip remained the same. This finding suggests that people with GAD do not engage in an avoidance of fearful emotions, but rather they engage in an avoidance of increased negative emotionality (Newman & Llera, 2011). The study also found that when inducing worry prior to the fearful clip, this results in less physiological and subjective responding to the fearful clip and reduced negative affect in response to the sad clip. This finding provides evidence for the CAM by suggesting that worry facilitates emotion dysregulation by preventing a change in negative emotionality (Llera & Newman, 2010, 2011). Conversely, the same study found that prior worry did not inhibit physiological or subjective responding to happy or calm clips and found no increase or decrease in positive affect (Llera & Newman, 2010), suggesting that those with GAD do not experience avoidance of increased emotionality in the context of positive emotional experiences.

The CAM has been further supported in an ecologically based context as well (Crouch et al., 2017). In a longitudinal study that used the worry index from the contrast avoidance questionnaire (CAQ), Crouch and colleagues' (2017) results suggested that GAD symptoms

(worry) predicted the endorsement of contrasts as stressful and appeared to blunt the effects of negative contrasts on emotion. Additionally, consistent with the CAM, Bauer and colleagues (2020) found that individuals who engaged in contrast avoidance tendencies maintained an increased level of worry across different degrees of exposure to stress. Despite the positive beliefs regarding the avoidance of shifts in negative emotionality, Bauer and colleagues (2020) found that contrast avoidance moderates the relationship between anxiety and worry. Their findings suggest that there is a positive correlation between worry and anxiety such that the more one worries, the higher one's stress is in response to stressors. Moreover, this positive correlation became stronger for those high in contrast avoidance tendencies. This suggests that engaging in contrast avoidance tendencies creates a stronger relationship between the maintenance of worry and anxiety pathology over time. Thus, those engaging in contrast avoidance tendencies may experience more anxiety symptomatology, despite the adaptive functions that people with GAD perceive it to have (Bauer et al., 2020).

Dysfunctions of GAD and Worry: Sleep

While the CAM attempts to explain the maintenance of worry, it also lays the groundwork for understanding dysfunctions of GAD as outcomes of worry. One significant dysfunction of chronic worry typical in those with GAD is sleep difficulties. Specifically, worry has been found to be negatively associated with sleep quality (Smith et al., 2000) and is a common experience among individuals with insomnia (McGowan et al., 2016). Additionally, both worry and sleep difficulties have been linked to anxiety (McGowan et al., 2016; Ohayon et al., 1998; Starcevic et al., 2007). In Ohayon and colleagues (1998)'s study examining comorbidities of psychological disorders and insomnia, they found that 46.1% of their sample that suffered from sleep disturbances also had an anxiety disorder, and of these individuals,

65.4% had a GAD diagnosis. As such, GAD has been identified as the disorder with the highest

comorbidity of sleeping problems and insomnia (Choueiry et al., 2016). Insomnia, which

includes poor sleep quality by definition, affects quality of life and can cause prolonged

exhaustion and a change in mood and memory over time (Choueiry et al., 2016). Studies suggest

that clinically significant anxiety is considerably more frequent in students suffering from

clinical insomnia and those who are poor sleepers (Choueiry et al., 2016). One study suggests

that anxiety may more likely act as a pathway to insomnia rather than a consequence of it

(Dragioti et al., 2017). This study also highlighted that anxiety was more strongly associated

with insomnia when compared to other relevant symptoms (i.e., depression, pain). Further,

disturbances in sleep have shown to predict higher levels of worry in those with GAD (Cox et

al., 2019; Danielsson et al., 2013; Thielsch et al., 2015). This suggests a reciprocal relationship

of anxiety's effect on sleep and subsequently, the effects of sleep disturbances on anxiety.

Additionally, previous research has revealed the importance of investigating

transdiagnostic processes when examining the relationship between GAD symptoms and sleep

dysfunction (Fernandez-Mendoza et al., 2010; Lin et al., 2017; Morin, 2003; Sabouri et al.,

2016). Reimann and colleagues (2010) suggest that dysfunctional cognitive processes develop

and perpetuate sleep dysfunction. In alignment with this, research suggests that emotional coping

and regulation strategies underlie the development and maintenance of insomnia (Fernandez-

Mendoza et al., 2010; Morin, 2003). For example, research suggests that intolerance of

uncertainty (IU), the incapacity to endure the response prompted by the perceived absence of key

information (Carleton, 2016), is helpful for understanding the co-occurrence between sleep

dysfunction and worry, as it serves a role in this link (Lin et al., 2017; Sabouri et al., 2016).

Moreover, IU is associated with anxiety and chronic worry (Carleton, 2016; Cowie et al., 2018;

Dugas et al., 1998) and has shown to be a predictor of sleep dysfunctions (Lin et al., 2017).

Additionally, Sabouri and colleagues (2016) found an association between IU, sleep

disturbances, and anxiety sensitivity, suggesting IU as a potential transdiagnostic process that

underlies the link between anxiety and sleep difficulties. Taking into account the importance of

understanding transdiagnostic features when examining the link between GAD and sleep

difficulties, it's evident that novel processes such as contrast avoidance are worth investigating

further in the context of sleep dysfunction. Further, when considering the emphasis on the

maintenance of worry that the CAM postulates as well as the link between sleep difficulties and

worry, it's important to examine sleep difficulties in relation to relevant processes of worry and

GAD symptoms, such as contrast avoidance tendencies.

Dysfunctions of GAD and Worry: Quality of Life

Although Quality of Life (QoL) is a broad term with various definitions and

interpretations, it generally refers to subjective wellbeing or the extent of one's happiness (Parra

et al., 2014) and covers many domains of life, including well-being, happiness, satisfaction,

expectancy, and functionality (Pais-Ribeiro, 2004). QoL has been found to be inversely

connected to functional impairment (i.e., lower QoL relates to greater impairment; Mundt et al.,

2002; Wilner et al., 2020), which has been reported across several anxiety disorders with

individuals experiencing a range of impairments including significant issues in marital relations,

financial issues, interpersonal relationships, and difficulty in social activities, with reportedly

higher divorce rates and disability (Blazer et al., 1991; Lochner et al., 2003; Stein & Kean, 2000;

Weissman, 1991). Additionally, Keyes and Simoes (2012) found that high levels of positive

functioning and subjective well-being decrease the probability of mortality among U.S. adults

over the span of 10 years. Unfortunately, those with GAD have a considerably lower perceived

QoL, in terms of having a diminished sense of satisfaction with his or her own life (Bourland et al., 2000; Henning et al., 2007; Pallanti et al., 2008). GAD has been reported to be associated with lower likelihood of satisfaction in one's family life and in one's sense of overall well-being, even after controlling for comorbidities (Stein & Heimberg, 2004). Studies have also found a link between worry and QoL, particularly among those with GAD. One study found worry to be negatively correlated with QoL and positively correlated with impaired social relationships (Henning et al., 2007). Furthermore, QoL has been shown in the literature to be highly related to worry, such that one who engages in constant worry also reports lower quality of life and satisfaction (Henning et al., 2007). This further supports the importance of investigating a novel model that explains worry maintenance within the context of QoL.

Contrast Avoidance, Sleep, and Quality of Life

Chronic worry is the main strategy used to regulate emotions within those with GAD. As such, this constant worry creates issues in every day functioning such as sleep problems and causes a diminished QoL (Henning et al., 2007; Smith et al., 2000). By maintaining this constant state of worry, those with GAD engage in contrast avoidance to avoid increases in negative emotionality (Newman & Llera, 2011). Thus, contrast avoidance is inherently connected to worry, such that it describes the process behind worry in those with GAD. As such, worry is a process that directly results in dysfunctions of GAD. Therefore, it can be speculated that contrast avoidance tendencies have an indirect connection to dysfunctions of GAD.

Research has suggested that prolonged worry is associated with high heart rate and low heart rate variability in sleep (Brosschot et al., 2007). By constantly engaging in worry, one is maintaining a baseline of increased emotionality. Instead of experiencing sharp increases in emotionality upon exposure to distressing or fearful occurrences, one maintains this stable

baseline. Because this contrast avoidance behavior is rooted in worry and worry maintenance, it can be suspected that it is also related to difficulty with sleep. As the CAM postulates, contrast avoidance tendencies underlie worry maintenance; moreover, research suggests that low QoL in those with GAD is significantly associated with chronic worry (Henning et al., 2007). This link between worry and QoL suggests a potential relationship between QoL and contrast avoidance tendencies that contributes to the maintenance of worry. Thus, it can be speculated that contrast avoidance tendencies may be linked to dysfunctions of GAD such as sleep difficulties and QoL.

Current Study

Given the implications of the CAM in the literature surrounding GAD, it is evident that contrast avoidance serves as a process underlying the maladaptive attempt to regulate emotions, and thus, may help explain adverse psychophysiological outcomes of GAD. Moreover, the current study aims to examine the way in which the CAM may explain dysfunctions in GAD. Specifically, the CAM may inform how chronic worry associated with GAD contributes to adverse outcomes. Despite these connections, no studies to our knowledge have examined the relationship between contrast avoidance tendencies, sleep difficulties, and QoL. Moreover, factors such as sleep difficulties and lower QoL are all linked to GAD (Cox et al., 2019; Danielsson et al., 2013; Mennin et al., 2005; Salters-Pedneault et al., 2006; Stein & Heimberg, 2004; Thielsch et al., 2015). This study ultimately aims to help inform the conceptualization of the complexities of GAD – a disorder that significantly affects millions of people annually and is one of the most difficult anxiety disorders to effectively treat. Specifically, the central focus of this study is to examine the relationship between contrast avoidance tendencies and sleep difficulties and lower overall quality and satisfaction of life in adults with GAD symptoms. Three hypotheses were developed based on previous research. First, it was hypothesized there

would be a positive correlation between sleep difficulties and contrast avoidance tendencies.

Second, it was predicted that QoL would be negatively correlated with contrast avoidance

tendencies. Third, it was predicted that GAD symptoms would be significantly associated with

sleep difficulties and QoL through contrast avoidance tendencies. That is, contrast avoidance

tendencies would help explain the link between GAD and issues with sleep and low QoL.

Methods

Participants and Procedures

To examine functional outcomes of GAD in an adult population, participants were recruited from the online platform, Amazon's Mechanical Turk (MTurk) through CloudResearch (Litman et al., 2017). Research suggests that MTurk is valuable for collecting a diverse sample in an inexpensive and cost-efficient way (Buhrmester et al., 2011). Participants were recruited from a web-based panel of individuals who endorse anxiety symptoms and were asked to complete a questionnaire. Specifically, CloudResearch develops this panel by repeatedly administering questionnaires to individuals over time, and individuals who consistently endorse anxiety symptoms and meet other quality metrics are included on this panel. Participants received compensation of up to $2.00 for completing the questionnaires, which is consistent with recommendations for compensation rates for participation in online research (Horton & Chilton, 2010). After completing the questionnaire, the participants' responses underwent a standard quality check. Data were excluded for not completing questionnaires relevant to the current study.

A total of 268 participants provided written informed consent. Of those participants, 13 were excluded due to incomplete responses. The final sample had 255 participants who endorsed anxiety (70.6% female). The mean age of the sample was 38.33 years ($SD = 10.86$), and participants identified as White (88.2%), African American (6.7%), Asian/Southeast Asian (5.1%) and Hispanic/Latino (6.3%). Most participants reported some college/university (88.6%) education, and most were employed full time (58%). Additional features of the sample are described in Table 1.

Measures

GAD

The Generalized Anxiety Disorder Questionnaire IV (GAD-Q-IV) is a self-report diagnostic measure used to assess for GAD (Newman et al., 2002). It has nine items assessing uncontrollable worry, anxiety symptoms, impairment, distress, and topics of worry (Moore et al., 2014). The measure includes yes/no questions regarding the participant's experience with worry and GAD symptoms, a question that requests participants to type their most frequent topics of worry, and two final questions that ask about distress and interference with daily life. The final two questions are rated on 8-point Likert scales (0=*Not at all/No Distress*; 2=*Mildly/Mild Distress*; 4=*Moderately/Moderate Distress*; 6=*Severely/Severe Distress*; 8=*Very Severely/Very Severe Distress*). This measure demonstrates strong test-retest reliability, convergent and discriminant validity, and good rates of agreement with the ADIS interview, a clinical tool used to assess for GAD (Newman et al., 2002). Additionally, the GAD-Q-IV has good internal consistency ($\alpha = .82$; Buhk et al., 2020). Total scores range from 0 to 13, with a cutoff score of 5.70 which indicates clinical levels of GAD (Newman et al., 2002). In the current analysis, this measure was used to report how many participants endorse clinically significant GAD symptoms as well as conduct correlation and regression analyses. See Appendix A for the GAD-Q-IV.

Contrast Avoidance Tendencies

The Contrast Avoidance Questionnaire-General Emotion (CAQ-GE) was used to measure participants' general beliefs and behaviors regarding emotional contrast avoidance (Llera & Newman, 2017). Three features of the CAM are assessed, including discomfort with emotional shifts (e.g., *When my emotions fluctuate it makes me feel out of control*), creating and perpetuating negative emotion to avoid negative contrasts (e.g., *I would rather feel bad now,*

because at least I won't experience an emotional rollercoaster if terrible things happen), and

tendency to allow positive emotional contrast (e.g., *I prefer to have a pessimistic outlook, so that*

I can be pleasantly surprised if something good happens; Llera & Newman, 2017). This

questionnaire has 25 items and participants answered using a 5-point Likert scale of 1 *(not at all*

true) to 5 *(absolutely true)*. The measure has strong psychometric properties with strong validity

and test-retest reliability, and high internal consistency (α = .95; Llera & Newman, 2017). This

measure has a cutoff score of 44.50 that has been found to distinguish between those reporting

GAD symptoms and non-GAD samples (Llera & Newman, 2017). See Appendix B for the

CAQ-GE.

Sleep Difficulties

The Insomnia Severity Scale (ISI) is a 7-item self-report measure used to assess the

nature, severity, and impact of insomnia (Bastien et al., 2001). The items of the ISI evaluate

severity of sleep onset, sleep maintenance, early morning awakening problems, sleep

dissatisfaction, interference of sleep difficulties with daytime functioning, perception of sleep

difficulties by others, and distress caused by sleep difficulties. The total score ranges from 0 to

28, and items are scored on a 5-point Likert scale ranging from 0 (*no problem*) to 4 (*very severe*

problem). A total score of 0 to 7 indicates no insomnia, 8-14 indicates sub-threshold insomnia,

15-21 indicates moderate insomnia, and 22-28 indicates severe insomnia (Morin et al., 2011).

The ISI has strong reliability, validity, and internal consistency (α = .90; Morin et al., 2011). See

Appendix C for the ISI.

Quality of Life

The Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-

SF) is a self-report measure with 16 items taken from the original scale of 93 items. Items assess

the degree of enjoyment and satisfaction in several areas of daily functioning (Mendlowicz &

Stein, 2000; Stevanovic, 2011), including health, mood, work, leisure activities, relationships,

daily functioning, sexual life, financial status, and medications (Stevanovic, 2011). Items are

rated on a 5-point Likert scale from 1 (*very poor*) to 5 (*very good*), with total scores ranging from

14-70. The last two items in the questionnaire (i.e., *During the past week, how satisfied have you*

been with your medication; How would you rate your overall life satisfaction and contentment

during the past week?) are not included in the total score as they are intended to be examined

independently. Higher total scores suggest better life enjoyment and satisfaction. This measure

has good reliability and strong validity with acceptable internal consistency ($\alpha = .90$; Endicott et

al., 1993; Stevanovic, 2011). See Appendix D for the Q-LES-Q-SF.

Data Analytic Plan

Inferential descriptive statistics were conducted to characterize the sample by calculating

frequencies, means, standard deviations, and ranges for relevant demographic and psychological

variables. Data assumptions were examined for mediation analyses. To determine if contrast

avoidance tendencies mediate the relationship between GAD severity and sleep difficulties and

QoL respectively, two mediation analyses were conducted. Specifically, the total scores of the

GAD-Q-IV were examined as a predictor of total scores of the Q-LES-Q-SF and the ISI

mediated by the total scores of the CAQ-GE. To conduct these analyses, IBM SPSS Statistics,

version 28.00 (IBM Corp., Armonk, NY, USA) and PROCESS Macro (Hayes, 2022) was used.

Results

Sample Characteristics and Bivariate Correlations

Means, standard deviations, ranges, and bivariate correlations for GAD severity, contrast avoidance, sleep difficulties, and quality of life are reported in Table 2. Within the sample, 72.5% of participants reported GAD symptoms at or above the clinical cutoff on the GAD-Q-IV. Additionally, 32.6% of the sample scored at or above the clinical cutoff on the ISI, indicating clinical levels of sleep difficulties. With higher scores indicating higher perceived QoL, the sample reported a mean score of 36.43 ($SD = 5.71$). As predicted, there was a positive correlation between contrast avoidance tendencies and sleep difficulties yielding a medium effect. Additionally, there was a significant negative correlation between contrast avoidance tendencies and QoL with a medium effect observed for this association.

Mediation Analyses

Two mediation analyses were conducted using the PROCESS Macro (Hayes, 2022) to test our hypotheses that GAD severity would predict elevated sleep difficulties and poor QoL mediated by contrast avoidance tendencies. GAD severity was inputted into the models as the independent variable, contrast avoidance tendencies was inputted as the mediating variable, and sleep difficulties and QoL were inputted as the outcome variables (see Figure 1). See Table 3 for the full results. The overall models were significant for both sleep difficulties ($F = 98.69$, $p < .001$) and QoL ($F = 62.52$, $p < .001$), accounting for 28% and 20% of the variance, respectively. The results indicate that GAD severity directly effects sleep difficulties ($B = 0.66$, $SE = 0.10$, $p < .001$) and QoL ($B = -0.62$, $SE = 0.12$, $p < .001$). Analyzing the indirect effects, as predicted, results reveal that contrast avoidance significantly mediated the relationship between GAD severity and sleep difficulties, ($B = 0.16$, $SE = 0.07$; 95% CI [0.026, 0.292]). GAD severity

significantly effects contrast avoidance (B = 3.91, SE = 0.33, p <.001) and contrast avoidance, in

turn, significantly effects sleep difficulties (B = 0.04, SE = 0.02, p = .010). However, contrary to

what was expected, contrast avoidance did not significantly mediate the relationship between

GAD severity and QoL, (B = -0.11, SE = 0.07; 95% CI [-0.254, 0.029]). Our findings suggest

that even after accounting for the mediating role of contrast avoidance, GAD severity still has a

significant impact on both sleep difficulties (B = 0.66, SE = 0.10, p < .001) and QoL (B = -0.62,

SE = 0.12, p < .001).

Discussion

Prior research demonstrates that individuals with GAD experience dysfunctional outcomes such as severe sleep difficulties and a lower QoL (Bourland et al., 2000; Choueiry et al., 2016; Cox et al., 2019; Henning et al., 2007; Pallanti et al., 2008). Additionally, previous studies have indicated the relevance of the CAM by demonstrating the associations between GAD and contrast avoidance tendencies, such that those who endorse symptoms of GAD also engage in contrast avoidance behaviors (Crouch et al., 2017; Llera & Newman, 2010). Although recent evidence has supported the CAM and its relation to GAD, no studies to date have examined these dysfunctional outcomes of GAD in relation to the CAM. To address gaps in the literature, this study aimed to investigate the relationship between contrast avoidance tendencies, sleep difficulties, and QoL. Specifically, the current study evaluated the role of contrast avoidance in mediating the influence of GAD symptom severity on sleep difficulties and QoL.

The majority (72.5%) of the present sample of anxious individuals endorsed clinical levels of GAD. This aligns with previous research that found similar elevations of GAD symptoms in anxious populations (McVoy et al., 2013). Similar to other studies that have examined co-occurrences of anxiety and sleep disorders (Choueiry et al., 2016), approximately one third of the sample also endorsed clinically significant sleep difficulties (32.6%). Additionally, the sample had a low perceived QoL on average. This finding is consistent across studies that assess for QoL among anxiety disorders, with findings that suggest that different anxiety disorders relate to different domains of QoL (Mendlowicz & Stein, 2000; Wilner et al., 2020). Furthermore, the majority of the sample also scored beyond the clinical cutoff for contrast avoidance, indicating that most participants experienced elevated levels of contrast avoidance.

Since contrast avoidance is a relatively new process, only a few studies have investigated its role in GAD symptoms (Bauer et al., 2020; Crouch et al., 2017; Llera & Newman, 2010). Thus, the current study aimed to explain this relationship in the context of GAD outcomes. As such, the study investigated whether contrast avoidance tendencies are linked to sleep difficulties and poor QoL among an anxious sample. As expected, findings revealed a positive correlation between contrast avoidance tendencies and sleep difficulties (Hypothesis 1). This finding suggests that greater contrast avoidance tendencies are associated with greater severity of sleep issues. Although prior research has investigated contrast avoidance tendencies in relation to dysfunctional emotion-oriented outcomes (i.e., emotion dysregulation) and GAD (Bosley et al., 2020), no studies have examined the relationship between contrast avoidance and dysfunctional impairment such as sleep issues. Additionally, as expected, the current analyses revealed a negative correlation between contrast avoidance tendencies and QoL, suggesting that greater contrast avoidance tendencies are associated with lower perceived QoL (Hypothesis 2). These findings build upon prior work that indicates that transdiagnostic processes in GAD are related to sleep disturbances and QoL, such as emotion dysregulation and intolerance of uncertainty (Barberis et al., 2017; Fernandez-Mendoza et al., 2010; Lin et al., 2017; Morin, 2003; Polizzi et al., 2022; Sabouri et al., 2016; Saxena at al., 2011). Thus, the current study fills a gap in the literature by explaining how contrast avoidance, a novel underlying mechanism, may play a role in the link between GAD severity and sleep difficulties and poor QoL.

In addition to the hypothesized associations, the results demonstrated significant associations among GAD severity, contrast avoidance, sleep difficulties, and QoL, suggesting important connections between these variables. Further, the present study replicated prior research that suggests positive associations between GAD and sleep difficulties (McGowan et

al., 2016). Consistent with prior research that suggests that worry, the central feature of GAD, predicts sleep difficulties overtime (McGowan et al., 2016), the results indicated that GAD severity relates to sleep difficulties. Additionally, our findings that suggest GAD is linked to contrast avoidance align with Llera and Newman's (2010) study, which found that avoiding increased shifts in negative emotionality was uniquely experienced by individuals with GAD when compared to a non-anxious sample. The current results provide further support to prior work examining the CAM and GAD and are critical for understanding the mechanisms behind severe dysfunctional impairment among individuals with GAD. In addition, these findings provide further insight into how researchers may develop effective treatment for these dysfunctions.

The third hypothesis examinied whether contrast avoidance partially accounts for sleep difficulties and poor QoL among individuals with GAD. Thus, two mediation analyses were conducted to investigate contrast avoidance as a mediator of GAD and its outcomes. As expected, GAD symptom severity was indirectly associated with sleep difficulties through contrast avoidance tendencies (Hypothesis 3a). These findings suggest that contrast avoidance may underlie the link between GAD symptoms and sleep difficulties. That is, GAD severity may be perpetuated by the avoidance of emotional shifts (e.g., maintaining worry), and thereby worsening the physical, emotional, and functional consequences of GAD outcomes, specifically problems with sleeping. The results of the mediation analyses build on prior research that suggest that underlying processes such as emotion dysregulation play a role in mediating the relationship between GAD and sleep outcomes (Tsypes et al., 2013). Thus, these findings provide valuable information to the GAD literature by helping to explain what emotional processes may account for negative sleep outcomes within individuals with GAD.

Contrary to what was hypothesized, the second mediation analysis revealed that contrast avoidance did not significantly mediate the relationship between GAD and QoL (Hypothesis 3b). Although the results revealed that greater GAD severity is associated with lower QoL, this association was not through contrast avoidance tendencies. This finding conflicts with previous research that suggests inflexibility in emotions (i.e., using limited emotion regulation [ER] strategies) is associated with lower QoL among individuals with GAD, suggesting that ER inflexibility is attributed to the maintenance of dysfunctional outcomes such as poor QoL (Conroy et al., 2020; Hofman 2014). One reason that could possibly account for the current findings is the broad nature of the construct QoL as it encompasses several domains of life (i.e., general activities, physical health, subjective feelings, leisure time activities, social relationships, work, and household duties; Pais-Ribeiro, 2004). Thus, it could be speculated that contrast avoidance tendencies may not necessarily be associated with the construct as a whole, but rather specific domains within the construct (Barberis et al., 2017; Saxena et al., 2011). As such, studies may expect to find a link between contrast avoidance tendencies and specific areas of QoL such as social relationships, work functioning, physical health, etc. (Barberis et al., 2017). For example, when compared to a non-anxious sample, participants with GAD showed significantly lower QoL in specific domains such as self-esteem, goals/values, money, learning, creativity, friends, family, work, and play (Henning et al., 2007). Rather than expecting QoL in general to be significantly correlated to contrast avoidance tendencies, researchers may expect to see differences in the way that contrast avoidance tendencies may affect specific areas in one's life and perceived satisfaction and well-being. Likewise, it might be expected that contrast avoidance tendencies would be a process that emerges in certain areas of an individual's life such as work, money, friends, etc. (Henning et al., 2007).

The current results suggest the importance of targeting contrast avoidance in treatment to help alleviate severe sleep difficulties in those with GAD. Evidence shows trends of high treatment dropout rates among patients with GAD (Crouch et al., 2017; Gersh et al., 2017), which underscores the importance of investigating transdiagnostic processes underlying GAD, such as contrast avoidance, in order to develop effective treatments for this disorder. Similarly, other studies have also identified ways to target contrast avoidance in treatment (Newman et al., 2013, 2014). For example, researchers have suggested that it may be beneficial to practice exposure of negative contrasts in therapy with patients with GAD (Newman et al., 2014). Additionally, prior research suggests that almost one third of individuals with GAD also experience sleep difficulties (Hoehn-Saric, 1981). Thus, targeting insomnia in CBT (CBT-I) has been shown to be effective in decreasing GAD symptoms (D'Urso 2016; Maroti et al., 2011). Ultimately, the current findings enhance the understanding of the development and maintenance of sleep difficulties among individuals with GAD. Moreover, the current study reveals the potential benefit of screening for the presence of contrast avoidance tendencies among individuals seeking treatment at sleep clinics.

Although the current study provides a valuable contribution to the literature, several limitations should be considered. This study relied on online, self-report questionnaires, which are not always reliable (i.e., self-report bias, social desirability, etc.; Latkin et al., 2017; Rosenman et al., 2011). In addition, clinical diagnoses cannot be confirmed. Future studies could address this limitation by using structured diagnostic interviews assessing for GAD and sleep difficulties in a clinical setting rather than using self-report measures. Further, this study was a cross-sectional design. This approach does not allow researchers to have an insight into symptoms of sleep difficulties and GAD symptom severity over a period of time, but rather in a

particular instance in time, meaning the current study is unable to determine directionality when assessing these relationships. That is, the current findings cannot provide insight on whether GAD symptom severity predicts sleep difficulties or, inversely, if sleep difficulties predict GAD symptom severity. Thus, future studies could address this by conducting a longitudinal design, in which participants' reports of GAD severity, sleep difficulties, perceived QoL, and contrast avoidance tendencies are monitored across several months or years. This approach may provide an additional insight as to how these variables change together, and thus, may inform how each variable creates a change in the other. Lastly, the sample was primarily comprised of White women; therefore, the results may not generalize to other anxious samples. Although research suggests that GAD is most common in this demographic (Asnaani et al., 2010; Kessler et al., 2012), it is important to examine these constructs in minority populations to be able to generalize the current findings to diverse demographics. Thus, recruiting a more diverse sample would help address this limitation. Another limitation of this study is that the measure of contrast avoidance relied on a self-report questionnaire. This method relied on the participants to accurately report their own experiences and beliefs regarding contrast avoidance tendencies. To address this limitation and gain an insight into a more accurate view of the participants' levels of contrast avoidance, this study can be expanded upon in the future through the use of an experimental design, rather than a correlation design. In addition to measuring for contrast avoidance by using a self-report questionnaire (CAQ-GE), it may be valuable to measure contrast avoidance tendencies experimentally. For example, Llera and Newman (2010) measured contrast avoidance by eliciting emotion inductions (i.e., worry, relaxation, neutral) to participants before showing them emotional film clips (i.e., sadness, fear, calm, happiness). By monitoring their psychophysiological measures before, during, and after the film clip, contrast avoidance was

informed by emotional and physiological (i.e., heart rate, heart rate variability [HRV]) responses throughout the experiment. Similarly, the current study can be further expanded by integrating this experimental methodology with experiemental sleep procedures. Prior sleep study research has used polysomnography (PSG) and electroencephalography (EEG) among an anxious sample to measure sleep quality and brain activity during stages of sleep to examine its relationship to anxiety and worry (Meers et al., 2020). Taken together, the current study could be expanded by combining methodologies that assess for both contrast avoidance tendencies and sleep quality on an experimental level to determine how the two contructs may relate to each other directionally.

In sum, the current study found that individuals with GAD symptoms experience co-occurring severe sleep difficulties and poor QoL. In conjunction with the pattern of low efficacy rates of GAD treatment, these findings underscore the importance of understanding mechanisms behind GAD in relation to its negative outcomes. As such, the connection between sleep difficulties, QoL, and GAD symptom severity is a complex relationship that warrants further investigation to improve GAD treatment outcomes. The current findings inform GAD treatment by identifying the potential benefit of targeting contrast avoidance tendencies in interventions to help alleviate severe sleep difficulties among individuals with GAD.

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Table 1.
Sample Characteristics (N = 255)

	% (*n*)
Sex (at birth)	
Female	70.6 (*180*)
Male	29.0 (*74*)
Race/Ethnicity	
African American	6.7 (*17*)
Asian/Southeast Asian	5.1 (*13*)
White	88.2 (*225*)
Hispanic/Latino	6.3 (*16*)
American Indian/Alaska Native	0 (*0*)
Native Hawaiian/Other Pacific Islander	0 (*0*)
Sexual Orientation	
Heterosexual/Straight	76.9 (*196*)
Gay/Lesbian	5.1 (*13*)
Bisexual	17.3 (*44*)
Questioning	0.4 (*1*)
Region of Residence	
Northwest	22.4 (*57*)
Midwest	25.1 (*64*)
South	33.3 (*85*)
West	19.2 (*49*)
Income	
Less than $10,000	4.7 (*12*)
$10,000 to $24,999	15.7 (*40*)
$25,000 to $49,999	30.2 (77)
$50,000 to $74,999	22.0 (*56*)
$75,000 to $99,999	13.3 (*34*)
$100,000 to $149,999	7.8 (*20*)
$150,000 or more	6.3 (*16*)
Marital/Relationship Status	
Single (never married, living alone, divorced, widowed, etc.)	43.1 (*110*)
Living with a partner as if married	18.8 (*48*)
Married but separated	3.9 (*10*)
Married	34.1 (*87*)

Table 2.

Means, Standard Deviations, and Bivariate Correlations of Study Variables

	1	2	3	4
1. GAD Severity	-			
2. Contrast Avoidance	.60**	-		
3. Quality of Life	-.45**	-.34**	-	
4. Sleep Difficulties	.53**	.43**	-.46**	-
Mean	8.05	64.18	36.43	5.95
SD	3.48	22.86	5.71	5.32
Range	13	100	38	21

Note. GAD severity = scores on the Generalized Anxiety Disorder Questionnaire IV; contrast

avoidance = Contrast Avoidance Questionnaire – 125 sum total score; quality of life = Quality of

Life Enjoyment and Satisfaction Short Form; sleep difficulties = Insomnia Severity Scale.

**p* < .01

Table 3.

Mediation Results for GAD Severity on Sleep Difficulties and QoL through Contrast Avoidance

Model	R^2	Path	B	SE	t	p	CI (l)	CI (u)
Sleep difficulties	.282					<.001		
		a	3.913	0.332	11.777	<.001	3.258	4.567
		b	0.040	0.154	2.588	.0102	0.010	0.070
		c	0.813	0.082	9.934	<.001	0.652	0.974
		c'	0.658	0.101	6.519	<.001	0.459	0.856
		$a*b$	0.156	0.068			0.026	0.291
Quality of life	.200					<.001		
		a	3.924	0.333	11.778	<.001	3.268	4.581
		b	-0.028	0.018	-1.591	.113	-0.063	0.007
		c	-0.733	0.093	-7.907	<.001	-0.915	-0.550
		c'	-0.623	0.115	-5.410	<.001	-0.850	-0.396
		$a*b$	-0.110	0.071			-0.254	0.029

Note. GAD = generalized anxiety disorder. Contrast avoidance = Contrast Avoidance

Questionnaire IV; Sleep difficulties = Insomnia Severity Scale; Quality of life = Quality of Life

Enjoyment and Satisfaction Questionnaire Short Form. R^2 represents the results for each full

mediation model. Unstandardized regression coefficients (*B*) are reported. *SE* = standard error; CI

(*l*) = lower bound of 95% confidence interval; CI (*u*) = upper bound of 95% confidence interval;

*a*b* represents the indirect path.
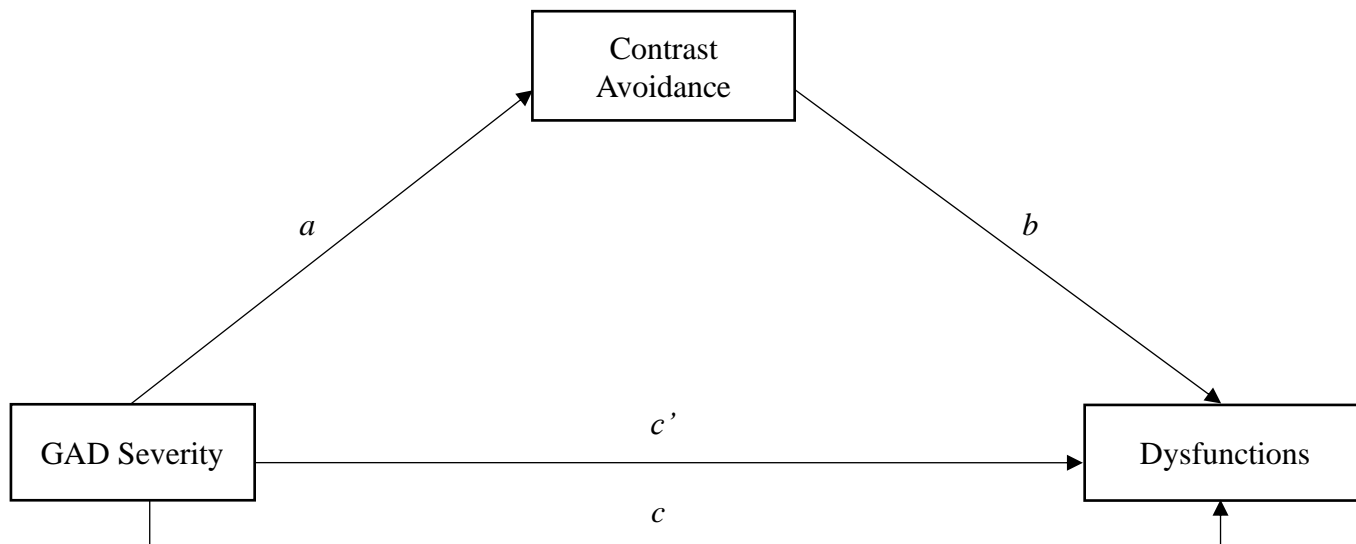
Figure 1. Conceptual diagram of the proposed model testing the direct and indirect effects of GAD severity on disfunctional outcomes through contrast avoidance. Separate models were conducted to independently examine disfunctions such as sleep difficulties and quality of life. GAD Severity = Generalized Anxiety Disorder Questionnaire IV; contrast avoidance = Contrast Avoidance Questionnaire- General Emotion; Dysfunctions = Insomnia Severity Index and Quality of Life Enjoyment and Satisfaction- Short Form.

APPENDIX A

Generalized Anxiety Disorder Questionnaire IV

1. Do you experience excessive worry? NO=A YES=B

2. Is your worry excessive in intensity, frequency, or amount of distress it causes? NO=A YES=B

3. Do you find it difficult to control your worry (or stop worrying) once it starts? NO=A YES=B

4. Do you worry excessively and uncontrollably about minor things such as being late for an appointment, minor repairs, homework, etc.?

    NO=A YES=B

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

a)_____   b)_____
c)_____   d)_____
e)_____   f)_____

5. Please indicate how many separate topics you worry about excessively and uncontrollably, as listed above.

   a) No topics of worry
   b) One topic
   c) Two topics
   d) Three topics
   e) Four topics
   f) Five topics
   g) Six or more topics

6. During the last six months, have you been bothered by excessive and uncontrollable worries more days than not?

    NO=A YES=B

7. During the past six months, have you been bothered by restlessness or feeling keyed up or on edge more days than not?

    NO=A YES=B

8. During the past six months, have you been bothered by difficulty falling/staying asleep or restless/unsatisfying sleep more days than not?

    NO=A YES=B

9. During the past six months, have you been bothered by difficulty concentrating or your mind going blank more days than not?

      NO=A YES=B

10. During the past six months, have you been bothered by irritability more days than not?

      NO=A YES=B

11. During the past six months, have you been bothered by being easily fatigued more days than not?

      NO=A YES=B

12. During the past six months, have you been bothered by muscle tension more days than not?

      NO=A YES=B

13. How much do worry and these physical symptoms interfere with your life, work, social activities, family, etc.?

```
0      1      2      3      4      5      6      7      8
|             |             |             |             |
Not          Mildly      Moderately    Severely      Very
At All                                               Severely
```

14. How much are you bothered by worry and these physical symptoms (how much distress do they cause you)?

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

APPENDIX B

Contrast Avoidance Questionnaire – General Emotion

Directions: Below are a series of statements that can be related to emotions in general, and some that focus on worry. Please read each of these questions carefully, and answer by circling a number (1 to 5) to indicate to what extent these statements are true for you.

1	2	3	4	5
Not at All True	Slightly True	Somewhat True	Very True	Absolutely True

1. I focus on the negative because I want to be emotionally prepared in case something terrible happens.
2. I tend to expect the worst outcome so that I am not emotionally caught off guard
3. I feel uneasy with emotional changes.
4. I would rather feel bad now, because at least I won't experience an emotional rollercoaster if terrible things happen.
5. Because bad things could happen at any time, it's more comfortable to already be in a gloomy mood.
6. I am particularly uneasy with sharp shifts in my negative emotion.
7. I prefer to have a pessimistic outlook, so that I can be pleasantly surprised if something good happens
8. I tend to predict failure because I don't like to look forward to something in case it doesn't happen
9. If I notice I'm feeling happy, I tend to immediately remind myself of all the bad things that could happen
10. I never get my hopes up so that I am not disappointed
11. It really throws me off when I suddenly feel very bad.
12. I prefer to feel bad now so I don't have to endure losing my happiness later.
13. When I have already been in a bad mood, it has been easier to endure bad news
14. I don't like it when external events control my ups and downs.
15. When my emotions fluctuate it makes me feel out of control.
16. When I am relaxed or calm, I focus on the negative as a way to avoid a sudden shift in my mood if something bad happens.
17. I don't anticipate that anything good will happen so that everything will feel like a pleasant surprise.
18. I maintain a negative mood because it makes it easier to cope when bad things happen
19. When my emotions go up and down, it makes me uncomfortable
20. I focus on the negative because at least I know not much can happen that could make me feel worse.
21. I would rather feel down than have to go through life experiencing ups and downs.
22. Allowing myself to feel happy leaves me vulnerable to feeling terrible in the end.
23. Strongly fluctuating emotions are particularly unpleasant for me.

24. I try to stay focused on the bad things that could happen, because it prevents me from feeling emotionally vulnerable.
25. Sometimes I would rather just feel bad now, instead of having to wait and see how things are going to turn out.

APPENDIX C

Insomnia Severity Index

The Insomnia Severity Index has seven questions. The seven answers are added up to get a total score. When you have your total score, look at the 'Guidelines for Scoring/Interpretation' below to see where your sleep difficulty fits.

For each question, please CIRCLE the number that best describes your answer.

Please rate the CURRENT (i.e. LAST 2 WEEKS) SEVERITY of your insomnia problem(s).

1. Difficulty falling asleep

None	Mild	Moderate	Severe	Very Severe
0	1	2	3	4

2. Difficulty staying asleep

None	Mild	Moderate	Severe	Very Severe
0	1	2	3	4

3. Problems waking up too early

None	Mild	Moderate	Severe	Very Severe
0	1	2	3	4

4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?

Very Satisfied	Satisfied	Moderately Satisfied	Dissatisfied	Very Dissatisfied
		0	1	2
3	4			

5. How NOTICEABLE to others do you think your sleep problem is in terms of impairing the quality of your life?

Not at all Noticeable	A Little	Somewhat Noticeable	Much	Very Much
0	1	2	3	4

6. How WORRIED/DISTRESSED are you about your current sleep problem?

Not at all Worried	A Little	Somewhat	Much	Very Much Worried
0	1	2	3	4

7. To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) CURRENTLY?

Not at all Interfering	A Little	Somewhat	Much	Very Much Interfering
0	1	2	3	4

Guidelines for Scoring/Interpretation:
Add the scores for all seven items (questions 1 + 2 + 3 + 4 + 5 +6 + 7) = _____ your total score

Total score categories:
0–7 = No clinically significant insomnia
8–14 = Subthreshold insomnia
15–21 = Clinical insomnia (moderate severity)
22–28 = Clinical insomnia (severe)

APPENDIX D

Quality of Life and Satisfaction Questionnaire - Short Form

GENERAL ACTIVITIES	OVERALL LEVEL OF SATISFACTION				
Taking everything into consideration, during the past week how satisfied have you been with your ...	Very Poor	Poor	Fair	Good	Very Good
… physical health?	1	2	3	4	5
… mood?	1	2	3	4	5
… work?	1	2	3	4	5
… household activities?	1	2	3	4	5
… social relationships?	1	2	3	4	5
… family relationships?	1	2	3	4	5
… leisure time activities?	1	2	3	4	5
… ability to function in daily life?	1	2	3	4	5
… sexual drive, interest and/or performance?*	1	2	3	4	5
… economic status?	1	2	3	4	5
… living/household situation?*	1	2	3	4	5
.. ability to get around physically without feeling dizzy or unsteady or falling	1	2	3	4	5
… your vision in terms of ability to do work or hobbies?*	1	2	3	4	5
… overall sense of well being?	1	2	3	4	5
… medication? (if not taking any, check here _____ and leave item blank)	1	2	3	4	5
How would you rate your overall life satisfaction and contentment during the past week?					