

Running head: Worry

Discriminative Differences Among High, Medium, and Low
Worriers in Their Ability to Discriminate High, Medium,
and Low Anxious Material.

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COMPLETION OF THESIS

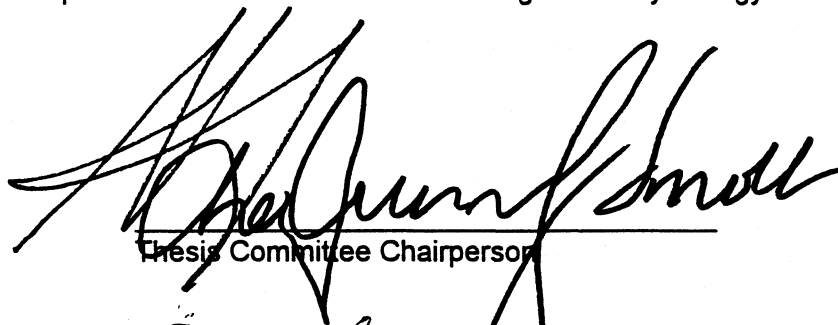
MEMO TO DIRECTOR OF GRADUATE STUDIES:

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Abstract

This study investigated the discriminative abilities of 173 undergraduate males and females who were presented with scenarios in which levels of worry were manipulated. The Penn State Worry Questionnaire (PSWQ; (Meyer, Miller, Metzger, & Borkovec, 1990) assessed participants level of trait anxiety (worry) and categorized them into high, medium, or low worry groups. Participants who scored high on the PSWQ were able to discriminate among the three levels of worry as well as the medium and low worry groups. People who scored high on the PSWQ were significantly more likely to report feeling less likely to cope with worry producing situations than the medium and low worry groups.

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At some point in life, many people experience symptoms of anxiety, ranging from feelings of tension, and uneasiness before speaking in public, to the more severe symptoms of panic attacks. Unpleasant physical sensations associated with anxiety contribute to a cognitive phenomena termed worry. Because of this wide range of symptomology, many signs and cues signaling anxiety are misunderstood and misattributed by individuals experiencing the sensations. This misattribution of causes or cognitive distortion for such symptoms(e.g. "I'm having a heart attack, I'm going crazy, I'm out of control) may even exacerbate symptoms and contribute to elevated anxiety. The catalyst that seems to fuel this process of misattribution of the physical symptomology is the process of worry. This study attempted to explore the process of worry specifically addressing the following question: can individuals, who report worrying alot of the time, discriminate between different levels of worry?

Nature of anxiety and worry

Anxiety is a biological response to a perceived or real threat or danger in the environment and culminates in the well known fight/flight response (Cannon, 1929). This mechanism is termed fight or flight because the effects are aimed to reduce and to prevent the recurrence of the unpleasant anxiety by fighting or running away from the perceived danger. This fight/flight response is considered an adaptive response (Cannon, 1929). In a sense, the fear operates as a warning of the individual's vulnerability to social sanctions and to physical dangers (Beck & Emery, 1985).

Processing the environmental cues associated with the feared event, allows the person to prepare cognitively for the events. Thus, the primary purpose of anxiety is to protect the organism by signaling them to take immediate action and protect themselves (Craske & Barlow, 1993). Such protection is mediated by the activation of the sympathetic nervous system and the thought processes associated with this activation.

In threatening situations, individuals make selective appraisals of environmental configurations. These appraisals, together with evaluations of the availability of one's coping resources, determine whether the configuration is interpreted as dangerous or not. This appraisal sets in motion the sequences of affective, behavioral, cognitive, and physiological symptoms (Beck & Emery, 1985). Physiologically, a message is sent to a part of the nervous system termed the autonomic nervous system. This system controls all activity not requiring thought to operate, such as the heart beating. There are two branches of the autonomic nervous system: the sympathetic, which activates the energy needed to run the fight or flight response in the body and the parasympathetic nervous system, which returns the body to homeostasis, a period of rest and normal functioning. Two chemicals are released by the sympathetic nervous system from the adrenal glands located in the kidneys, adrenaline and noradrenalin. These chemicals act as agonists that drive and continue activity of the fight or flight system. This system is said to be "all or nothing"; once activated the response will continue until the chemicals are destroyed or used up by the body, and explains why an individual may feel uneasy and apprehensive after a danger has passed and the sympathetic nervous system has been deactivated. The

individual may also continue to prepare for the event (worry) due to the fact that the non-occurrence of the feared outcome is negatively reinforcing. Once the body has “had enough” of the fight or flight response, the parasympathetic nervous system is activated, returning the body to a state of homeostasis.

Activation of the sympathetic nervous system causes several physical changes in the body all of which are adaptive to survival. There is an increase in heart rate and strength of the heart beats causing increased blood and oxygen flow to large working muscles such as biceps and quadriceps to prepare for action (fight or flight). Increased speed and depth of breathing also occurs to feed working muscles. A consequence of this reaction is a feeling of lightheadedness, dizziness, tightening of the chest, and a sensation of choking. Other changes include: increased sweating, decreased digestion which may cause nausea, and dilation of the pupils to allow more light into the eye. Cognitively, the individual seeks to find an appropriate way of dealing with the threat. This cognitive preparation and evaluation of resources can lead to an increased feeling of anxiety. Overall, the person may feel trapped resulting in a sense of urgency to escape the situation. Such urgency to escape may be attributed to the unpleasant sensations experienced in the body that are not understood by the person, which can lead to a heightened awareness of the physiological changes taking place in the body. Such happenings lend to internal cues which increase the levels of anxiety already present in the body.

Conceptualization of GAD

Anxiety disorders are the second most common psychiatric disorder, approximately 12.6% of the general population suffer from this disorder (Maxmen & Ward 1994). Normal anxiety is differentiated from an anxiety disorder by severity of symptoms and degree of interference in the person's everyday life. Shepard (1966) has suggested that between 30% and 40% of the population may experience anxiety severe enough to warrant clinical intervention. Practitioners in the 1960s found the number of patients presenting with a variety of emotional and stress related symptoms overwhelming. Symptoms of anxiety were initially classified under the DSM II (APA, 1968) as "anxiety neurosis": which was defined as "a vague category referring to patients who are experiencing excessive anxiety over a prolonged period of time without marked phobic avoidance; in other words, generally anxious individuals"(Barlow, 1988, p.139). This conceptualization was later revisited and is in the DSM IV (APA, 1994) under the heading of Generalized Anxiety Disorder (GAD).

With the publication of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 1980), Anxiety Neurosis was formally split into two separate categories' Panic Disorder and GAD. In the DSM III (APA, 1980), GAD is formally recognized as a mental disorder but classified as a residual category. By definition, this meant that only chronically anxious individuals who did not meet the criteria for any other anxiety disorder were given this diagnosis. The criteria for GAD included generalized,

persistent anxiety (present for one month) manifested by three of the four following behaviors: 1. motor tension, 2. autonomic hyperactivity, 3. apprehensive expectation, and 4. vigilance and scanning (APA 1980). Confusion grew among practitioners because many individuals presenting for treatment of anxiety disorders met this criteria (Rapee, 1991).

The GAD diagnosis underwent more changes with the publication of the DSM III-R (APA, 1987). Criteria changed from DSM III to include, as a core feature of GAD, an excessive, unrealistic worry in two or more areas. The categories or clusters of necessary symptoms changed from four to three and the required duration of symptoms to meet criteria changed from one month to six months.

Presently, the DSM IV (APA, 1994) criteria for the diagnosis of GAD are:

- A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).
- B. The person finds it difficult to control the worry.
- C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past six months). Note: only one item is required in children.
 - (1) restlessness or feeling keyed up or on edge
 - (2) being easily fatigued
 - (3) difficulty concentrating or mind going blank
 - (4) irritability

(5) muscle tension

(6) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep).

- D. The focus of the anxiety and worry is not confined to features of an Axis I disorder, (e.g., the anxiety or worry is not about having a Panic Attack (as in Panic Disorder), being embarrassed in public (as in Social Phobia), being contaminated (as in Obsessive Compulsive Disorder), being away from home or close relatives (as in Separation Anxiety Disorder), gaining weight, (as in Anorexia Nervosa), having multiple physical complaints (as in Somatization Disorder), or having a serious illness (as in Hypochondriasis), and the anxiety and worry do not occur exclusively during Posttraumatic Stress Disorder.
- E. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- F. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication), or a general medical condition (e.g., hyperthyroidism) and does not occur exclusively during a Mood Disorder, a Psychotic Disorder, or a Pervasive Developmental Disorder.

Research on the Reliability of GAD

Studies investigating the reliability of GAD as a distinguishable anxiety disorder separate from other anxiety disorders have been few in number. Barlow, Blanchard, Vermilyea, Vermilyea, and DiNardo (1985) investigated the reliability of the DSM III definition of GAD. At that time, GAD was seen as a residual category and the

investigators wanted to provide some basic data which would help determine an optimal way of defining and conceptualizing GAD. Individuals were diagnosed using the Anxiety Disorders Interview Schedule (ADIS) (Barlow, Brown, & DiNardo, 1994), an instrument designed to differentiate the different anxiety disorders based on current criteria that most patients met all four defining features associated with GAD which lent support to the residual classification. It was also found that the type of worrying (anticipatory anxiety) and apprehensive expectation, seemed to be different in focus and number from the other anxiety disorders. This led Barlow et al., to conclude that GAD could be viewed as a separate Axis I disorder distinguished from other anxiety disorders by chronic pathological worrying.

In a review of the literature, Rapee (1991) found only two studies that investigated the reliability of DSM III-R criteria for GAD. Many felt that the results from the Barlow (1985) study and the corresponding changes made to the definition of GAD, would result in a decrease of the reliability of the diagnosis. However, DiNardo, Rapee, Moras, and Barlow (1989) found an interrater agreement of .57 in 31 participants which is moderate to good, whereas Mannuzzi (1989) found a kappa coefficient of only .27 in 11 participants. It has been suggested by these researchers that the discrepancy in results between the studies could be explained as an artifact of the different instruments used. DiNardo et al. incorporated the ADIS-R which focuses on worry as its core feature, whereas Mannuzzi (1989) employed the Schedule for Affective Disorders and Schizophrenia (1986), which emphasized somatic symptoms of anxiety and not worry. If

these investigations focused on the core feature of worry, one might speculate that the results may have increased the reliability of the GAD diagnosis.

As a result of the reconceptualization of GAD in the DSM IV, the core feature of GAD has been defined as anxious apprehension or worry. Barlow (1988) defined worry as a “future-oriented mood state in which one becomes ready or prepared to attempt to cope with upcoming negative events (p. 139)”. Other researchers (i.e. Borkovec, Robinson, Pruzinsky, & Dupree 1983), defined worry as “a chain of thoughts and images, negatively affect-laden and relatively uncontrollable. The worry process represents an attempt to engage in mental problem solving of an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes”(p. 10). Beck and Emery (1985) defined worry as an “anticipatory cognitive process involving repetitive thoughts related to possible threatening outcomes and their potential outcomes” (p. 94). Matthews (1989) defined worry as “a persistent awareness of possible aversive events and outcomes, at some level searching for ways to avoid them” (p. 456).

Research on the nature of worry has helped to define and treat GAD. For example, Barlow, Shadick, and Hopkins (1991), Borkovec et al. (1983), Craske, Rapee, Jackel, and Barlow (1989) have found that the spheres or areas of worry tend to be the same for both controls and people with GAD and include the areas of family, finances, work, and illness. The differences between controls and treatment groups lie in the perceived controllability of the worry and the number of worry spheres. Individuals diagnosed with GAD feel less control over worries and express difficulty in stopping the worries once they start. These

findings led investigators to change DSM IV criteria.

Function of Worry

The function of worry for individuals diagnosed with GAD has been of theoretical interest to many researchers. Davey (1993) believes worry functions as an avoidance of problems negatively reinforced by the non-occurrence of the feared outcome. This idea is shared by several theorists (Borkovec & Romer, 1995, Borkovec & Inz, 1983), although empirical support is yet to be found. Another negative function of worrying proposed by Borkovec and Romer (1995) includes “problem solving, in order to prevent the occurrence of negative events or devising coping strategies in case such events should occur” (p. 28). Outcomes of such events usually result in unsuccessful attempts to avoid the problem. Although worrying is usually seen as a negative event, researchers (Borkovec & Romer, 1995; Borkovec, Robinson, Pruzinsey, & Depree, 1983) have theorized positive aspects of worry, such as worry seeming as an adaptive problem-focused-coping strategy, an information-seeking style, and representing a motivation to being prepared.

Borkovec and Romer (1995) have recently attempted to clarify the function of worry empirically. Participants were given the Generalized Anxiety Disorder Questionnaire (GADQ: Gross & Eifert, 1990), a self report measure based on DSM III and DSM III-R GAD and placed in GAD and nonanxious groups. Participants were then administered the Reason to Worry Questionnaire (Borkovec & Roemer, 1995). The RWQ is a six item self report instrument containing items: 1) motivation, 2) problem solving, 3) preparation,

4) avoidance/prevention, 5) distraction from more emotional topics, and 6) superstition).

These six items were based on several theories of the nature of worry as well as self-reports of GAD patients. After reading each item, individuals were asked to rate each item as to the reason on a 1-5 Likert-type scale giving the reason they worry. Most participants endorsed motivation, preparation, and avoidance as the reasons they worried the most, suggesting that worry maybe adaptive.

Etiological Theories of Anxiety

Peurifoy (1992) described anxiety disordered patients shared common characteristics which he termed the “High Anxiety Personality”. These characteristics included the following: 1) High levels of creativity and imagination. These persons can imagine numerous outcomes to situations vividly even when these outcomes are “low probability”. However, in GAD patients, creativity may lead to an over use of “what if questioning”, (What if A happens, What if B happens, What if C happens) as well as an over use of the catastrophication distortion, which is thinking of the worst possible outcome of every situation. 2) Rigid thinking. Individuals may use rigid rules in an all or nothing fashion and apply them to specific situations. Such dichotomous thinking forces the person to view a situation as either “black” or “white” and prevents “gray” alternative solutions. 3) Excessive need for approval. Such people may exhibit low self image, dependence on others for self worth, and fear of criticism and rejection, resulting in a complete dependence on others for one’s happiness. Such a dependency may generate extreme anxiety when the sources of approval are removed. 4) Extremely high expectations that

may not be realistic (perfectionism). Such people may have high expectations that are unrealistic and focus on small imperfections rather than their bigger accomplishments. 5) The need to be competent and dependable. Persons scoring high in anxiety may take on as many responsibilities as possible, often overburdening themselves and thereby reducing the likelihood of success, thus creating more anxiety. 6) An excessive need to be in control. Such persons put a high and unrealistic value on being in control in all situations. A great deal of anxiety is felt when unexpected changes take place and proper appearances are not upheld. 7) Suppression of some or all negative feelings and bodily needs to ensure the feeling of control (also called over control of feelings). Such persons are “out of touch” with healthy bodily and psychological needs such as enough rest, exercise, and interpersonal support.

The etiological factors thought to contribute to the development of the “High Anxiety” personality include a combination of these seven factors fostered by the values and beliefs of one’s family of origin, the methods of discipline used to train and socialize children, the amount of anxiety and its management modeled by significant adults, one’s birth order in the family, relevant social and cultural influences, and one’s biological make up (Peurifoy, 1992). Early experiences and events which generally shape the development of the high anxiety personality include the following: 1) alcoholism or other addictions in the family, 2) child abuse or other sources of invalidation, 3) anxious parental role models, 4) overly critical parents or family members, 5) rigid family rules, 6) rigid belief systems, 7) an

over emphasis on appearances or an appropriate behavior, 8) overprotective parents, 9) models of suppression or denial of feelings or an punishment for expression of feelings, 10) a lack of information about bodies and emotions, 11) exclusive performance related approval, 12) inadequate models for coping with separation or loss, 13) a reversal of parent/child roles, and 14) having to protect a family secret. With an interaction of these factors, individuals develop an apprehensive expectation about themselves and their environment. Depending upon the situations that have influenced their physical and psychological development, individuals may be seen as having an environmental vulnerability to the development of anxiety disorders.

In addition to developmental traumas mentioned earlier, Beck and Emery (1985) have suggested other predisposing factors to GAD including heredity (i.e. parents having a mood disorder or some traits of anxiety) and physical disease (i.e. neurochemical abnormalities such as hyperthyroidism). Other theorists have also suggested that anxiety disorders may have a biological basis, these theories have been investigated through the use of twins studies and studies done on first degree relatives. Harris, Noyes, Crowe, and Chaudry (1983) evaluated morbidity risks for panic disorder, agoraphobia, or any other anxiety disorder in the relatives of agoraphobic patients and normal controls. Results suggested that relatives of patients with anxiety disorders appear to be at a greater risk on developing an anxiety disorder than are compared to normal controls. Turner, Beidel, and Costello (1987) assessed the prevalence of DSM III anxiety disorders in children

considered “high risk” and compared them to children of dysthymic parents and normal controls. Results indicated that “high risk” children were three times more likely to develop a disorder as compared to the dysthymic children and nine times more likely to develop a disorder when compared to normals. Twin studies have indicated that the concordance rate of anxiety disorders for monozygotic twins was higher than for dizygotic twins in all anxiety disorders except for GAD. These results suggested a genetic link to the acquisition and development of anxiety disorders however, more research needs to be done in this area to make definitive conclusions.

The possibility that biological factors determine GAD has been explored through the research on state-trait anxiety initially by Cattell and Scheier (1961). According to their theory, some individuals operate at characterologically higher levels of anxiety their entire lives (trait anxiety) compared to non-anxious individuals who, based on the situation, can become temporarily highly anxious (state anxiety). Trait anxiety was defined by Spielberger (1972) as “relatively stable individual difference in... the disposition to perceive a wide range of stimulus situations as dangerous or threatening” (p.39). Based upon his review of the GAD literature, Rapee (1991) has suggested that GAD can be conceptualized as a pure manifestation of high trait anxiety. Substantiating this premise is observational data including the findings that 1) GAD is a relatively stable disorder with a life long prevalence, no reportable onset, and no dramatic shift in previous functioning; 2) Individuals seem to respond to a wide range of stimuli, rather than specific

stimulus cues, with apprehension; 3) Empirical data suggests cognitive differences between GAD individuals and controls but not between normals with high and low trait anxiety. However, a tendency to worry correlates highly with trait anxiety but not with state anxiety. These findings suggest that a relationship between GAD and trait anxiety is a viable theory (Rapee, 1991).

Cognitive theorists such as Beck and Emery (1985) have attempted to explain how cognitive processes exacerbate and maintain anxiety. Cognitive vulnerability has been defined as “a person’s perception of himself as subject to internal or external dangers over which his control is lacking or is insufficient to afford him a sense of safety” (p.75). Once a person begins to focus on his or her weaknesses, he/she begins to doubt his or her ability to utilize life-skills, and this filters outcomes through negative perspectives. This culminates in self-doubt, which affect performance in these anxiety situations. Consequently, feelings of low self-efficacy follow the self-fulfilling prophecy of inability to cope with anxiety provoking situations.

Beck and Emery define schema as the basic cognitive structures which enables the individual to label, classify, interpret, evaluate, and assign meaning to objects and events (Beck & Emery, 1985). For example, if one has the schema that “the world is a dangerous place and no one can be trusted”, then often neutral situations may be labeled as dangerous or threatening. These schema are organized into clusters, termed cognitive constellations, which deal with various life situations. When an individual is confronted with a situation, the constellations draw meaningful information and block irrelevant

information from the environment. So, for example, if an individual is walking and hears a dog barking, she can focus on where the dog is located, the size of the dog, if the dog is chained, and if the dog poses a threat to her safety. All other information such as time of day, name of street, and number of cars on the street, are disregarded because they are not important to the situation at hand (adaptive filtering).

Similarly, individuals cognitively construct perceptions of threatening information by scanning the environment for information relevant to their schema. Relevant information is then filtered through a subsystem of a specific cognitive set or mode allowing the individual to evaluate the nature of the perceived threat. Activation of this subsystem, is caused by an upset in functioning. In the case of GAD, hypervigilance biases the interpretation of information as a danger. If in fact the danger is a “false alarm,” secondary appraisal of the situation will return the person to a state of normal functioning.

Secondary appraisal involves a process in which an individual assesses the availability and the effectiveness of his/her internal resources for coping with potential threats (Beck & Emery 1985). In the case of anxiety disorders, when schema signal that the world is a dangerous place, individuals become sensitized to negative feedback and experience distorted thinking. Positive feedback is selectively blocked resulting in systematically biased interpretations of danger and subsequent overmobilization of the ANS and SNS. Similar models of information processing have been proposed by Kendall and Ingram (1987).

Schema associated with anxiety disorders contain an overall theme of danger or harm to the person. Sources of this anticipatory threat vary according to the focus of attention of the individual. For example, a person who suffers from panic attacks tends to focus on the natural physiological changes in his/her body associated with the fight/flight response. The changes in the body are misinterpreted by the individual as a danger (“I’m going crazy”, “I’m having a heart attack”, “I’m going to die”) which causes a greater sense of panic. In the case of GAD, rather than focusing on having a panic attack, a person has two or more spheres or areas of worry in which he/she focus attention and anticipates possible negative outcomes.

GAD is thought to result from cognitive distortions, or inaccurate processing of information, contained in the environment. The following cognitive distortions characterize GAD: 1) Magnification is a tendency to inflate negative evaluations of situations (for example focusing on one negative comment in the context of 99 positive ones); 2) Catastrophication is a tendency to incorrectly view an event as intolerable, unmanageable, and beyond one’s ability to cope; and 3) Overgeneralization is a tendency to draw a general conclusion from an isolated event and apply it inappropriately to unrelated situations. A case which illustrates these distortions involves a person who has recently moved away from home for the first time from elderly parents who are in reasonably good health. One night the phone rings and the individual’s automatic thoughts are: “It must be my mom with the news that my father had a heart attack” (catastrophication); “I’m never going to be able to deal and I’ll have to move back home”

(catastrophication); and “I’ll end up just like John moving back home, never finding a job, and having to go on welfare”(overgeneralization).

Vasey and Borkovec (1992) and Kendall and Hollon (1989) have explored the specific cognitions or schema associated with GAD. Findings suggest that persons diagnosed with GAD use an automatic questioning style manifested in the form of “What if “ questions (What if he dies?, What if I have to move back home?, What if I have to go on welfare?). Content of these questions is negative in affective tone and reflects a maladaptive form of self-talk. The questioning style, because it is automatic and rapid, increases the levels of distress of the individual and leads to a greater number of worrisome thoughts.

Supportive Research for the Cognitive Nature of Anxiety

Indirect Support

Overall, most theories that attempt to explain GAD have been cognitive in nature. The supportive research for these theories come from several sources and has been both direct and indirect. In an indirect demonstration, Matthews and Shaw (1977) researched the efficacy of thought stopping as a treatment for GAD. Matthews, et al. believe that anxiety related cognitions are modifiable through cognitive treatments. Results demonstrated that seven out of eight patients improved to some degree, two of the patients were seen as symptom free. The average improvement in anxiety symptoms was moderate which Butler and Matthews (1983) research supports the view that anxiety disorders are

cognitive in nature. Butler et al., explored the following hypotheses: 1) People suffering from generalized anxiety will be more likely than others to interpret ambiguous material as threatening; 2) Aversive events will be rated as more threatening by anxious than non-anxious people; 3) The subjective probability of such threatening events will be projected to be higher for anxious than for non-anxious people. Three questionnaires assessing general anxiety were administered. Results indicated that high anxious participants were more likely to interpret ambiguous material as threatening than non-anxious persons and were also found to focus more on threatening information in the environment than were controls. These findings were used to lend indirect support to the cognitive involvement in GAD.

Direct Support

Borkovec and Inz (1990) were interested in investigating whether worry primarily involves thought, rather than imaginal activity as a driving cognitive process. Participants in the GAD group were selected on the basis of a three step process 1) a phone interview to detect the presence of GAD; 2) a structured interview using the Anxiety Disorders Interview Schedule Revised (ADIS-R); and 3) readministration of the ADIS-R after seven days by an independent clinician. Individuals in the non-anxious group answered an advertisement in a local paper. Participants completed a battery of self-report questionnaires including the State-Trait Anxiety Inventory (trait version) (Spielberger,

Gorsuch, & Lushene, 1970); the Fear Questionnaire (Marks & Matthews, 1979); the Zung Self-Rating of Anxiety (Zung, 1975); the Beck Depression Inventory (Beck, Ward Mendelson, Mock, & Erbaugh, 1961); the Reactions to Relaxation and Arousal Questionnaire (Heide & Borkovec, 1983); the Cognitive/Somatic Anxiety Inventory (Borkovec & Matthews, 1988); and the Worry Questionnaire (Meyer, 1988). Participants completed a series of cognitive information tasks followed by a ten minute period of self-relaxation and a ten minute period of worrying. Participants diagnosed with GAD were also involved in ten therapy sessions involving relaxation and cognitive therapy. Results indicated that 1) Non-anxious people reported that visual imagery predominated their thought activity during relaxation, where individuals diagnosed with GAD reported thought activity to predominate and; 2) Therapy was seen to shift individuals diagnosed with GAD to a more normal predominance of imagery during relaxation. Such multiple self-reports again suggested the role of cognitive mediation in anxiety, but again, only descriptively.

Vasey and Borkovec (1992) research also supports the cognitive conceptualization of GAD. Vasey et al. attempted to clarify the content of schema associated with anxiety. They proposed that catastrophication, a cognitive distortion commonly used by individuals diagnosed with GAD, would serve as the means by which individuals would generate sequences of possible catastrophic consequences for two self-generated topics of worry. By means of self-report scales of worry, individuals were placed in one of two groups,

those who reported being high worriers or individuals who did not report being a worrier. Participants were given two minutes to list all the possible topics they had recently worried about in the past week and were asked to rate the percentage of time spent worrying about them. Results indicated that worriers produced significantly longer sequences of catastrophication than did non-worriers. Individuals who scored high on scales measuring worry also indicated more discomfort during catastrophication of thoughts than did non-worriers.

The present study was designed to further explore the relationship between worriers (high anxiety individuals) with respect to different levels of anxiety-producing situations (states). If indeed, Rapee (1991) is correct in asserting that anxiety is a characterological condition (trait), then individuals high in trait anxiety should be unable to distinguish between contextual cues that vary in levels of anxiety production (states) compared to (non-anxious) controls. Theoretical constructions involving whether patients diagnosed with GAD cognitively distort perceptions or whether they fail to discriminate among cues that normally elicit anxiety in only some people may need to be further elaborated.

Method

Participants

Participants were 172 undergraduate students enrolled in several sessions of introductory psychology classes from Salisbury State University. Participants in the

experiment were awarded credit or served on a volunteer basis or as a class requirement.

The mean age for the participants was 23.6. Gender and race were not considered for identification of the participants. Individuals were informed that they were taking part in a study investigating the relationship between mood levels and types of literary works.

Instruments

Each participant was given a packet of information containing: the Penn State Worry Questionnaire (PSWQ: Meyer, Miller, Metzger, & Borkovec, 1990) an instrument consisting of 16 statements used to measure frequency and intensity of trait anxiety (worry) in general. Several studies (Borkovec, & Davey, 1993; Brown, Anothy, & Barlow, 1992; Meyer, Miller, Metzger, & Borkovec, 1990) have investigated the psychometric properties of this instrument. Overall findings suggest that the PSWQ has moderate to high reliability: test-retest after two weeks was found to be between .75 and .81, after four weeks it was found to be between .74 and .92. The PSWQ correlates significantly with other instruments that measure similar constructs (i.e. the State-Trait Anxiety Questionnaire (.64 for Trait and .49 for State), the Test Anxiety Inventory (.58), and the Cognitive Somatic Anxiety Questionnaire (.69). The PSWQ has been shown to differentiate between GAD and other anxiety disorders with individuals diagnosed with GAD scoring significantly higher as compared to individuals who met criteria for PTSD $F(1,57)= 6.01, p<0.02$ (Meyer, et, al.).

Participants were also given 9 scenarios (3 “high anxiety”, 3 “medium anxiety”, and 3 “low anxiety”) created to elicit various levels of worry, and which served as the

independent variable. The content of each anxiety scenario was based on research on the spheres of worry elicited by a population of individuals diagnosed with GAD (Craske, Rapee, Jackel, & Barlow, 1989). The top five spheres of worry reported by Craske included problems with 1) family/ home (including interpersonal relationships), 2) finances, 3) work/school, 4) illness/health/injury, and 5) an “other” category (e.g. car problems, being late, and nuclear war.) Eleven scenarios were created for this study, varying in subject matter, but consistent with Craske’s five spheres of worry modified for a college population. In this study, the scenarios included , 1) problems with job performance, 2) illness of a family member, 3) bodily injury, 4) interpersonal relationship problems, 5) perceived threats to personal safety, 6) problems with school performance, 7) problems with finances, and 8) uncertain plans for the future.

These 11 scenarios were piloted on an independent sample of 19 undergraduate psychology students ($M = 20.89$ years of age) who participated for extra credit. Ten t-tests for correlated measures were performed for each scenario. Each scenario was compared to each of the remaining 10 on all 9 of the dependent variables.

Scenarios were initially grouped into categories based on two dependent variables , which asked students “How worry producing would you say most people would rate this scenario?” and “Compared to most people, how much do you think you would worry about this situation?” Each scenario was compared to the remaining scenarios in all categories and found not to differ significantly from each other. The scenarios in each category were found to differ significantly from the remaining 2 categories. Therefore,

items in category 1 (low) did not differ from each other but differed from category 2 (medium) at $p < .05$, and from category 3 (high) at $p < .01$. Refer to appendix A ,B ,C for an example of the low, medium, and high scenarios.

In this study, 3 scenarios in each of the 3 anxiety categories were administered. The scenarios were followed by 9 questions which asked for Likert-like ratings for each question.

The questions were:

- 1) "How worry producing would you say most people would rate this scenario?"
- 2) "How much do you think you would worry about this situation?"
- 3) "How much might others think you would worry about this situation?"
- 4) "How do you think you would be able to cope with this situation?"
- 5) "Has this ever happened to you or someone you know?"
- 6) "How did you or the person you know deal with the situation?"

Two additional questions asked for a rating between 0 and 100% were based on a scale to assess the degree of worrying. These questions were:

"What percentage of the day would you say you worry about things in general?",
 "What percentage of the day would say you feel calm and at ease with yourself in general?".

The last question consisted of asking the participants to list all possible "What ifs" that came to mind as they read the scenario. They were then asked to rate the amount of

worry they would feel thinking about the statement they just wrote on a Likert like scale from 1 no worry to 7 maximum amount of worry.

Procedure

Participants were given an informed consent form prior to taking part in the experiment and were instructed to complete subsequent measures anonymously. Packets contained the Penn State Worry Questionnaire, 9 randomly ordered scenarios depicting 3 levels of worry followed by nine questions and directions for completion. Participants were instructed to read each item carefully and answer each question as honestly as possible.

Results

The nine dependent variables were analyzed in a 3x3 {participant's level of worry (between) x level of worry produced by the scenario (within)} mixed multivariate analysis of variance. The analysis revealed significant main effects for participant's level of worry and level of worry produced by the scenario for most of the dependent variables.

Judgements about others level of worry

An analysis of the item asking "How much would most people worry about this situation?" revealed no main effect for participant's worry level, $F(2, 173) = .79, p < .457$, with high anxious individuals ($M=16.48$) scoring similarly to medium anxious individuals ($M=16.34$) and low anxious individuals ($M=16.04$). A main effect for level of worry produced by the scenario $F(2, 173) = 2.39, p < .0001$ was found with high anxious scenarios ($M=19.53$) scoring significantly higher than medium anxious scenarios ($M=16.79$) and low anxious scenarios ($M=12.55$).

Judgements about own level of worry

An analysis of the item asking “How much would you worry about this situation?” revealed a main effect for participant’s worry level, $F(2, 173) = 12.81$, $p < .0001$ with high anxious individuals ($M=16.24$) scoring higher than medium individuals ($M=15.04$) and low anxious individuals ($M=13.82$). A main effect was also found for level of worry produced by the scenario, $F(2, 173) = 398.37$, $p < .0001$ with high anxious scenarios ($M=18.92$) scoring higher than medium anxious scenarios ($M=15.87$) and low anxious scenarios ($M=10.33$).

Judgements about others estimates of participants level of worry

An analysis of the item asking “How much would others say that you would worry in this situation?” revealed a main effect for participant’s worry level, $F(2, 173) = 7.87$, $p < .001$ with high anxious individuals ($M=16.08$) scoring higher than medium anxious individuals ($M=15.03$) and low anxious individuals ($M=14.34$). A main effect was also found for level of worry produced by the scenario, $F(2, 173) = 417.85$, $p < .0001$ with high anxious scenarios ($M=18.78$) scoring higher than medium anxious scenarios ($M=15.79$) and low anxious scenarios ($M=10.90$).

Judgements about own ability to cope

An analysis of the item asking “How much would you say you would be able to cope in this situation?” revealed a main effect for participant’s worry level, $F(2, 173) = 5.39$, $p < .005$ with low anxious individuals ($M=13.75$) scoring higher than medium anxious individuals ($M=12.95$) and high anxious individuals ($M=11.89$). A main effect was also

found for level of worry produced by the scenario, $F(2, 173) = 127.11$, $p < .0001$ with low anxious scenarios ($M=15.61$) scoring higher than medium anxious scenarios ($M=13.43$) and high anxious scenarios ($M=9.56$).

Judgements of the frequency of the situation occurring

An analysis of the item asking “How many times has this situation happened to you?” revealed no main effect for participant’s worry level, $F(2, 173) = 10.24$, $p < .667$ with medium anxious individuals ($M=4.30$) scoring similarly to low anxious individuals ($M=4.18$) and high anxious individuals ($M=3.86$). A main effect for level of worry produced by the scenario was found, $F(2, 173) = 80.36$, $p < .0001$ with low anxious scenarios ($M=6.08$) scoring higher than medium anxious scenarios ($M=3.91$) and high anxious scenarios ($M=2.35$).

Number of cognitions

The question looking for the generation of “What, if” questions” revealed a main effect for participant’s worry level, $F(2, 173) = 26.83$, $p < .0001$ with high anxious individuals ($M=20.74$) scoring higher than medium anxious individuals ($M=16.60$) and low anxious individuals ($M=10.89$). A main effect was also found for level of worry produced by the scenario $F(2, 173) = 384.76$, $p < .0001$ with high anxious scenarios ($M=33.81$) scoring higher than medium anxious scenarios ($M=8.16$) and low anxious scenarios ($M=6.32$).

A significant difference between number of cognitions for level of worry in the “high” compared to the other two scenario was also revealed, $F(2, 173) = 28.69$, $p < .0001$. {See Tables 1, 2}

This analysis also produced significant interactions for participant's level of worry x level of worry produced by the scenario in four of the nine dependent variables. These variables are represented by the following questions: 1) "How much would most people worry about this situation?", $F(4, 173) = 2.39, p < .051$; 2) "How much would you worry about this situation?", $F(4, 173) = 4.12, p < .003$; 3) "How much would others say that you would worry about this situation?", $F(4, 173) = 3.58, p < .007$, and 4) "Number of 'What, if' questions", $F(4, 173) = 26.46, p < .0001$. The results of the Pillais Simple Effects Analysis for participant's level of worry x level of worry produced by the scenario indicated that the interactions found would most likely be attributed to the significant F values of the main effects, compared to the interaction, therefore only a discussion of main effects will follow. {See Table 3}

Discussion

Each dependent variable assessed certain aspects of participants ability to discriminate between levels of worry induced by each scenario. It was predicted that while high worriers (high anxiety) would not be able to discriminate between the three levels of worry manipulated in this study, low worriers (low anxiety) participants would be able to make such discriminations. The research question assessed in this study "How much would most people worry about this situation?" had not been addressed in previous research on GAD.

Results showed that participants rated the high anxiety producing scenarios as most likely to induce high anxiety in others, the medium anxiety producing scenarios to produce

medium anxiety in others, and the low anxiety producing scenarios to produce low anxiety in others regardless of level of anxiety of participant. The hypothesis that individuals scoring high in anxiety would fail to discriminate between the different levels of worry producing scenarios was not supported. It was not surprising that the individuals who reported high worry differed in the amount of worry when compared to the other two groups. Surprisingly, individuals who reported high worry were able to discriminate between the various levels of worry in a given scenario, leading to the possible speculation that individuals who reported high worry do not differ in their perception of worry and seem to be aware of socially appropriate behavior given the situation.

When asked in question 2, “How much would you worry about this situation?” regardless of level of worry in a scenario, high anxious individuals responded with the highest level of worry, medium anxious individuals responded with medium levels of worry, and low anxious individuals responded with the lowest level of worry. Results also indicated that regardless of an individual’s anxiety level, the high scenarios were always viewed as being the most worry producing, the medium scenarios were always viewed as producing medium amounts of worry, and the low scenarios were always seen as producing the lowest amounts of worry.

These results confirm results from earlier studies (Butler & Matthews, 1983; Kendall & Ingram, 1987) which found that individuals who reported high anxiety differed from individuals who reported no anxiety in their interpretation of ambiguous material as being more threatening and thus more anxiety producing. Results may have changed to indicate

a significant interaction between individuals who scored high on the PSWQ and high levels of worry in a scenario if a clinical population of individuals diagnosed with GAD was used as in most experiments investigating worry.

Another interesting finding was that the PSWQ was validated in this study. The high, medium, and low groups responded to the ambiguous scenarios such that individuals scoring high on the PSWQ were always highest, individuals who scored in the medium range on the PSWQ were always medium, and individuals who scored low on the PSWQ were always lowest on each scenario. These results also supported the discriminative validity of the scenarios.

Participants also seemed to respond in a similar manner when asked “How much would others say that you would worry about this situation?”. Individuals in the low level of worry felt that others would say they worry at a low level as compared to individuals in the medium group who felt individuals would say they worry at a medium level. High level individuals felt that others would say that they worry at a high level. It seems that all individuals in their respective groups would worry at a level that was comparable to the level obtained on the PSWQ, suggesting that individuals have a realistic view of the way they are perceived by others.

Some unexpected results were obtained when data addressing question 4, “How much would you be able to cope with this situation?” were analyzed. Regardless of level of worry, participants felt that they would be able to cope most in the low anxiety scenarios

followed by medium anxiety scenarios, and last, high anxiety scenarios. Regardless of level of worry produced by the scenario, participants scoring low in anxiety reported feeling most likely to cope (high self-efficacy), followed by individuals scoring medium in anxiety, and individuals scoring high in anxiety reported feeling least likely to cope (low self-efficacy).

Extrapolating from the results of question 5 “How many times has this ever happened to you?”, regardless of anxiety levels of individual participants, the low scenarios seemed to be most familiar and were reported to have happen most often, the medium scenarios were reported to have happened the second most often, and the high scenarios were reported to have happened the least often and were seen as least familiar.

Individuals scoring high on the PSWQ saw themselves as least likely to cope with a given situation as compared to the medium and low scoring individuals. In the high anxiety scenario, individuals scoring high in anxiety saw themselves as least likely to cope even though they had little if any experience with the given situation. This may suggest that worry by people who report being high in anxiety serves as a means of coping with the situation. This finding supports those of previous authors (Barlow, 1988; Borkovec, Robinson, Pruzinsky, & DePree, 1983). Possibly, the more unknown a situation, the greater the low self-efficacy and the less likely people would feel prepared to cope.

In the final question, participants were asked to generate all possible “What, If” questions that came to mind. Results indicated that regardless of anxiety production of the scenarios, individuals who scored high in anxiety produced the most “what if” questions,

the individuals who scored medium in anxiety produced the second most “what if” questions, and individuals who scored low in anxiety produced the fewest number of “what if” questions. Results also indicated that regardless of anxiety level of the individual, the high anxiety scenarios produced the most “what if” questions, the medium scenarios produced the second most “what if” questions, and the low scenarios produced the fewest number of “what if” questions. Finally, it was found that in the high anxiety scenarios, individuals who scored high in anxiety produced significantly more “what if” questions as compared to the other two groups.

Studies investigating the use of cognitive distortions by GAD individuals (Vasey & Borkovec, 1992; Kendall, 1989) have found that individuals who are high in anxiety (worry) will produce more negative cognitions when presented with ambiguous material than will nonanxious individuals. This result was evidenced by the results of the present study. These results support the work of Borkovec and Vasey (1992) who found that individuals who report being high in anxiety produced significantly more “what if” questions than individuals who reported no anxiety and reported the “what if” questions to be more likely to occur (probability over-estimation) compared to nonworriers.

Results of the present study suggest that, participants who reported worrying acknowledge that they are worriers, are able to discriminate between levels of worry in a given situation, can speculate how others see them, can accurately predict how others would respond to worry in a socially appropriate way, feel they are less likely to cope with

worry producing situations, and don't overexaggerate the number of times a situation has occurred.

Although our results indicated that all groups had a realistic view of the way they perceived the scenarios, high worry individuals consistently view themselves as engaging in more worry than the other groups. To account for these results Bowers, (1981); Matthews, (1990); and Vasey and Borkovec (1992) have focused research on the cognitive processes involved in normal worry and GAD worry. According to these researchers, emotional information is encoded in highly elaborate schema making it more easily accessible for the individual diagnosed with GAD, who may be biologically vulnerable to anxiety. Those diagnosed with GAD may put more emphasis on this information and when confronted with a situation that is seen as worrisome, activate all fear schema, including threatening cues based on past events. Individuals diagnosed with GAD may see themselves as unable to cope with the activated fear schema and may engage in worrying to combat these threatening internal and external cues. The processing of the thoughts (worrying) may somehow become caught up in a continuous feedback loop and account for the individuals diagnosed with GAD reporting the uncontrollable nature of the worrying and the significantly larger number of "what if" questions (Barlow, Blanchard, Vermilyea, Vermilyea, & DiNardo, 1986; Borkovec, Robinson, Pruzinsky, & Depree, 1983; and Vasey & Borkovec, 1992).

Our results indicated that individuals who scored high on the PSWQ had significantly

more cognitions related to the feared event. An explanation that attempts to account for this phenomena is proposed by Borkovec and Hu (1990) in which they speculate that worrying can be seen as cognitive avoidance of a feared outcome negatively reinforced by the non-occurrence of the feared outcome. "In a sense, worry may serve to hinder complete processing of more disturbing thoughts or images. This is often evident during the process of decatastrophizing, a form of cognitive restructuring, where clients are reluctant to elaborate on the worse possible outcomes of a feared negative event. Instead, clients may feel more comfortable ruminating over their anxious thoughts and then distracting from the catastrophic thought or image (Barlow, Brown, & O'Leary, 1993). It seems that the natural habituation process to the feared outcome has not taken place and is halted by repeatedly engaging in this rapid shift from negative thought to negative thought seen in the catastrophication process common to GAD. The therapeutic process commonly employed by Cognitive Behavioral therapists with GAD is therefore Worry Exposure, which can be seen involving 1) identification and recording of the client's two or three principal spheres of worry, 2) practicing imagery training, 3) practicing vividly evoking worry spheres while the client concentrates on his thoughts, 4) teaching the client to hold these images for 25 to 30 minutes, and 5) after the exposure to the images, having the client generate all possible alternatives to the worst possible outcome to the images. The use of this technique has proven to be modestly effective (Craske, et al., 1992).

A final explanation to possibly account for individuals scoring high on the PSWQ to indicate poorer coping in situations involving worry can be derived from Martin

Seligman's theory of Learned Helplessness (1975) This theory has been traditionally used to cognitively explain the etiology of depression. The cognitions and feelings of helplessness are learned by the individual early in life. People, through their experiences, find that their actions have little effect on the environment, this lack of positive feedback leads to an expectation of helplessness. When an individual has an expectation that outcomes are independent of responding, they will 1) reduce the motivation to control the outcome, 2) interfere with learning that responding may control the outcome, and 3) produce fear or anxiety (Sue, Sue, & Sue, 1990). With GAD individuals may believe that because prior attempts to deal with a worry producing situation had no effect on the outcome of that event, that future attempts will also be ineffective, thereby producing the feeling of helplessness (worry).

Abramson and Seligman (1978) later found that people make attributions as to the reason why they are helpless. It was discovered that individuals attributed their helplessness to internal, stable, and global factors. Similarly, individuals who are GAD (high worriers) may in fact be attributing the results of prior situations that have become a sphere of worry to themselves (internal). Individuals may have a stable self image and define themselves as always unable to deal with these high worry situations (stable). These individuals, unlike those who are depressed, may feel that they can not deal with certain situations or spheres of worry, but are able to deal with other situations (specific).

A future area of research may tap the relationship between worry in GAD and obsessional thought in OCD. Little, if any, research has looked at these similarities to

explore the actual function of worry. One such study (Tallis & DeSilva, 1992) found that both worry and compulsion seem to be activated as a result of stressful life events, and both seem to serve the purpose of preventing the occurrence of the feared outcome. The authors propose that worry is a “cognitive variant of obsessional checking”. Individuals can acknowledge that these behaviors are difficult to control. It seems that the worrying and obsessional thinking are almost like a form of magical thinking. Further research may want to ask the question of worriers “Do you think that if you continue to worry, the negative events will not occur?” If so, negative reinforcement may keep the person from stopping the worrying which is supported by the fact that people diagnosed with OCD and GAD report being unable to control their obsessional thoughts and worrying.

In summary, this study was done to further explore to concept of worry, specifically looking at the discriminative abilities of individuals at varying levels of worry when presented with scenarios also varying in levels of worry. Our study indicated that individuals, regardless of level of anxiety, were able to discriminate between high, medium, and low scenarios. Because worry is speculated to be the product of a cognitive processing error, reinforced negatively by cognitive avoidance and perceived to be uncontrollable, future research in the function of worry may result in a more effective treatment of worry.

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Appendix A

Example of Low Worry Scenario

“ You arrive home from class one day and your roommate says that they have someone that you should meet. They go on to explain that this person is very nice and has seen you around campus and would like to meet you. At this point, you are curious and tell the them to go on with their description. The roommate proceeds to tell you that the mystery person likes the same things that you do and has some classes that you have this semester. This bit of information intrigues you even more and you begin to imagine who it could be. Your roommate continues and tells you they have set up a blind date with this person for Friday and you are to meet the mystery person at one of the local bars. Good luck!”

Appendix B

Example of Medium Worry Scenario

“ You have been at the library late again trying to do research for the paper you have due on Monday. It’s about midnight and all the security lights on campus seem to be out, but this is nothing new. You live on the other side of campus and are alone. Usually, there are no problems getting from place to place on campus. You start the ten minute walk and hear foot steps behind you. You decide not to turn around to see who it is and continue to walk. But as you walk, the steps seem to be getting louder and closer.

Thoughts run through your mind like “I hope I’m alright, I’m almost there, I can’t turn around, and Where is everybody tonight?” the pace quickens along with your heart and all you can do is walk faster. When you increase the pace, the person seems to be keeping in perfect step with you.”

Appendix C

Example of High Worry Scenario

“ You’ve been at school for about a month and a half and midterms are a week away. So far, school has been challenging and your GPA is around a 2.4. This week will either make or break your semester and you need to pull at least B’s to keep the 2.4 average. One day, the phone rings and it’s your aunt who you haven’t heard from since you came to school. She seems upset and you ask “What’s the matter?” At first, she pauses trying to collect herself and then says “I have some terrible news and I don’t know how to tell you.” A feeling of uneasiness comes over you. You feel your stomach churning, you begin to sweat, and feel a little lightheaded. She continues with “It’s your father, he had a heart attack at work and is in a coma.”

Table 1

Mixed Analysis of Variance

Main Effects for A and B (participants level of worry x level of worry in the scenario)

Source	<u>df</u>	Participant	Scenario
Question 1	2	.79	2.39***
Question_2	2	12.81***	398.37***
Question 3	2	7.87**	417.85***
Question 4	2	5.39*	127.11***
Question 5_	2	10.24	83.36***
Question 8	2	26.83***	384.76***

• $p < .05$. ** $p < .001$. *** $p < .0001$

Table 2

Means for A and B (participants level of worry x level of worry in the scenario)

Source	<u>Participants</u>			<u>Scenario</u>		
	High	Medium	Low	High	Medium	Low
Question 1	16.48	16.34	16.04	19.53	16.79	12.55
Question 2	16.24	15.04	13.82	18.92	15.87	10.33
Question 3	16.08	15.03	14.34	18.78	15.79	10.90
Question 4	11.89	12.95	13.75	9.56	13.43	15.61
Question 5	3.86	4.30	4.18	2.35	3.91	6.08
Question 6	20.74	16.60	10.89	33.81	8.16	6.32

Table 3

Mixed Analysis of VarianceInteraction of A x B (participants level of worry x level of worry in the scenario)

Source	<u>df</u>	Participant x Scenario
Question 1	4	2.39*
Question 2	4	4.12**
Question 3	4	3.58***
Question 4	4	26.46****

- $p < .05$. ** $p < .003$. *** $p < .007$. **** $p < .0001$.

Note. The significant interactions can be accounted for by the main effects of the participants level of worry and level of worry in the scenario.