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GENDER DIFFERENCES AND COGNITIVE CONSTRUCTS IN GENERALIZED
ANXIETY DISORDER

by

Olivia Anna Teer

A Thesis in Partial Fulfillment
Of the Requirements for a Degree with Honors
(Psychology)

The Honors College

University of Maine

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Abstract

Generalized anxiety disorder (GAD), a psychological disorder currently recognized by the DSM-IV-TR, is typically associated with distorted cognitions, particularly in regards to high levels of excessive worry. Accordingly, much research has attempted to better understand these, and other cognitive factors that may predict symptoms consistent with such a diagnosis. One study conducted by Tull and colleagues (2009) found that cognitive factors such as anxiety sensitivity and difficulties in emotion regulation may serve as predisposing factors in the development of GAD. My study continues this line of research by assessing the predictive nature of several cognitive constructs (i.e., worry, rumination, coping styles, and anxiety sensitivity) in accordance with symptoms consistent with a diagnosis of GAD. Undergraduate students (N =285) completed anxiety-related measures on an online anxiety prediction study. Results indicated that women reported more generalized anxiety symptoms than men. In addition, regression analyses indicated gender differences in predictors of GAD. Coping strategies and rumination proved to add to the prediction of GAD.

Dedication

I would like to dedicate my thesis to my family for their never-ending support, love, and confidence in my academic abilities.

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Gender Differences and Cognitive Constructs in Generalized Anxiety Disorder

Generalized Anxiety Disorder (GAD), a psychological disorder currently recognized by the DSM-IV-TR (American Psychiatric Association; APA, 2000), is typically associated with distorted cognitions, particularly in regards to high levels of excessive and uncontrollable worry (Tull, Stipelman, Salters-Pedneault, & Gratz, 2009). According to the DSM-IV-TR (American Psychiatric Association, 2000), GAD is defined as the presence of persistent anxiety for a period of at least one month. In addition, the anxiety typically manifests itself in ways such as motor tension, dizziness, sweating, accelerated heart rate, irritability, or concentration difficulties (Keller, 2002). Experiencing anxiety is healthy and a normal part of life. Anxiety is a standard reaction to stress, threats, or danger, and anxiety itself is not considered to be a disorder. Anxiety becomes a disorder when it becomes excessive, interferes with daily functioning in individuals' lives and reduces their quality of living (Keller, 2002).

According to the American Psychiatric Association (2000), GAD affects 3.1% of the U.S population in any given year (Keller, 2002). Furthermore, women are twice as likely to develop GAD than men (Salzer et al., 2008). In the past two decades, there has been a significant increase in the study of GAD; however, it remains the most poorly understood and least effectively treated of the anxiety disorders (Brown, Barlow, & Liebowitz, 1994). Researchers have found that among the most effective psychotherapeutic treatments for GAD, less than 60% of clients meet the criteria for high end-state functioning at follow-up assessment (e.g., Borkovec & Costello, 1993). It may be that GAD is poorly treated because the symptoms of the disorder contradict traditional cognitive techniques. GAD is not easily treated with exposure therapy given there is no

specific target of anxiety. Given that the construct of worry often covers a wide-range of topics, it is not easily treated using cognitive restructuring. In addition to worry being the central feature of GAD, there are other cognitive factors that contribute to the development of this disorder. Tull and colleagues (2009) found that cognitive factors such as anxiety sensitivity may serve as predisposing factor in the development GAD. A more comprehensive understanding of cognitive constructs like worry, rumination, anxiety sensitivity, and coping styles is imperative in order to improve psychotherapeutic treatments for this disorder (Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006).

The cognitive construct of worry remains the defining characteristic of GAD. The DSM-IV-TR (APA, 2000) conceptualizes worry as extreme, disproportionate to the actual problem, persistent, invasive, uncontrollable, and focused on several themes or topics. These themes and topics typically relate to “minor matters” or “everyday, routine life circumstances, ” but are perceived as severe by the individual. High levels of worry are associated with high levels of distress and impair daily functioning (Starcevic & Berle, 2006).

There are several hypotheses regarding the function of worry in GAD. Borkovec and colleagues (e.g., Borkovec & Inz, 1990; Borkovec, Ray, & Stober, 1998) have led the field in research and in the conceptualization of worry. According to Borkovec’s model, the role of worry is cognitive avoidance. In this model (Borkovec et al., 1998), worry serves the purpose of avoiding unpleasant or hurtful feelings and the associated symptoms of autonomic arousal (e.g., accelerated heart rate; Borkovec et al., 1998). Worry is linked with the perception that the world is threatening and one may not be able to control or cope with future negative events (Brown, O’Leary, & Barlow, 2007). In Borkovec’s

cognitive avoidance model, worry is characterized by a dominance of thought activity and low levels of imagery in order to avoid or escape more threatening imagery and more distressing somatic activation (Borkovec et al., 1998). Other researchers have confirmed Borkovec's hypothesis that worry is primarily composed of verbal thoughts rather than images. For example, Freeston and colleagues (1996) confirmed that worry is reported as being predominately verbal rather than as imagery. In their study, participants completed the Generalized Anxiety Disorder Questionnaire (GADQ; Newman et al., 2003) and the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). Participants were divided into two groups: those who met cognitive criteria for GAD and those who experienced a normal amount of worry. Results indicated that excessive worriers reported a significantly higher percentage of thoughts compared to ordinary worriers (Freeston, Dugas, & Ladouceur, 1996).

Other researchers have assessed whether images during worry occur less often, or are briefer, than images generated when thinking about a personally-relevant, future positive event (Hirsch, Hayes, Matthews, Perman, & Borkovec, 2011). In this study, participants were split into two groups: one group met diagnostic criteria for GAD and the other group did not meet GAD criteria. Participants completed a battery of diagnostic questionnaires, including the GADQ (Newman et al., 1997), Structured Clinical Interview for DSM-IV for Axis 1 disorders (First et al., 1996), PSWQ, (Meyer et al., 1990), State-Trait Anxiety Inventory (Spielberger et al., 1983), and Beck Depression Inventory (Beck et al., 1979). Participants were given an imagery occurrence task in which they would think about a positive or negative topic and after 10 seconds, they had to indicate whether they were having imagery or verbal thoughts. Then the participants were given an imagery

duration task, in which participants had to think about an identified negative or positive topic and estimate the duration of any imagery that occurred within 10 seconds. The researchers found that images occurred less often and were briefer during worrying than while thinking about a personally-relevant, future positive topic. Further, imagery occurred even less during worry in individuals with GAD than controls (Hirsch et al., 2011).

Borkovec and Inz (1990) examined the frequencies of self-reports of thoughts and images among GAD clients and matched nonanxious controls during a self-relaxation period and a worry period. Clients completed 12 sessions of relaxation therapy. Clients were asked to report their thoughts during periods of worry and periods of relaxation. The researchers found that during the relaxation period, nonanxious participants reported significantly more imagery whereas individuals with GAD reported less imagery during the worry period. Further, nonanxious participants had a predominance of thought during the worry period. These results support the hypothesis that worry is mainly thought-based rather than imagery-based (Borkovec & Inz, 1990).

Although worry may provide short-term relief from higher levels of anxiety, there are long-term consequences of worry (e.g., the maintenance of anxiety provoking cognitions, the inhibition of emotional processing). Even though individuals with GAD may view worry as an effective coping strategy that prevents disastrous events and prepares them to cope with future events, worry actually sustains anxiety (Borkovec et al., 1998). For example, the avoidant functions of worry prevent effective problem solving in real-life situations because the content of worrisome thoughts often jumps from topic to topic without resolving any specific problem. Further, because worry serves as an

avoidance strategy of imagery, emotional processing of threatening material will be inhibited because worry prevents the full activation of fear structures in memory (Brown et al., 2004). This process is considered to be critical for anxiety reduction.

In addition to worry being the central feature of GAD, there are other cognitive factors that contribute to the development of this disorder. Tull and colleagues (2009) found that cognitive factors such as anxiety sensitivity (AS) may serve as a predisposing factor in the development of GAD. AS is defined as a fear of anxiety-related sensations and symptoms, based on the assumption that these sensations have catastrophic or harmful physical, social, or psychological consequences (Starcevic & Berle, 2006). The construct of AS consists of many anxiety-related symptoms including autonomic-related sensations such as sweating, dizziness, and palpitations. Underlying beliefs and fears predispose individuals with high levels of AS to misinterpret suddenly occurring or unexplained physical symptoms as being dangerous and severe (Starcevic & Berle, 2006).

Researchers have suggested that AS may serve as a predisposition to many types of anxiety-related pathology. For example, one study examined the relationship between anxiety sensitivity and the development of GAD. Participants completed self-report questionnaires (GADQ; Newman et al., 2002), Panic Disorder self-report (Newman, Holmes, Zuellig, Kachin, & Behar, 2006), Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1993), Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004), and the Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995) and were classified according to their GAD status or non-GAD status (Tull et al., 2009). Results indicated that anxiety sensitivity was found to predict the diagnosis of GAD, and that worry was associated with higher levels of anxiety sensitivity (Tull et al., 2009). A meta-analysis also

indicated that GAD is strongly related to AS. Further, the strong association between AS and GAD may be explained by the fact that discomfort and uncontrollability are central to GAD and worry, in that anxiety sensations represent uncontrollable events (Naragon-Gainey, K., 2010).

Understanding the relationship between rumination and worry may also contribute to the identification of other factors that contribute to the development of GAD.

At the conceptual level, rumination and the construct of worry resemble each other.

Rumination is defined as repetitive and passive thinking about negative, depressive, or anxious thoughts and the implications of these thoughts (Nolen-Hoeksema & Morrow, 1991). Worry is specified as a chain of thoughts and images that are uncontrollable. Their resemblance lies in the fact that both constructs refer to unproductive, repetitive thoughts. A key difference between worry and rumination is that worry is concerned with danger whereas rumination is concerned with failure, hopelessness, and loss. Rumination occurs in the context of sadness, disappointment, loss and depression (Muris, Roelofs, Meesters, & Boomsma, 2004). Another difference is that rumination is typically focused on past experiences, whereas worry is typically associated with future events.

Researchers have assessed the cognitive content of naturally-occurring worry episodes. For example, Szabo and Lovibond (2002) had participants self-monitor and record worrisome thoughts that occurred within a 7-day period. Participants recorded their naturally-occurring worries until they had worried 10 times. The diaries yielded measures of the excessiveness of 1-week state of worry as well as the cognitive content of the worry. No definition of worry was given and participants were instructed to fill in the diary every time they experienced worry. The researchers found that worry episodes

referred to negative aspects of a present or past situation, which reflects rumination (Szabo & Lovibond 2002). In another study, investigators found that ruminative response styles led to higher levels of worry (Vickers & Vogeltanz-Holm 2003). Researchers have also (Muris et al., 2004) investigated the contributions of rumination and worry to symptoms of anxiety and depression. Results indicated that rumination and worry were highly correlated, worry was more clearly related to anxiety symptoms than to depression symptoms, and rumination also significantly correlated with anxiety symptoms (Muris et al., 2004). Researchers have also found that worry surfaced as a unique predictor of anxiety symptoms, even when rumination level was controlled. These results highlight the interconnected relationship between rumination and worry (e.g., Muris et al., 2004).

Another construct that plays a role in the development of GAD symptoms is cognitive coping. Cognitive coping is defined as the way one thinks about how to deal with the intake of emotionally arousing stimuli (Legerstee, Garnefski, Jellesma, Verhulst, & Utens, 2010). Examples of cognitive coping are: active coping, planning, seeking social support, behavioral disengagement, and mental disengagement. Active coping is the process of actively trying to deal with the stressful event which may include taking direct action and increasing one's efforts (Carver, Scheier, & Weintraub, 1989). Planning refers to how an individual thinks about strategies to cope with a stressor, design action strategies and thinking about how to best deal with the problem (Carver et al., 1989). Seeking social support is the act of gaining moral support, understanding, and sympathy from peers.

Coping strategies like active coping, planning, and seeking social support are considered to be adaptive modes of dealing with stress (Folkman, Lazarus, Dunkel-

Schetter, DeLongis, & Gruen, 1986). Seeking social support, however, can be considered to be both adaptive and maladaptive. It proves to be adaptive in the sense that when faced with a stressor, an individual can be reassured by receiving this type of support. Seeking social support has also been suggested to be maladaptive because sources of sympathy are sometimes used as an outlet for the venting of feelings, rather than taking action to try to actively deal with the stressor (Carver et al., 1989). Two other coping strategies that are considered dysfunctional are behavioral disengagement and mental disengagement.

Behavioral disengagement refers to the reduction of efforts to deal with the stressor or giving up the attempt to achieve the goals with which the stressor is interfering (Carver et al., 1989). Mental disengagement occurs through a variety of activities that distract the person from thinking about the goal with which the stressor is interfering. Strategies that reflect mental disengagement are activities that take an individual's mind off the problem, like escaping through sleep, daydreaming, or by watching TV (Folkman et al., 1986).

Cognitive coping is distinctively different from similar constructs such as emotion and mood regulation. Cognitive coping focuses on decreasing negative affect in response to stressful situations. It is important to look at cognitive coping because it has been found to act as a mediator and moderator of the relationship between psychopathology and stress (Legerstee et al., 2010). Legerstee and colleagues (2010) investigated differences in cognitive coping strategies between anxiety-disordered and non-anxiety disordered individuals. All participants completed the Cognitive Emotion Regulation Questionnaire (Garnefski et al., 2007). Structured clinical interviews were given to assess for anxiety disorder diagnoses. Negative life events during the past year were assessed using a self-report checklist and anxiety symptoms were assessed using the Revised Fear Survey

Schedule for Children (Ollendick, 1983). Results indicated that individuals with anxiety disorders scored significantly higher on maladaptive coping strategies like self-blame, rumination and catastrophizing than individuals without anxiety disorders (Legerstee et al., 2010).

Maladaptive coping strategies can lead to the development of GAD symptoms, particularly in adolescents. A recent study found that adolescents with anxiety disorders experienced significantly more negative life events than non-anxious adolescents (Legerstee et al., 2010). Adolescents with anxiety disorders used emotionally maladaptive (e.g., self-blame, rumination, catastrophizing) cognitive coping strategies at a significantly higher rate than their non-anxious counterparts (Legerstee et al., 2011). Understanding how cognitive coping strategies play a role in GAD may be useful in further developing psychotherapeutic interventions.

The present study assessed the predictive nature of several cognitive constructs (i.e., worry, rumination, coping styles, and anxiety sensitivity) in accordance with developing symptoms consistent with a diagnosis of GAD. First, it was expected that all constructs would positively predict GAD symptoms. Second, it was hypothesized that women would report more symptoms of GAD than men.

Method

Recruitment

The participants ($N = 285$) were recruited from 100 and 200 level psychology classes in order to attain a cross sectional sample of undergraduate participants.

Measures

Demographics Questionnaire. The demographics information sheet was used to acquire basic information about participants. Items on the questionnaire included gender, age, year in school, race, and ethnicity.

Generalized Anxiety Disorder Questionnaire-IV. The Generalized Anxiety Disorder Questionnaire-IV (GADQ-IV; Newman et al., 2002) is a self-report diagnostic measure of GAD based on DSM-IV criteria. The GADQ-IV includes a section where the participant writes his or her worry topics, a yes/no checklist of whether the participant has experienced excessive and uncontrollable worry for at least 6 months (“is your worry excessive in intensity, frequency, or amount of distress it causes?”), and a checklist of 6 DSM-IV GAD symptoms (“restless, unsatisfying sleep”). The GADQ-IV also includes questions that require participants to rate the amount of distress experienced as a result of their worry, using a 8-point Likert scale (0 = *none* to 8 = *very severe*).

Penn State Worry Questionnaire. The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) is a 16-item self-report measure assessing intensity and extensiveness of worry. It is rated on a 1-5 point scale (1 = *not at all typical of me* to 5 = *very typical of me*). The PSWQ consists of items like (“my worries overwhelm me,” “once I start worrying, I can’t stop). The PSWQ has been found to have good test-retest reliability as well as validity. It correlates predictably with several

psychological measures that are related to worry, and does not correlate with other measures that do not relate to the construct.

Anxiety Sensitivity Index. The Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1993) was developed to authenticate the concept of anxiety sensitivity. The ASI is a 16 item self-report measure that evaluates an individual's fear of anxiety/physical symptoms and their potential for negative consequences. These consequences include additional anxiety or fear, embarrassment, illness, and loss of control. Participants rate statements like: ("Unusual body sensations scare me", "It scares me when I feel faint") on a 0 = *very little* to 4 = *very much* Likert scale. The scale items are interconnected at a high level, implying that individuals who believe that anxiety has one negative effect (e.g., loss of control) tend to believe that anxiety also has other negative effects (e.g., leads to embarrassment).

Response Styles Questionnaire. The Response Styles Questionnaire (RSQ; (Nolen-Hoeksema & Morrow, 1991) is a 32-item questionnaire that asks respondents to signify to what extent they think or do each item listed when they feel sad or depressed. Items are rated on a 0 to 3 scale, ranging from "*almost never*" to "*almost always*". For the current study, the rumination subscale of the RSQ was used. This subscale contains 21 items and scores can range from 0 to 63. Representative items consist of: "Think about how alone you feel," "Think about how passive and unmotivated you feel," and "Think about your feelings of fatigue and achiness."

COPE. The COPE (Carver et al., 1989) measures different coping strategies that an individual may use when influenced by stressful situations. The original COPE scale has 15 subscales: Positive Reinterpretation and Growth ("I learn something from the

experience”), Active Coping (“I do what has to be done, one step at a time”), Planning (“I make a plan of action”), Seeking of Social Support for Emotional Reasons (“I discuss my feelings with someone”), Seeking of Social Support for Instrumental Reasons (“I try to get advice from someone about what to do”), Suppression of Competing Activities (“I put aside other activities in order to concentrate on this”), Religion (“I put my trust in God”), Acceptance (“I get used to the idea that it happened”), Mental Disengagement (“I daydream about things other than this”), Focus on Venting of Emotions (“I get upset and let my emotions out”), Behavioral Disengagement (“I just give up try to reach my goal”), Denial (“I act as though it hasn’t even happened”), Restraint Coping (“I make sure not to make matters worse by acting too soon”), Alcohol/Drug Use (“I use alcohol or drugs to make myself feel better”), and Humor (“I laugh about the situation”). These fifteen subscales are combined into a higher-order factor structure that consists of four factors: problem-focused coping, emotion-focused coping, avoidance, and acceptance. These factors are established as having acceptable psychometric properties in prior research studies (Sigmon, Stanton, & Snyder, 1995; Sigmon, Whitcomb-Smith, Rohan, & Kendrew, 2004).

Results

Characteristics of the Sample

The participants were 74 undergraduate males ($n = 74$) and 211 undergraduate females ($n = 211$) at the University of Maine. The average age of the sample was 20.02 years ($SD = 4.91$). With regard to ethnicity, 93.7% were Caucasian; 2.8% Hispanic; 1.1% Native America; 1.1% Asian; and 1.4% indicated other.

Correlation Analysis

Pearson's correlation tests were completed to look at the relationships between the different measures. Correlations are used to find the strength of linear dependence between two variables X and Y. Results of the correlation analyses are presented in

Table 1.

Table 1
Correlation Analysis Between Measures

Measures	1	2	3	4	5	6	7	8
1.PSWQ	—	.46***	.52**	.74**	.18**	.04	.15*	-.21**
2.ASI	.46**	—	.52**	.46**	.43**	.18**	.070	.11
3.Rumination	.52**	.52**	—	.56**	.42**	.19**	.25**	.03
4.GADQ-IV	.74**	.46**	.56**	—	.17*	-.08	-.00	-1.3
5.Avoidance Coping	.18**	.43**	.42**	.17*	—	.43**	.26**	.29**
6.Problem-Focused	.04	.18**	.19**	-.08	.43**	—	.48**	.53**
7.Emotion-Focused	.15*	.07	.25**	-.00	.26**	.48**	—	.19**
8.Acceptance	-.21**	.11	.03	-.13	.29**	.53**	.19**	—

Results indicate that worry is highly related to anxiety sensitivity, $n(285) = .46, p < .001$, rumination $n(285) = .52, p < .001$, GAD symptoms $n(285) = .74, p < .001$, avoidance coping $n(285) = .18, p < .001$, and emotion-focused coping, $n(285) = .152, p < .001$. Results also demonstrate that acceptance coping is negatively correlated with worry $n(285) = -.21, p < .001$.

Table 2. Means and standard deviations for measures by gender.

Group Statistics for Independent Samples t-test

Sex		N	Mean	Std. Deviation
Avoidance Cope	Male	74	34.4	6.8
	Female	206	35.0	8.1
Problem-Focused Cope	Male	74	33.6	7.9
	Female	206	33.1	7.9
Emotion-Focused Cope	Male	74	25.1	6.6
	Female	206	29.4	7.8
Acceptance Cope	Male	74	28.8	7.5
	Female	206	28.1	6.4
GADQ-IV	Male	74	12.4	6.5
	Female	206	15.1	6.8
Worry	Male	74	45.5	13.0
	Female	206	53.4	13.3
Anxiety Sensitivity	Male	74	14.0	8.7
	Female	206	18.4	12.0
Rumination	Male	74	1.9	.56
	Female	206	2.0	.63

Independent samples *t*-tests were conducted to compare GAD symptoms with avoidance coping, problem-focused coping, emotion-focused coping, acceptance coping, worry, rumination, and anxiety sensitivity. Women reported having more symptoms of GAD ($M = 15.1, SD = 6.8; t(283) = -3.00, p < .001$, anxiety sensitivity ($M = 18.4, SD = 12.0$), $t(277) = -2.90, p < .001$, emotion-focused coping ($M = 29.4, SD = 7.8; t(278) = -$

4.30, $p < .001$, and worry ($M = 53.4$, $SD = 13.3$; $t(283) = -4.40$, $p < .001$). Women did not report higher levels of rumination than men.

Table 3

*Independent Samples T-Test***Independent Samples T-Test**

	Levene's Test for Equality of variances		T-Test for Equality of Means				
	F	Sig.	t	df	Sig. (2 tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
Avoidance Cope	2.85	.1	-.53 -.58	278 152	.60 .57	-2.6 -2.5	1.5 1.4
Problem-Focused Cope	.084	.77	.50 .50	278 128	.61 .62	-1.6 -1.6	2.6 2.7
Emotion-Focused Cope	2.01	1.15	-4.3 -4.7	278 151	.00 .00	-6.6 -6.2	-2.4 -2.5
Acceptance Cope	5.17	.02	.79 .73	278 114	.43 .47	-1.1 -1.2	2.5 2.7
GADQ-IV	.272	.60	-3.0 -3.0	283 133	.00 .00	-4.5 -4.5	-.93 -.95
Worry	.220	.64	-4.4 -4.4	283 130	.00 .00	-11.3 -11.3	-4.3 -4.3
Anxiety Sensitivity	9.07	.00	-2.9 -3.3	277 175	.00 .00	-7.4 -7.0	-1.4 -8.0
Rumination	1.32	.25	-1.6 -1.7	283 141	.11 .10	-.30 -.30	.03 .02

Regression Analysis
All Participants

A stepwise regression analysis was conducted to see if the cognitive constructs of worry, anxiety sensitivity, rumination, and coping were predictive of GAD symptoms in the entire sample. Results indicated that worry, rumination, and anxiety sensitivity positively predicted GAD symptoms and problem-focused coping was a negative predictor. These variables accounted for 59.5% of the variance in GAD symptoms and the coefficients are presented in Table 4.

Table 4. Coefficients for predictors of GAD symptoms ($N = 285$)

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1		-4.600	1.097		-4.193	.001
	Worry	.368	.021	.732	17.809	.001
2		-6.937	1.147		-6.047	.001
	Worry	.316	.022	.628	14.139	.001
	Rumination	2.504	.493	.226	5.080	.001
3		-3.828	1.586		-2.444	.015
	Worry	.310	.022	.618	14.052	.001
	Rumination	2.704	.492	.243	5.502	.001
	Problem-focused coping	-.098	.034	-.113	-2.871	.004
4		-3.171	1.587		-1.998	.047
	Worry	.297	.023	.591	12.994	.001
	Rumination	2.322	.520	.209	4.462	.001
	Problem-focused coping	-.104	.034	-.120	-3.063	.002
	Anxiety Sensitivity	.059	.028	.098	2.133	.034

a. Dependent Variable: Generalized Anxiety Disorder Severity

For females, worry and rumination were positive predictors and emotion-focused coping negatively predicted GAD symptoms. These three variables accounted for 61.5% of the variance in GAD symptoms. Coefficients are presented in Table 5.

Table 5. *Regression for Females (n = 211)*

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1		-5.516	1.345		-4.101	.001
	Worry	.384	.024	.742	15.711	.001
2		-7.418	1.352		-5.488	.001
	Worry	.321	.027	.620	11.808	.001
	Rumination	2.579	.569	.238	4.528	.001
3		-4.241	1.602		-2.647	.009
	Worry	.323	.026	.623	12.198	.001
	Rumination	2.970	.566	.274	5.250	.001
	Emotion-focused coping	-.138	.040	-.157	-3.474	.001

a. Dependent Variable: Generalized Anxiety Disorder Severity

For males, worry and rumination positively predicted GAD symptoms. These two variables accounted for 47.4% of the variance in GAD symptoms. Coefficients are presented in Table 6.

Table 6. *Regression Analysis for Males (n = 74).*

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1		-2.750	2.093		-1.314	.193
	Worry	.331	.044	.663	7.472	.001
2		-5.723	2.484		-2.304	.024
	Worry	.305	.045	.612	6.789	.001
	Rumination	2.176	1.033	.190	2.107	.039

a. Dependent Variable: Generalized Anxiety Disorder Severity

Discussion

Generalized anxiety disorder (GAD) is typically associated with distorted cognitions, particularly in regards to high levels of excessive worry. Although GAD occurs in roughly 3.1% of the population, it is currently the least understood anxiety disorder. In addition, psychological treatments for GAD require a more accurate understanding of cognitive factors that may predict and maintain this disorder. Given that women have higher rates of GAD, predictive factors may vary by gender. The aims of this study were to examine predictive factors of a continuous measure of GAD (GADQ-IV) in males and females.

The first hypothesis of the study was partially confirmed. A step-wise regression on all participants indicated that worry, rumination, and anxiety sensitivity positively predicted GAD symptoms and problem-focused coping was a negative predictor with these variables accounting for 60% of the variance GAD scores. Although it was predicted that all of the variables studied would predict GAD, this was not confirmed. Emotion-focused, avoidance, and acceptance coping did not contribute to the prediction of GAD symptoms. It could be that with a larger sample size, these coping factors may be predictive. For example, avoidance coping might appear to be a positive predictor of GAD symptoms whereas acceptance might be a negative predictor. Future research with larger samples would need to be conducted to support these contentions.

The second hypothesis of the current study was confirmed. Women reported greater levels of GAD symptoms than men. These results are consistent with the current literature on gender differences in GAD prevalence. Ancillary analyses may provide some

additional support for other cognitive constructs that impact the development and maintenance of GAD symptoms in women and men. For example, independent samples *t*-tests revealed that women reported greater levels of anxiety sensitivity and emotion-focused coping than men. For females, worry and rumination were positive predictors and emotion-focused coping negatively predicted 62% of the variance in GAD. Emotion-focused coping contains strategies such as emotional venting, seeking support for emotional reasons and seeking support for instrumental reasons. Although worry and rumination continue to be associated with high levels of GAD for men and women, emotional coping styles appear to be gender-specific in predicting GAD in women. Further research is needed to ascertain if these variables predict GAD in a longitudinal design.

There were some limitations to this study. One of the limitations to this study is that the sample size is small and data outcomes could differ with a larger sample size. Participants were primarily college-aged and Caucasian, making it difficult to generalize the results to more diverse populations in the United States. Future studies should recruit participants from more diverse backgrounds. Another limitation of this study is the restricted geographic location in which the study took place. The sample consisted of all undergraduate college students, and psychopathology is less likely to be found in a college sample. This study also involved the use of self-report data. Self-report data may be influenced by certain factors; for example participants may under-report or over-report their symptoms. This study was cross-sectional, rather than longitudinal, and since the data was collected at one given time, it was impossible to control for individual differences in self-report measures. There could also be other variables that contribute to

GAD symptoms.

This study contributes to existing literature by examining cognitive constructs like worry, rumination, anxiety sensitivity, and coping that may predict the development of GAD. Because GAD is one of the most poorly understood anxiety disorders, it is important to study constructs that predict GAD symptoms in order to develop new intervention and treatment programs. Additionally, further research will aid in the understanding of the origin and prevention of Generalized Anxiety Disorder.

Appendices

Appendix A-Penn State Worry Questionnaire**PSWQ**

Write the number that best describes how typical or characteristic each item is of you.

1=Not at all typical

2=A little typical

3=Somewhat typical

4=Typical

5=Very typical

- ___1. If I don't have enough time to do everything, I don't worry about it.
- ___2. My worries overwhelm me.
- ___3. I do not tend to worry about things.
- ___4. Many situations make me worry.
- ___5. I know I shouldn't worry about things, but I just cannot help it.
- ___6. When I am under pressure I worry a lot.
- ___7. I am always worrying about something.
- ___8. I find it easy to dismiss worrisome thoughts.
- ___9. As soon as I finish one task, I start to worry about everything else I have to do.
- ___10. I never worry about anything.
- ___11. When there is nothing more I can do about a concern, I don't worry about it anymore.
- ___12. I've been a worrier all my life.
- ___13. I noticed that I have been worrying about things.
- ___14. Once I start worrying I can't stop.
- ___15. I worry all the time.
- ___16. I worry about projects until they are done.

Appendix B- Anxiety Sensitivity Index

AS Index

Respond to each item by indicating the number of the phrase which best represents the extent to which you agree with the item. If any of the items address something that is not part of your experience (i.e., "it scares me when I feel shaky" for someone who has never trembled or had the "shakes"), answer on the basis of how you think you might feel if you had such an experience. Otherwise answer all items on the basis of your own experience. Be careful to make only one choice for each item and please answer all items.

0 = Very little

1 = A Little

2 = Some

3 = Much

4 = Very Much

- _____ 1. It is important to me not to appear nervous.
- _____ 2. When I cannot keep my mind on a task, I worry that I might be going crazy.
- _____ 3. It scares me when I feel "shaky" (trembling).
- _____ 4. It scares me when I feel faint.
- _____ 5. It is important to me to stay in control of my emotions.
- _____ 6. It scares me when my heart beats rapidly.
- _____ 7. It embarrasses me when my stomach growls.
- _____ 8. It scares me when I am nauseous.
- _____ 9. When I notice that my heart is beating rapidly, I worry that I might have a heart attack.
- _____ 10. It scares me when I am short of breath.
- _____ 11. When my stomach is upset, I worry that I might be seriously ill.
- _____ 12. It scares me when I am unable to keep my mind on a task.
- _____ 13. Other people notice when I feel shaky.

- _____ 14. Unusual body sensations scare me.
- _____ 15. When I am nervous, I worry that I might be mentally ill.
- _____ 16. It scares me when I am nervous.

Appendix C- The COPE

THE COPE

Instructions: We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress. Please try to respond to each item separately in your mind from each other item. There are no right or wrong answers, so choose the most accurate answer for YOU, not what you think most people would say or do. Please use the following scale as you respond.

- 1 = I USUALLY DON'T DO THIS AT ALL
 2 = I USUALLY DO THIS A LITTLE BIT
 3 = I USUALLY DO THIS A MEDIUM AMOUNT
 4 = I USUALLY DO THIS A LOT

- ___1. I try to grow as a person as a result of the experience.
 ___2. I turn to work or other substitute activities to take my mind off things.
 ___3. I get upset and let my emotions out.
 ___4. I try to get advice from someone about what to do.
 ___5. I concentrate my effort on doing something about it.
 ___6. I say to myself "this isn't real."
 ___7. I put my trust in God.
 ___8. I laugh about the situation.
 ___9. I admit to myself that I couldn't deal with it, and quit trying.
 ___10. I restrain myself from doing anything too quickly.
 ___11. I discuss my feelings with someone.
 ___12. I use alcohol or drugs to make myself feel better.
 ___13. I get used to the idea that it happened.
 ___14. I talk to someone to find out more about the situation.
 ___15. I keep myself from getting distracted by other thoughts or activities.
 ___16. I daydream about things other than this.
 ___17. I get upset, and am really aware of it.
 ___18. I seek God's help.
 ___19. I make a plan of action.
 ___20. I make jokes about it.
 ___21. I accept that this has happened and that it can't be changed.
 ___22. I hold off doing anything about it until the situation permits.
 ___23. I try to get emotional support from friends or relatives.
 ___24. I just give up trying to reach my goal.
 ___25. I take additional action to try to get rid of the problem.
 ___26. I try to lose myself for awhile by drinking alcohol or taking drugs.
 ___27. I refuse to believe that it has happened.

- ___ 28. I let my feelings out.
- ___ 29. I try to see it in a different light, to make it seem more positive.
- ___ 30. I talk to someone who could do something concrete about the problem.
- ___ 31. I sleep more than usual.
- ___ 32. I try to come up with a strategy about what to do.
- ___ 33. I focus on dealing with this problem, and if necessary let other things slide a little.
- ___ 34. I get sympathy and understanding from someone.
- ___ 35. I drink alcohol or take drugs, in order to think about it less.
- ___ 36. I kid around about it.
- ___ 37. I give up the attempt to get what I want.
- ___ 38. I look for something good in what is happening.
- ___ 39. I think about how I might best handle the problem.
- ___ 40. I pretend that it hasn't really happened.
- ___ 41. I make sure not to make matters worse by acting too soon.
- ___ 42. I try hard to prevent other things from interfering with my efforts at dealing with this.
- ___ 43. I go to movies or watch TV, to think about it less.
- ___ 44. I accept the reality of the fact that it happened.
- ___ 45. I ask people who have had similar experiences what they did.
- ___ 46. I feel a lot of emotional distress and find myself expressing those feelings a lot.
- ___ 47. I take direct action to get around the problem.
- ___ 48. I try to find comfort in my religion.
- ___ 49. I force myself to wait for the right time to do something.
- ___ 50. I make fun of the situation.
- ___ 51. I reduce the amount of effort I'm putting into solving the problem.
- ___ 52. I talk to someone about how I feel.
- ___ 53. I use alcohol or drugs to help me get through it.
- ___ 54. I learn to live with it.
- ___ 55. I put aside other activities in order to concentrate on this.
- ___ 56. I think hard about what steps to take.
- ___ 57. I act as though it hasn't even happened.
- ___ 58. I do what has to be done, one step at a time.
- ___ 59. I learn something from the experience.
- ___ 60. I pray more than usual.

Appendix D- Response Styles Questionnaire

Response Styles Questionnaire

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you never, sometimes, often or always think or do each one when you feel down, sad, or depressed. Please indicate what you generally do, not what you think you should do.

0 = Almost Never

1 = Sometimes

2 = Often

3 = Almost Always

- ___ 1. Think about how alone you feel.
- ___ 2. Think "I won't be able to do my job/work because I feel so badly"
- ___ 3. Think about your feelings of fatigue and achiness
- ___ 4. Think about how hard it is to concentrate
- ___ 5. Try to find something positive in the situation or something you learned
- ___ 6. Think "I'm going to do something to make myself feel better"
- ___ 7. Help someone else with something in order to distract yourself
- ___ 8. Think about how passive and unmotivated you feel
- ___ 9. Remind yourself that these feelings won't last
- ___ 10. Analyze recent events to try to understand why you are depressed
- ___ 11. Think about how you don't seem to feel anything any more
- ___ 12. Think "Why can't I get going?"
- ___ 13. Think "Why do I always react this way?"
- ___ 14. Go to a favorite place to get your mind off your feelings
- ___ 15. Go away by yourself and think about why you feel this way
- ___ 16. Think "I'll concentrate on something other than how I feel."
- ___ 17. Write down what you are thinking about and analyze it
- ___ 18. Do something that has made you feel better in the past
- ___ 19. Think about a recent situation, wishing it had gone better
- ___ 20. Think "I'm going to go out and have some fun"
- ___ 21. Concentrate on your work.
- ___ 22. Think about how sad you feel.
- ___ 23. Think about all your shortcomings, failings, faults, mistakes
- ___ 24. Do something you enjoy

- ___ 25. Think about how you don't feel up to doing anything
- ___ 26. Do something fun with a friend
- ___ 27. Analyze your personality to try to understand why you are depressed
- ___ 28. Go someplace alone to think about your feelings
- ___ 29. Think about how angry you are with yourself
- ___ 30. Listen to sad music
- ___ 31. Isolate yourself and think about the reasons why you feel sad
- ___ 32. Try to understand yourself by focusing on your depressed feelings

Now, we would like for you to go back through the same items and rate each of these items for how effective this strategy has been for you in helping you cope more effectively with a depressed mood and helping to alleviate a depressed mood. Use the following scale to rate the effectiveness of each of the following strategies.

1	2	3	4	5	6	7
not very						extremely
effective						effective

- ___ 1. Think about how alone you feel.
- ___ 2. Think "I won't be able to do my job/work because I feel so badly"
- ___ 3. Think about your feelings of fatigue and achiness
- ___ 4. Think about how hard it is to concentrate
- ___ 5. Try to find something positive in the situation or something you learned
- ___ 6. Think "I'm going to do something to make myself feel better"
- ___ 7. Help someone else with something in order to distract yourself
- ___ 8. Think about how passive and unmotivated you feel
- ___ 9. Remind yourself that these feelings won't last
- ___ 10. Analyze recent events to try to understand why you are depressed
- ___ 11. Think about how you don't seem to feel anything any more
- ___ 12. Think "Why can't I get going?"
- ___ 13. Think "Why do I always react this way?"
- ___ 14. Go to a favorite place to get your mind off your feelings

- ___ 15. Go away by yourself and think about why you feel this way
- ___ 16. Think "I'll concentrate on something other than how I feel."
- ___ 17. Write down what you are thinking about and analyze it
- ___ 18. Do something that has made you feel better in the past
- ___ 19. Think about a recent situation, wishing it had gone better
- ___ 20. Think "I'm going to go out and have some fun"
- ___ 21. Concentrate on your work.
- ___ 22. Think about how sad you feel.
- ___ 23. Think about all your shortcomings, failings, faults, mistakes
- ___ 24. Do something you enjoy
- ___ 25. Think about how you don't feel up to doing anything
- ___ 26. Do something fun with a friend
- ___ 27. Analyze your personality to try to understand why you are depressed
- ___ 28. Go someplace alone to think about your feelings
- ___ 29. Think about how angry you are with yourself
- ___ 30. Listen to sad music
- ___ 31. Isolate yourself and think about the reasons why you feel sad
- ___ 32. Try to understand yourself by focusing on your depressed feelings

Appendix E- Generalized Anxiety Disorder Questionnaire

GADQ-IV

1. Do you ever experience excessive worry?

Yes

No

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

Yes

No

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

Yes

No

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

5. Please list the most frequent topics about which you worry excessively or uncontrollably (separate topics by a comma):

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

Yes

No

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

	Yes	No
Restlessness or feeling keyed up or on edge	*During the past six months, have you often been bothered by any of the following symptoms? Place a check next to each symptom that you have had more days than not: Restlessness or feeling keyed up or on edge. Yes	Restlessness or feeling keyed up or on edge. No

Difficulty falling/staying asleep or restless/unsatisfying sleep	Difficulty falling/staying asleep or restless/unsatisfying sleep. Yes	Difficulty falling/staying asleep or restless/unsatisfying sleep. No
Difficulty concentrating or mind going blank	Difficulty concentrating or mind going blank. Yes	Difficulty concentrating or mind going blank. No
	Yes	No
Irritability	Irritability Yes	Irritability No
Being easily fatigued	Being easily fatigued Yes	Being easily fatigued No
Muscle tension	Muscle tension Yes	Muscle tension No

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

0- 1 2- 3 4- 5 6- 7 8-Very
None Mild Moderate Severe Severe

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

0- 1 2- 3 4- 5 6- 7 8-Very
None Mild Moderate Severe Severe

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