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Rumination and Worry: Exploring the Specificity of Depressed and Anxious Negative Thoughts

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ABSTRACT

Depression is the most common mental disorder in the United States and is a leading cause of disability worldwide, contributing to the substantial global economic burden. Research identifying effective and cost-efficient intervention programs has been generally successful, yet the heterogeneity of depressive symptoms and their co-occurrence with other conditions complicate these efforts. This, “specificity” question, here understood as the ongoing search for distinct clinical symptoms associated primarily with depression rather than anxiety and other disorders has remained a more elusive challenge. Depression and anxiety frequently co-occur, and research has been designed to identify symptoms and syndromes specific to each condition. Rumination and worry are types of negative thoughts proposed to differentiate between depression and anxiety, and are the focus of this investigation. Participants were undergraduate students who completed the Beck Depression Inventory-2, the daily routine portion of the Self-Report of General Trait Anxiousness, the Ruminative Responses Scale, and the Penn State Worry Questionnaire. Analyses examined the relations among depression, anxiety, rumination, and worry. Additional procedures considered potential influences of subject gender and levels of perceived social support, the latter being assessed by the Multidimensional Scale of Perceived Social Support. We hypothesized that rumination would correlate more highly with depression than anxiety, with worry significantly more positively related with anxiety. It was also proposed that a temporal orientation would assist in distinguishing these relationships. Results supported the hypothesis that

rumination related more highly with depression; however, worry was not seen to relate more highly to anxiety than depression. Results also offered partial support for the second hypothesis in that visibly larger correlations between two future-oriented worry items and anxiety were evident, however, only one of two correlations between past-oriented rumination items and depressive symptom severity was greater than the correlation between past-oriented rumination items and anxiety. Additional analyses using ANOVAs allowed for a comparison of gender differences in the areas of depression, anxiety, rumination, and worry, as well as comparisons of reported social support levels were largely inconclusive. Limitations, directions for future research, and implications for clinical practice and assessment are described.

Rumination and Worry: Exploring the Specificity of
Depressed and Anxious Negative Thoughts

A Thesis

Presented to

The Faculty of the School of Psychology

Abilene Christian University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science in Psychology

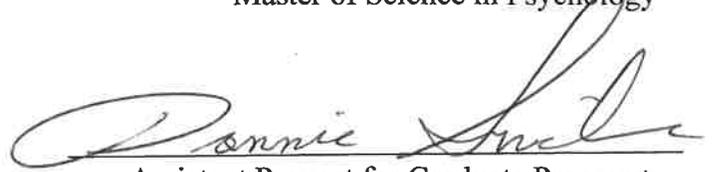
By

Yi-Hsuan Lin

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This thesis, directed and approved by the committee for the thesis Yi-Hsuan Lin, has been accepted by the Office of Graduate Programs of Abilene Christian University in partial fulfillment of the requirements for the degree

Master of Science in Psychology



Assistant Provost for Graduate Programs

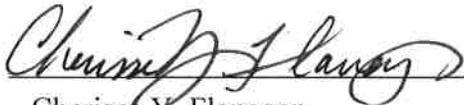
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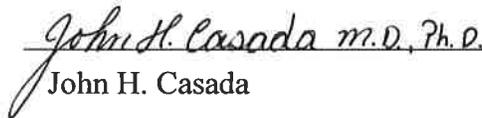
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To my parents, thank you for the support of my education. To my brother and my friends, thank you for encouraging me and cheering me up when I wanted to give up. To Cindy Schoonmaker and her family especially, for all the help and love these two years.

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CHAPTER I

INTRODUCTION

Importance of the Question

Depression is characterized by persistent sadness and a loss of interest in activities that one normally enjoys, accompanied by an inability to carry out daily activities for two or more weeks (DSM-5; American Psychiatric Association [APA], 2013). Depression is the most common mental disorder in the United States, with the National Institute of Mental Health (NIMH) reporting that an estimated 17.3 million adults in the U.S. suffer from at least one major depressive in their lifetime, representing 7.1% of U.S. adults, in which the rate for females (8.7%) is higher than for males (5.3%). The NIMH also reports that major depressive episodes are highest among young adults, aged 18 to 25 years, where the prevalence rate is 13.1% (NIMH, 2019). Similarly, NIMH reports that major depressive disorder is most prevalent among adults reporting membership in two or more racial groups. Of course, this problem is not isolated to the United States, as the World Health Organization (WHO) estimates more than 300 million people of all ages suffer from depression globally. The WHO also reports depression is the leading cause of disability worldwide as a major contributor to the overall global burden of disease (WHO, 2018). In addition to the huge financial costs for individuals, families, communities, societies, and countries, depression also inflicts its most substantial impact on individuals experiencing various depressive conditions, in the form of extreme

personal distress and on many occasions thoughts of or even acts of suicide. Current estimates suggest that 80% or more of completed suicides appear to have been significantly connected to depression, making it among the leading causes of death in adults (Suicide Statistics, n.d.; WHO, 2018).

The substantial prevalence and disability associated with major depressive disorder is both impressive and disheartening, yet considerable progress is evident when one examines research identifying and disseminating effective interventions for children, adolescents, adults, and the elderly with depression (National Collaborating Centre for Mental Health, 2005; Cuijpers et al., 2010). A number of empirically supported treatments are evident in the psychotherapy outcome literature, among which are cognitive-behavioral therapy (David-Ferdon & Kaslow, 2008), behavioral activation therapy (Dimidjian et al., 2006), and interpersonal therapy (David-Ferdon & Kaslow, 2008; Reynolds et al., 1999; Weissman & Markowitz, 2002), for example. Similar age-specific evidence of effectiveness is also reported, as exemplified by the TADS study of the treatment of depression in adolescents and in a number of reports of successful treatment of depressed children (NIMH Science Update, 2009).

However, identification of the most efficient and cost-effective intervention program for depressed individuals at various ages, geographic locations, socioeconomic strata, and ethnic backgrounds has not been so easy. Among the chief difficulties here appears to be the heterogeneity of depressive symptoms across patient samples in the frequent co-occurrence of depressive conditions with other forms of psychopathology. Thus, the search for empirically supported treatments (ESTs; Garfield, 1998; Kaslow & Thompson, 1998; Kendall, 1998), or better, evidenced-based practices (EBPs; American

Psychological Association, Presidential Task Force on Evidence-Based Practice, 2006; Rubenstein et al., 1999; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996; Scogin, Welsh, Hanson, Stump, & Coates, 2005) has remained a challenging mandate for depression treatment-outcome researchers. Furthermore, the need to delineate specific characteristics of patient samples in terms of symptom profiles and co-occurring conditions has made the pursuit of answers to the “specificity” question prominently raised by Gordon Paul in the late 1960s a continuing challenge to the present day. As the reader may recall, Paul’s phrasing of the now-famous ultimate clinical question was, “What treatment, by whom, is most effective for this individual, with that specific problem, under which set of circumstances, and how does it come about?” (Paul, 1967, 1969, p. 44). Therefore, in the current context, the paraphrase of Paul’s question would be: “What treatment is most effective for which depressed individuals (age, gender, ethnicity), with what particular symptom profiles, and what co-occurring conditions?” Although this represents an ambitious and intimidating complexity, several decades of research have helped to clarify central questions confronting depression outcome researchers.

Depressive and Anxious Disorder Co-Occurrence

Individuals with depression often experience symptoms like those of an anxiety disorder. Occasional anxiety is an expected part of life, but the symptoms of anxiety disorders can interfere with daily activities such as job performance and relationships. It is common for someone with an anxiety disorder to also suffer from depression or vice versa. Many people who develop depression have a history of an anxiety disorder earlier in life. Moreover, according to the World Health Organization (World Health

Organization, 2017), mental health disorders cost the global economy \$1 trillion in lost productivity a year, with depression and anxiety being the leading causes.

Anxiety and depression are also frequently reported to be highly correlated (Brown, Campbell, Lehman, Grisham, & Mancill, 2001), likely due at least in part to some sharing of symptomatology across the various disorders in each category. Shared signs of depression and anxiety include physical symptoms, such as insomnia, change in sleep patterns, and restlessness, and emotional symptoms, such as feelings of dread, concentration problems, avoidance, catastrophic thinking, and absentmindedness. As a result of frequent co-occurrence of anxious and depressive disorders, as well as the shared or, at least, highly similar symptom presentations presented by anxious and depressed individuals, a significant amount of research effort has been directed toward attempting to determine the specificity of depressed and anxious cognitive patterns and the relation to pathology.

Specificity of Depression and Anxiety

Historically, anxiety conditions were often viewed as either a precursor of depression (anxious helplessness fatigues into the hopelessness of depression) and as a subset of more severe affective conditions. This is most evident visually in the hierarchical arrangement seen in the organization of the *Diagnostic and Statistical Manual of Mental Disorders* prior to the revision of the third edition, where the diagnosis of major depressive condition precluded consideration of a comorbid anxious condition (DSM-2, APA, 1968; DSM-3, APA, 1980).

There has been a growing interest in the role of cognition in the development of psychopathological states since the first formulation of the cognitive model of depression.

Cognitive processes are assumed to mediate emotional and behavioral responses and are considered critical in the formation and maintenance of maladaptive psychological states. The cognitive model proposed by Aaron T. Beck (1967) may help to account for some of the differences and overlap between depression and anxiety. Cognitive distortion is an irrational thought pattern involved in the onset and perpetuation of psychopathological states that cause individuals to perceive reality inaccurately (Beck, 1967, 1976). Similarly, Albert Ellis's rational emotive therapy (1987), which was based on the ABCDE model of psychological disturbance and therapy, also indicated that irrational beliefs such as psychological disturbance and maladaptive behaviors can cause psychological and behavioral consequences like depression and anxiety (Ellis, 1962; Ellis & Dryden, 1987).

Researchers also studied the emotional part of specificity on depression and anxiety. Positive affectivity (PA) refers to positive emotions and expression, including pride, energy, enthusiasm, and joy. Negative affectivity (NA) is negative emotions and expression, which includes sadness, fear, lethargy, and distress. PA and NA are highly distinctive dimensions that can be meaningfully represented as uncorrelated factors. According to Watson and Clark (1984), NA was correlated with symptoms and diagnoses of both anxiety and depression; in contrast, PA was related primarily to symptoms and diagnoses of depression (Beck & Perkins, 2001; Watson & Clark, 1984; Watson, Clark, & Carey, 1988).

Attributional style has been also found to interact with stress to predict subsequent symptomatology of depression and anxiety (Ahrens & Haaga, 1993). Seligman and his colleagues found that depressed persons tended to attribute negative outcomes to internal

factors, while attributing positive outcomes to external factors. These causal attributions of life events lead to increased sad affect, lowered self-esteem, and decreased motivation (Seligman, 1975; Seligman et al., 1979). Especially, attributional style for negative events should be associated with both anxiety and depression, since NA is common to both. In contrast, attributional style for positive events should be associated with depression but not anxiety, since PA is only associated with depression (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978; Heimberg et al., 1989).

Despite years of debate and investigation into the differential patterns of distinct symptoms of depression and anxiety, relatively little evidence has been consistently indicative of distinct negative emotion conditions. As reviewed above, the evaluation of positive affect and attributional style has contributed importantly to the understanding of the distinct patterns associated with depression and anxiety. However, even though the theoretical and research attention to negative affect and thought patterns has been more substantial than attention to positive affect, it still has often been found difficult to demonstrate replicable distinctions between depressed and anxious states. Moreover, the affective difference between anxiety-fear-helplessness and depression-sadness-hopelessness seems almost too obvious. However, the differential thought patterns distinguishing depression and anxiety have proven much more difficult to demonstrate.

In summary, anxiety is now understood to be essentially a state of high NA with no significant relation to PA, while depression is a mixed state of high NA and low PA, inferring that the difference lies in the area of positive affect deficits. Furthermore, for depressive attributional style, studies show that only the outcome of positive events can differentiate depression and anxiety. In fact, negative emotions and thoughts are

important features of anxiety and depressive disorders, but there were few research studies indicating the specificity of the negative part of depression and anxiety.

Research on Negative Thought Patterns of Anxiety and Depression

There were several different types of negative thought patterns, including the ones already mentioned, such as cognitive distortions, irrational beliefs, and attributional explanatory style. Additionally, there were also studies on other types of negative thoughts. For instance, automatic thoughts are images or mental activity that occur as a response to a trigger that can have negative effects on people who have trouble with depression or anxiety. Also, there are dysfunctional attitudes, which are a set of beliefs that describe excessively rigid and perfectionistic criteria for evaluations of self-worth and personal performance. Automatic thoughts are proposed to have a direct effect on changes in depressive symptoms, while changes in dysfunctional attitudes are said to have an indirect effect on changes in depressive symptoms, mediated by automatic thoughts (Kwon & Oei, 1994, in press).

Worry, which is a general type of negative thought, has been defined in many ways. The common meaning of *worry* is a state of uncertainty about uncontrollable issues in lives. Nevertheless, there is a narrower definition of worry, which will be used in the present study, as the mental distress or agitation resulting from concern usually for something impending or anticipated; in other words, it is catastrophic anticipation for the future.

Rumination is another type of negative thought. Rumination is defined by Nolen-Hoeksema, indicating that individuals are with a ruminative style of responding to

depressed mood. Rumination involves repetitively focusing on the fact that one is depressed, on one's symptoms of depression, and on the causes, meanings, and consequences of depressive symptoms; rumination will cause protracted periods of depressed mood (Nolen-Hoeksema, 1991).

Worry mostly used to be studied in relation to anxiety and rumination in relation to depression, but some of the studies indicated that worry and rumination may not be clearly separated. Fresco et al. (2002) reported that worry and rumination are multidimensional and related but distinct cognitive processes that each have a relationship to both depression and anxiety. Eysenck et al. (2006) found that depression is triggered by probable negative events even when they lie in the future. Muris et al. (2004) indicated that rumination and worry correlated substantially while maintaining distinctiveness. Interestingly, worry and rumination were more clearly related to anxiety symptoms than depression symptoms. Worry emerged as a unique predictor of anxiety symptoms, even when controlling for rumination; however, when controlling for worry, rumination no longer accounted for a significant proportion of the variance in depression symptoms. Muris et al. (2005) also found that neuroticism, rumination, and worry were positively linked to both anxiety and depression, whereas there was no evidence found indicating that worry was exclusively linked to anxiety, nor that rumination would merely be related to depression (Eysenck, Payne, & Santos, 2006; Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Gustavon, Pont, Whisman, & Miyake, 2018; Merino, Ferreiro, & Senra, 2013; Muris, Roelofs, Meesters, & Boomsma, 2004; Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Safren et al., 2000; Topper, Molenaar, Emmelkamp, & Ehring, 2014).

What Has Been Known So Far

With regard to all the aforementioned information, worry and rumination are known to be alike, as they are both psychopathological, unproductive, repetitive thoughts, but worry seems to be more future-oriented, while rumination is past-oriented. Moreover, worry has mostly been studied in relation to anxiety, and rumination has been studied in relation to depression; however, some of the studies indicated that worry and rumination may not be clearly separated.

Current Study

The purpose of the current study is to test the relationship between rumination, worry, depression, and anxiety. The first hypothesis is that rumination will be more highly correlated to depression than to anxiety, while worry will be more highly correlated to anxiety than to depression. Moreover, the second hypothesis is that the temporal-oriented relationship (i.e., rumination is more past-oriented, and worry is more future-oriented), which has been suggested in previous studies, will be supported. Thus, rumination and worry will be the specificity of negative thoughts on depression and anxiety.

Next, other variables such as social support and gender were studied as the possible reasons that may have impacts on the severity level and extent of depression and anxiety. A number of studies demonstrate the harmful consequences of poor social support and the protective effects of having access to rich and functional social networks on maintaining physical and psychological health (Ozbay et al., 2007). Also, epidemiological studies throughout the world consistently reported higher rates of depression and anxiety disorders in women (Klose & Jacobi, 2004). Therefore, the

comparison of social support levels and gender differences in the areas of depression, anxiety, rumination, and worry will be additionally explored.

CHAPTER II

METHOD

Subjects and Procedures

Participants were college students aged 18 years and above and were recruited from those enrolled in PSYC 120, Introduction to Psychology, at Abilene Christian University. Participants received a small amount of course research credit for completing the project. Participants provided consent prior to responding to any question and were reminded that their participation was completely voluntary. Participants completed the assessment measures online through the SurveyMonkey website. The survey consisted of the BDI-II (Beck, Steer, & Brown, 1996), the S-R GTA (Endler, 1980), the RRS (Nolen-Hoeksema & Morrow, 1991), the PSWQ (Meyer, Miller, Metzger, & Borkovec, 1990), and the MSPSS (Zimet, Dahlem, Zimet, & Farley, 1988). The survey took approximately 25 minutes to complete.

Once data collection was complete, participant responses were reviewed for out of range and missing values. Following this data “cleaning”, the data file was imported to SPSS for scale scoring, reliability calculation, and statistical analysis.

Measures

This study requested participants to respond to survey items. Each of the psychological scales selected for inclusion in this project is a current version of

existing psychological inventories, published in mainstream professional sources, with empirically demonstrated test reliability and validity.

Depression

The Beck Depression Inventory-Second Edition (BDI-II) is a widely used self-report inventory measuring the severity of depression in adolescents and adults. The BDI-II was revised in 1996 to be more consistent with DSM-IV criteria for depression. The BDI-II comprises 21 items rated on a scale ranging from 0 (absence of symptoms; e.g., “I do not feel sad”) to 3 (most severe symptoms; e.g., “I am so sad or unhappy that I can't stand it”) to assess symptom severity during the past two weeks including today. Numerous studies have established the reliability and validity of the BDI-II in different populations and cultures. In adults, the BDI-II has been found to correlate with multiple measures of depression (Beck et al., 1996). The scale simply sums the scores; a higher score means more severe depression. A total score of 0–13 is considered minimal range, 14–19 is mild, 20–28 is moderate, and 29–63 is severe. Cut scores are to be adjusted based on the characteristics of the sample and the purpose for use of the BDI-II (Beck, Steer, & Brown, 1996).

Anxiety

The S-R Inventory of General Trait Anxiousness (S-R GTA; Endler & Okada, 1975) was designed to measure attitudes and reactions related to general situations. The modified version (Endler, 1980) consists of five situations, including interpersonal, physical danger, ambiguous, innocuous, and social evaluation. Subjects are asked to rate their responses to each of the situations on

15 dimensions, with options from A (as feeling very comfortable in the situation) to E (as the severest uncomfortable feeling). Phillips and Endler (1982) studied college students, reporting test-retest reliabilities for each situation as follows: interpersonal .60, physical danger .79, ambiguous .71, innocuous .60, and social evaluation .75. The current study uses the innocuous subscale (e.g., items like, “feel nervous” and “feel self-confident”) as the measure of trait anxiety.

Rumination

The Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991) is a 71-item self-report measure used to identify four coping strategies in response to depressed mood: problem-solving, distraction, engaging in dangerous activities, and rumination. The Ruminative Responses Scale (RRS) is the subscale consisting of 22 items, which are focused on self (e.g., “I think about what am I doing to deserve this?”), symptoms (e.g., “I think about how hard it is to concentrate”), or the possible consequences and causes of the mood (e.g., “I go away by myself and think about why I feel this way”), on a Likert-type scale, with values ranging from 1 (almost never) to 4 (almost always). The scale simply sums the scores; a higher score means more severe ruminative tendency. The internal consistency of the RRS is good ($\alpha = .89$), and subjects’ responses to this scale have been shown to correlate significantly ($r = .62$) with their use of ruminative responses to depressed mood in a 30-day diary study (Nolen-Hoeksema & Morrow, 1991).

Worry

The Penn State Worry Questionnaire (PSWQ; Meyer et al. 1990) was developed to measure aspects of clinically significant worry, measuring the tendency, intensity, and uncontrollability of worry (e.g., “I worry all the time”; “My worries overwhelm me”). It consists of 16 items rated on a five-point Likert scale, with values ranging from 1 (not at all typical of me) to 5 (very typical of me). In scoring the PSWQ, a value of 1, 2, 3, 4, or 5 is assigned to a response depending upon whether the item is worded positively or negatively. The possible range of scores is 16–80 with the algorithm of total scores: 16–39 as low worry; 40–59 as moderate worry, and 60–80 as high worry. Meyer et al. (1990) carried out a series of studies showing high internal consistency in clinical and non-clinical samples ($\alpha = .88-.95$), good test-retest reliability in various samples ($r = .74-.92$), and good convergent and discriminant validity.

Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) is developed as a brief self-report measure of subjectively assessed social support in which 12 items are rated on a seven-point Likert-type scale, ranging from 1 (very strongly disagree) to 7 (very strongly agree). The MSPSS is designed to measure the perceived adequacy of support from the following three sources: family (Items 3, 4, 8, and 11; e.g., “My family really tries to help me”), friends (Items 6, 7, 9, and 12; e.g., “I can talk about my problems with my friends”), and significant other (Items 1, 2, 5, and 10; e.g., “I have a special person who is a real source of comfort to me”). Mean subscale scores will sum

across subscale items (4 items for each subscale) and then divide by 4; mean total scale score will sum across all 12 items, then divide by 12. Any mean scale score ranging from 1 to 2.9 could be considered low support; a score of 3 to 5 could be considered moderate support; a score from 5.1 to 7 could be considered high support. The MSPSS has good internal reliability ($\alpha = .85-.91$), and test-retest reliability ($\alpha = .72-.85$), as well as adequate construct validity, demonstrated by significant correlations between the MSPSS subscales and the Depression and Anxiety subscales of the Hopkins Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), with a variety of samples including university undergraduates (Zimet et al., 1988).

CHAPTER III

RESULTS

Plan of Data Analysis

The initial stage of data analysis involved calculation of correlation coefficients between continuous variables for the first hypotheses. Additional correlation coefficients were computed to examine hypothesis two. Data for statistical analyses were imported from the online survey tool (SurveyMonkey) and subsequently analyzed in SPSS 20.

Demographic Characteristics

A total of 112 participants responded to the survey and of these, 74 subjects completed all study measures. The sample was predominantly female ($N = 49$), and the majority reported the ethnicity of white or Caucasian (58.1%), followed by Hispanic or Latino (23%). A more detailed description of the demographic characteristics of participants completing survey scales is presented in Table 1.

Table 1

Demographic Characteristics of Participants (N = 74)

Characteristic	<i>n</i>	%
Gender		
Female	49	66.2%
Male	24	32.4%
Prefer not to answer	1	1.4%
Ethnicity/ Race		
White or Caucasian	43	58.1%
Black or African American	9	12.2%
Hispanic or Latino	17	23.0%
Asian or Asian American	3	4.1%
Identity of part of two or more	1	1.4%
Prefer not to answer	1	1.4%

Correlational Analysis

Correlation coefficients were calculated for all of the 74 participants to determine the strength and direction of observed relationships between variables of interest. Correlation matrixes for these computations for all subjects completing the assessment battery are presented in Tables 2 and 3.

Table 2

Correlations for Scores on BDI-II, S-R GTA, RRS, PSWQ for All Participants (N = 74)

	Anxiety (S-R GTA)	Rumination (RRS)	Worry (PSWQ)
Depression (BDI-II)	.524**	.762**	.472**
Anxiety		.616**	.622**
Rumination			.546**
Worry			

** $p < .01$

Table 3

Correlations for Scores on BDI-II, S-R GTA, RRS, PSWQ and the Items from RRS and PSWQ for All Participants (N = 74)

	Item	Scale			
		Depression	Anxiety	Rumination	Worry
R7	analyze recent events	.573**	.576**		.422**
R13	think about situation	.582**	.382**		.392**
W9	worry about undone things	.359**	.541**	.421**	
W16	worry about projects until it's done	.371**	.546**	.413**	

** $p < .01$

ANOVAs

ANOVAs were computed for the 74 participants to determine the relationship between nominal and numerical variables. This allowed for a comparison of gender differences in self-reported levels of symptom severity in the areas of Depression, Anxiety, Rumination, and Worry, as well as comparisons of reported social support levels. For these mean-comparison statistical tests, all subjects reporting an identified gender and completing the specific scale were included in computations. As depicted in Table 4, significant mean differences were observed only for worry and anxiety, with female participants reporting significantly higher levels of anxious/worry symptoms. Similarly, women reported higher levels of rumination and depression; these variables did not reach the level of statistical significance, with observed probabilities around $p = .10$. All other measured variables, social support-family/friends/significant other and

socialization, were not found to differ to a statistically-significant level across male and female participants.

Table 4

Means for Scores on BDI-II, S-R GTA, RRS, PSWQ x Gender

Dependent Variable	Gender	Mean	Significance
Depression	Female	15.166	.095
	Male	11.260	
Anxiety	Female	46.467	.008
	Male	41.692	
Rumination	Female	20.497	.245
	Male	17.086	
Worry	Female	43.021	.009
	Male	32.667	

Testing Hypotheses

The first stated hypothesis was that rumination will be more highly correlated to depression than to anxiety, while worry will be more highly correlated to anxiety than to depression. This hypothesis was directly examined via the calculation of correlation coefficients from the scores of the whole four scales. Missing item values for each scale were counted, and if 10% or less of the items were missing a response, a prorated total was calculated to adjust for the missing values (i.e., prorated scale total scores were obtained by summing item scores and multiplying by $(21/(21-\text{bdiMissing}))$; missing > 10% would lead to no total calculation for that scale). Depression correlation with rumination is .762, and it is statistically significant ($p = .000$). Depression correlation with worry is .472, and it is also statistically significant ($p = .000$). But the correlation of

depression and rumination is clearly bigger than the correlation of depression and worry. In order to test the hypothesis that depression would be more significantly correlated to rumination than it is to worry, the Fisher r-to-z transformation was used to obtain a value of z that assess the significance of the difference between two correlation coefficients. The Fisher r-to-z transformation produced positive 2.97 ($p = .003$), rejecting the null hypothesis, and clearly concluding that depression is significantly more highly correlated to rumination than to worry.

Anxiety correlation with worry is .622, and it is statistically significant ($p = .000$). Anxiety correlation with rumination is .616, and it is also statistically significant ($p = .000$). The correlation between anxiety and worry is slightly bigger than the correlation of anxiety and rumination; similarly, to assess the significance of the difference between two correlation coefficients, the Fisher r-to-z transformation produced positive .06 ($p = .95$), failing to reject the null hypothesis, and concluding that anxiety is not significantly more highly correlated to worry than to rumination.

The second stated hypothesis was that there would be a temporal orientation existing in the relationship, with anxiety focused more on the future, in relation to the greater connection to worry, and depression focused more on the past, in relation to the greater connection to rumination. This hypothesis was examined via the calculation of correlation coefficients from the temporal-focused items that we selected from the worry and rumination scales with the depression and anxiety scores. There were two items stressing past-orientation specifically pulled out from the RRS (i.e., “analyze recent events to try to understand why you

are depressed” and “think about a recent situation, wishing it had gone better”) and two items from the PSWQ stressing future-orientation specifically (i.e., “as soon as I finish one task, I start to worry about everything else I have to do” and “I worry about projects until they are all done”). Depression correlation with “analyze recent events” is .573, with “think about situation” is .582, with “worry about undone things” is .359, and with “worry about projects until it’s done” is .371, and they were all statistically significant ($p < 0.01$). Anxiety correlation with “analyze recent events” is .576, with “think about situation” is .382, with “worry about undone things” is .541, and with “worry about projects until it’s done” is .546, and they were all statistically significant ($p < 0.01$). Only one of the correlations between rumination items and depression was obviously greater than it was to anxiety; however, both correlations between two worry items and anxiety were obviously greater than they were to depression.

CHAPTER IV

DISCUSSION

Review of Results

Testing for Hypothesis 1 indicated support for the hypothesis that depression and rumination have a bigger correlation than depression and worry; however, anxiety was correlated with rumination and worry, without the statistical significance supporting that the relationship between anxiety and worry was stronger than the relationship between anxiety and rumination. On the other hand, testing for Hypothesis 2 indicated that both items from the worry scale that seemed to be future-oriented were more highly correlated to anxiety than to depression, as predicted; however, only one of the items from the rumination scale appearing to be past-oriented showed greater correlation to depression than anxiety. The situation that two results were somewhat opposed to one another might be interpreted as an indication that the current scales assessing depression and anxiety are unclear and indistinct.

Testing for gender influences indicated that women tended to feel more depressed and anxious, as well as ruminate and worry more, than men. Although only the mean scores of anxiety scale and worry scale reach the level of statistical significance, the results might be due to the limitations of the current study.

Limitations

This study has several limitations. One of these limitations is about the sample. First of all, it was a quite small sample size. Having a larger sample size would increase the power of the study and would provide more stability to the observed results. Second, convenience samples of college students were used in this study. Future studies would benefit from getting samples in different ways, such as using clinical populations to complete similar studies so that the generalizability and strength of the findings would be increased.

A related limitation is the design of the survey. The current study relied solely on self-reported instruments, in which data are often argued to be unreliable and threatened by self-reporting bias such as social desirability and recall bias. The inclusion of multiple assessment techniques would be suggested to improve the research.

Additional limitations include the length of the survey (183 items), which might be too many to answer. Participants would easily give up halfway through the process and end up being the group that should be excluded. Future studies might want to condense the survey to increase the completion rate. Also, since participating in the survey earned points for class credit, there is a chance that participants randomly answered the survey in order to get the credits.

Implications

The blurriness and contradiction indicated that we might need cleaner measures of worry and rumination with temporally focused items, with past failure for the rumination scale and future concerns for the worry scale, so that we

could better identify and differentiate depression and anxiety. Also, considering other variables that might influence the relationship would be a good way to keep understanding and figuring out the specificity of depression and anxiety.

Moreover, depression was tested to be highly correlated to rumination, which implies that individuals with depression tend to repetitively think in response to a sad mood and dwell on the causes, meaning, and implications of their mood, as well as problems and events from the past. Anxiety was tested to be highly correlated to worry, in which individuals focus on and fear uncontrollable and uncertain events with the potential for a future negative outcome. Also, these situations are easily observed in clinical settings. Thus, it is important to recognize the clinical utility of present-focused interventions that educate depressed and anxious individuals that whenever they find their mind drifting to thoughts of the past or future, they should try to gently redirect themselves to focus on the present moment. There are several different strategies and tools that help to keep individuals in the present moment, such as meditation and breathing exercises.

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APPENDIX A

ACU IRB Approval Letter

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885



February 2, 2019

Yi-Hsuan Lin

Department of Psychology

Dear Lin,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Rumination and Worry: Exploring the Influences of Socialization/ Alienation, Social Support, and Gender on the Specificity of Depressive and Anxious Symptoms",

(IRB# 19-008)is exempt from review under Federal Policy for the Protection of Human Subjects.

If at any time the details of this project change, please resubmit to the IRB so the committee can determine whether or not the exempt status is still applicable.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs

APPENDIX B

Consent Form

You may be eligible to take part in a research study. This form provides important information about that study, including the risks and benefits to you, the potential participant. Please read this form carefully and ask any questions that you may have regarding the procedures, your involvement, and any risks or benefits you may experience. You may also wish to discuss your participation with other people, such as your family doctor or a family member.

PURPOSE AND DESCRIPTION: This research study is being done to identify the specificity of depressive and anxious symptoms, and further explore that different levels of socialization, levels of social support, and gender of the individuals might influence symptoms' expression.

If you take part in the study, you will be asked to fill out set of questionnaires, which will take approximately 35 minutes to complete. The survey includes a demographic questionnaire, Beck Depression Inventory- Second Edition (BDI-II), Stimulus-Response Inventory of General Trait Anxiousness (S-R GTA), Ruminative Response Scale (RRS), The Penn State Worry Questionnaire (PSWQ), The Multidimensional Scale of Perceived Social Support (MSPSS), the Socialization Scale, and the Perkins' Alienation Scale.

RISKS & BENEFITS: There are risks to taking part in this research study. The potential risks from taking part in this study are minimal. It is possible that the survey questions may elicit some negative feelings and participants may experience some discomfort; however, no specific negative events are being asked and the questions are more generalized on negative and positive affect and overall life experience. Should any discomfort or significant feelings associated with this study arise, please contact your primary care physician. In addition, a list of resources of mental health professionals and support can be requested from the coinvestigators if needed.

There are potential benefits to participating in this study. Such benefits may include increased self-awareness and psychological symptom consideration. The researchers cannot guarantee that you will experience any personal benefits from participating in this study.

PRIVACY & CONFIDENTIALITY: Information collected about you will be handled in a confidential manner in accordance with the law. Some identifiable

data may have to be shared with individuals outside of the study team, such as members of the ACU Institutional Review Board.

The primary risk with this study is breach of confidentiality. However we have taken steps to minimize this risk. We will not be collecting any personal identification data during the survey. However, Survey Monkey may collect information from your computer. You may read their privacy statements here: <https://www.surveymonkey.com/mp/policy/privacy-policy/>.

CONTACTS: If you have questions about the research study, the Principal Investigator is Yi-Hsuan Lin, and may be contacted at yx117b@acu.edu and 626-238-7157. If you are unable to reach the Principal Investigator or wish to speak to someone other than the Principal Investigator, you may contact Scott Perkins, Ph.D at perkinss@acu.edu. If you have concerns about this study, believe you may have been injured because of this study, or have general questions about your rights as a research participant, you may contact ACU's Chair of the Institutional Review Board and Executive Director of Research, Megan Roth, Ph.D. Dr. Roth may be reached at
(325) 674-2885
megan.roth@acu.edu
320 Hardin Administration Bldg, ACU Box 29103
Abilene, TX 79699

Your participation in this research is entirely voluntary. You may decline to participate or withdraw from the study at any time and for any reason without any penalty or loss of benefits to which you are otherwise entitled.

Consent Signature Section: For the first question in the survey, "I have read the informed consent and I voluntarily consent to participation in this study", click only after you have read all of the information provided and your questions have been answered to your satisfaction.

APPENDIX C

Demographic Questions

1. What is your gender?
 - Female
 - Male
 - Other/ Prefer not to answer

2. What is your ethnicity?
 - White or Caucasian
 - Black or African American
 - Hispanic or Latino
 - Asian or Asian American
 - American Indian or Alaska Native
 - Native Hawaiian or other Pacific Islander
 - Identify as part of two or more
 - Prefer not to answer