Transdiagnostic Factors: The Mediating Role of Rumination in Health Anxiety and Premenstrual Distress

Kristina S. Anderson

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TRANSDIAGNOSTIC FACTORS: THE MEDIATING ROLE OF RUMINATION IN
HEALTH ANXIETY AND PREMENSTRUAL DISTRESS

by

Kristina S. Anderson

A Thesis Submitted in Partial Fulfillment
of the Requirements for a Degree with Honors
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Abstract

Recent evidence has suggested that multiple disorders may share transdiagnostic factors. Transdiagnostic means a factor that may account for the comorbidity of symptoms between certain psychopathologies. Recently, researchers have posited that rumination, the tendency to dwell on thoughts and feelings, may be a transdiagnostic factor in several psychological disorders. It is also possible that rumination may exacerbate other psychological constructs or physical concerns (e.g., experiential avoidance, health anxiety, premenstrual distress). Previous research found that rumination partially mediated the relationship between anxiety sensitivity and premenstrual distress. In addition to the research on correlates of premenstrual distress, recently researchers have begun to look at gender-specific stressors that may predispose women to report more psychological and physical distress. Given that women engage in rumination in response to distress more than men, it is important to examine this construct in relation to other constructs (e.g., health anxiety). The purpose of the present study was to extend the research on the relationships between rumination and premenstrual distress to include health anxiety, experiential avoidance, and anxiety sensitivity.

Undergraduate females \(N = 715\) completed measures of rumination (RSQ), premenstrual distress (MDQ), anxiety sensitivity (ASI), and experiential avoidance (AAQ). The average age was 19.47 (\(SD = 3.59\)) and the majority were Caucasian (92.9%). A stepwise multiple regression with premenstrual distress as the dependent
variable and the other variables entered as predictors revealed that rumination and health anxiety significantly predicted 20% of the variance in premenstrual distress. Given the earlier research that found that rumination mediated the relationship between anxiety sensitivity and premenstrual distress, we conducted a multiple mediation analysis. Results indicated that rumination partially mediated the relationship between health anxiety and premenstrual distress. This study provides more support for the mediating influence of rumination and also identifies another gender-specific stressor that may impact women’s mental and physical health.
# Table of Contents

Introduction ........................................................................................................ 1

Method ............................................................................................................... 11

Results ............................................................................................................. 14

Discussion ....................................................................................................... 18

Bibliography ................................................................................................... 22

Appendices ..................................................................................................... 25

Authors Biography ............................................................................................ 32
Transdiagnostic Factors: The mediating Role of Rumination in Health Anxiety and Premenstrual Distress

The term transdiagnostic factor is useful in understanding the potential role that a factor may play in the development and maintenance of comorbid psychopathologies and constructs. For example, McLaughlin and Nolen-Hoeksema (2010) found that rumination significantly accounted for the co-occurrence of symptoms between anxiety and depression in adolescents and partially accounting for the co-occurrence of symptoms in adults. Other transdiagnostic factors may include health anxiety, experiential avoidance, and anxiety sensitivity. These findings have important implications for the development of the concept of rumination as a transdiagnostic factor. In the case of McLaughlin and Nolen-Hoeksema’s (2010) study, rumination represented a mutual element common to several disorders (e.g., anxiety and depression).

Another study found rumination to be a transdiagnostic factor in the relationship between anxiety sensitivity and premenstrual distress (Sigmon, Schartel, Hermann, Cassel, & Thorpe, 2009). The results of this study indicated that individuals who experience anxiety sensitivity and who ruminate are more likely to experience greater premenstrual distress. These findings suggest that rumination is involved in both the experience of anxiety sensitivity and premenstrual distress (Sigmon et al., 2009).

From a clinical perspective, targeting transdiagnostic factors in treatment programs may provide many benefits including efficiency of treatment, efficacy of treatment, and endurance of treatment as opposed to targeting factors specific to individual disorders (Addis, Wade, & Hatgis, 1999; Barlow, Allen, & Choate, 2004; Brown, Antony, & Barlow, 1995; McEvoy, Nathan, Norton, 2009; McLaughlin & Nolen-
Hoeksema, 2010). The clinical benefits associated with targeting transdiagnostic factors during therapy sessions has launched a search to find factors responsible for the comorbidity of symptoms between psychopathologies and constructs.

Although several studies have investigated the role of rumination in anxiety and/or depression, little research has been conducted into the role of multiple transdiagnostic factors in women’s experience. The current study addresses this gap in the literature by performing preliminary regression analyses using rumination, health anxiety, anxiety sensitivity and experiential avoidance as the independent variables and premenstrual distress as the dependent variable. In addition, the meditational nature of rumination will be examined.

**Premenstrual Distress**

Premenstrual distress is reported by as many as 80% of women and is associated with a broad range of physical and emotional symptoms, which can range anywhere from mild to severe (Sigmon, Craner, Yoon, & Thorpe, 2012). In recent years there have been several studies dedicated to distinguishing factors that may account for the high rate of those reporting the experience of premenstrual distress. Some research has found a positive correlation between the emotional symptoms described by individuals suffering from severe premenstrual distress (e.g., feelings of hopelessness, guilt, and anxiety), and the symptoms described by women suffering from mood and/or anxiety disorders (e.g., Barnard, Frayne, Skinner, & Sullivan. 2003; Halbreich, Borenstein, Pearlstein, & Kahn. 2003). These findings suggest that cognitive processes may be predictive factors in the
self-reports of premenstrual distress. For example, 50% of women with PMS have reported having anxiety and/or mood disorders (Sigmon et al., 2012).

According to recent research there are two ways in which psychological factors may influence the experience of premenstrual distress: 1) women high in premenstrual distress may have maladaptive responses to emotional changes (e.g., rumination, self-blame), and (2) women high in premenstrual distress may focus inward on physiological sensations and have negative views of symptoms (e.g., anxiety sensitivity; Sigmon et al, 2012). Premenstrual distress has high rates of comorbidity with other psychological disorders (e.g. anxiety and depression; Sigmon et al., 2012). In this study it is expected that premenstrual distress will correlate positively with rumination, health anxiety, experiential avoidance, and anxiety sensitivity. It is also expected that these constructs may predict and/or mediate the experience of premenstrual distress. Research has discovered a potential relationship between anxiety sensitivity, rumination, and premenstrual distress. Sigmon and colleagues (2009) found that women who report higher levels of anxiety sensitivity (AS) and who engage in depressive rumination report more severe symptoms of premenstrual distress (Sigmon et al., 2009). It is expected this study will provide similar results.

**Rumination**

Rumination can be defined as a pattern of responding to distress or depressed mood in a passive, perseverative way of thinking about upsetting symptoms and the causes and consequences of those symptoms (Nolen-Hoeksema & Morrow, 1990). Individuals who continue to engage in rumination fail to initiate active problem solving
that might alter the cause of that distress (Nolen-Hoeksema & Morrow, 1990). It is this type of repetitive, negative thinking most often recognized when linking rumination with psychological disorders like depression and anxiety. Numerous studies have highlighted the significant role rumination plays in the development and maintenance of specific constructs and psychopathologies (e.g., anxiety and depression). Individuals who ruminate tend to have more severe symptoms and take longer to recover from their respective episodes.

Nolen-Hoeksema & Jackson (2001) developed the construct of rumination to help explain gender differences in depression prevalence; for example why women were twice more likely to develop depression than men. She hypothesized that women tend to focus on their negative thoughts and feelings in reaction to a depressed mood and thus do not solve the initial situation or event leading to depressed mood as opposed to men who tend to distract themselves from their moods and then eventually revisit the problem after the depressed mood dissipates (Nolen-Hoeksema & Jackson, 2001).

A factor analysis has identified two subtypes of rumination: reflection and brooding (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Brooding is the process in which an individual passively compares their current situation to an unmet goal. Reflection is the process where an individual engages in cognitive problem solving in attempt to alleviate their depressive symptoms (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The process of depressive rumination, involving both brooding and reflection, often results in negative affect (Thomsen, 2006).

According to Nolen-Hoeksema’s (1991) Response Styles Theory, there are four ways in which rumination negatively affects an individual: 1) through recall of negative
thoughts and memories, which works to intensify depressed mood; 2) interference with problem solving; 3) interference with development of successful strategies that could potentially be used to overcome the mood, and; 4) erosion of social support. Individuals who engage in depressive rumination often do so with the belief that it will help them understand their depressive mood and symptoms, and therefore will aid them in overcoming their mood and symptoms. However, instead of rumination helping the individual, repetitive negative thinking supplements the mood by focusing the individual’s attention on the mood, which in return reinforces the mood. This process of rumination often results in negative affect, which may include depression, helplessness, and/or stress (Thomsen, 2006). It has been suggested that the link between negative affect (e.g., depression) and rumination may correlate with the length, intensity, and/or frequency of the negative affect (McIntosh, 1996; Nolen-Hoeksema, 1991).

The recognition of the cyclical nature of rumination, and its relationship with negative affect has resulted in numerous investigations regarding the nature of rumination and its relationship with other psychological constructs and disorders. It is expected that a relationship will exist between rumination, health anxiety, experiential avoidance, anxiety sensitivity, and premenstrual distress. It is also expected that rumination will be a significant mediator that accounts for the comorbidity of symptoms between constructs and the condition of premenstrual distress. Given that depression and anxiety are symptoms of premenstrual distress and the evidence suggesting a strong link between rumination and depression, anxiety, and premenstrual distress, it is hypothesized that rumination may be a particularly important construct in the investigation of women’s psychological and physical functioning.
Health Anxiety

Health anxiety affects up to 20% of the population and is characterized by a wide range of worry and concern about health (Asmundson & Taylor, 2005). It can range from mild to severe and encompasses a broad range of disorders (e.g., hypochondriasis). Individuals who have significant levels of health anxiety can be described as being excessively sensitive to bodily sensations, which they often misinterpret as being extreme health conditions (Fergus & Valentire, 2011). Individuals with high levels of health anxiety also tend to seek reassurance from family members, friends, and health care professionals (Fergus et al., 2011).

Health anxiety is often characterized by catastrophic health appraisals. For example, individuals who experience high levels of health anxiety may perceive headaches to be brain tumors or a scratchy throat to be throat cancer (Abramowitz & Braddock, 2008). According to one study catastrophic health appraisals of body sensations and symptoms are predictors of the level of health anxiety an individual may experience (Hitchcock & Mathews, 1992; Marcus & Church, 2003). Individuals who report catastrophic health appraisals are significantly more likely to experience higher levels of health anxiety. This study used the Symptoms and Outcomes Scale (SOS) to assess individual’s tendency to appraise ambiguous body sensations as being either minor or catastrophic, the Intolerance of Uncertainty Scale (IUS), to measures negative beliefs surrounding uncertainty, and the Short Health Anxiety Inventory (SHAI) to examine individual’s health concerns from a cognitive perspective. Similar to our study, Fergus and Valentiner (2011) compared measures using correlation and regression analyses to arrive at their findings.
It is expected that health anxiety will be related to the constructs of rumination, experiential avoidance, and anxiety sensitivity and also to the condition of premenstrual distress. Research indicates that individuals who ruminate may experience health anxiety as a result of the way in which they respond to health distress. For example, they may engage in a passive preservative way of thinking about bodily sensations and symptoms and the causes and consequences of those symptoms. This evidence coincides with the hypothesis that health anxiety and the aforementioned concepts and condition of premenstrual distress may share etiological and/or maintaining factors.

**Experiential Avoidance**

Experiential avoidance (EA) refers to a tendency to avoid certain aspects of private experiences such as thoughts, feelings, memories, and bodily sensations (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). EA can be beneficial in the short term in reducing the presence of the aforementioned unwanted states. However, the act of extended EA often leads to ineffective functioning, and less contact with present experiences (Hayes, et al., 2006; Hayes, Strosahl & Wilson, 1999; Grigorio et al. 2010). Numerous studies have found that EA positively correlates with various forms of psychopathology, such as anxiety and depression. These findings are significant in that by discovering factors that contribute to the development and maintenance of EA, psychologists may be able to target and prevent EA.

It is expected that experiential avoidance will be related to the constructs of rumination, health anxiety, and anxiety sensitivity. It is also expected that EA will be related to the condition of premenstrual distress. Evidence suggesting a relationship
between constructs is demonstrated in the finding that rumination may be one such factor that is involved in the development and maintenance of EA. For example, a link has been discovered between self-reported depressive rumination and experiential avoidance and avoidant behaviors (Giorgio et al., 2010). In a sample of women diagnosed with breast cancer, those who reported higher levels of rumination tended to wait on average 2 months longer than non-ruminators to report their symptoms to health care professionals (Lyubomirsky, Karsi, Chang, & Chung, 2006). Women in this study were asked to complete questionnaires assessing their experience of discovering breast cancer symptoms, their ruminative style, and their response to learning of their diagnosis. Next the women were categorized into two groups: 1) ruminators and 2) non-ruminators, based on their responses to the ruminative style questionnaire. These groups were then compared using a t-test analysis. According to the authors, this finding may be a result of the avoidance conceptualization of rumination. For example, the correlation between rumination and experiential avoidance may explain the adverse effects of depressive rumination (Grigorio et al., 2010). These finding highlight a potential link between rumination and the avoidance of negative experiences. Given the aforementioned results, it is expected that in the current study, experiential avoidance will be positively correlated with the construct of rumination, along with health anxiety and experiential avoidance, and also with the condition of premenstrual distress.

**Anxiety Sensitivity**

Anxiety disorders are characterized by concerns over feelings of uncertainty and uncontrollability about situations (Nolen-Hoeksema, 2000). Research has found self-
reports of anxiety and rumination to be positively correlated. In a study conducted by Nolen-Hoeksema (2004), rumination predicted participant’s self-report ratings of anxiety. This finding may be due in part to the role rumination plays in diminishing and/ or delaying coping responses to stressful situations, and lowered satisfaction with solutions (Thomsen, 2006). Other researchers have found rumination to be associated with a reluctance to commit to a plan of action and lowered levels of confidence in the plan (Thomsen, 2006). Delayed coping responses, and lowered satisfaction in solutions may work to create a vicious cycle between anxiety and rumination.

Anxiety sensitivity refers to an individual’s propensity to fear bodily sensations that are related to anxiety. These symptoms may include sweating, muscle tension, increased heart rate and fears of death. An individual who experiences anxiety sensitivity believes that something catastrophic is going to occur as a result of their experiencing the symptoms of anxiety (Reiss & McNally, 1985; Sigmon et al., 2009). It is predicted that anxiety sensitivity will be correlated with the constructs of rumination, health anxiety and experiential avoidance, along with the condition of premenstrual distress.

Evidence for a correlation between anxiety sensitivity, premenstrual distress, and rumination has been found in previous research. Women who reported high levels of anxiety sensitivity and who engaged in depressive rumination reported elevated levels of premenstrual distress (Sigmon et al., 2009). The sample for this study consisted primarily of Caucasian undergraduate students. The respondents answered several surveys including the Menstrual Distress Questionnaire to assess for symptoms of premenstrual distress, the Anxiety Sensitivity Index, to assess for the fear of anxiety related symptoms and their potential to cause negative consequences, and the Response Styles
Questionnaire to assess how the individual responds to depressive events. (Sigmon et al., 2009). The researchers conducted meditational analyses that indicated rumination partially mediated the relationship between anxiety sensitivity and premenstrual distress. This means that rumination was partially responsible for the concurrence of symptoms between anxiety sensitivity and premenstrual distress. In agreement with the findings from this study we expect to find rumination to be correlated with anxiety sensitivity. We believed individuals in this study would ruminate about their fear of anxiety related symptoms and a significant correlation was expected between anxiety sensitivity and rumination.

**Current Study**

In summary, the purpose of the current study was to examine the relationship between the constructs of rumination, health anxiety, experiential avoidance, anxiety sensitivity, and the condition of premenstrual distress. First, it was predicted that all constructs and premenstrual distress would be positively correlated. Recent evidence has suggested that numerous disorders share etiological factors (Nolen-Hoeksema & Morrow, 2010). It was hypothesized that rumination, health anxiety, experiential avoidance, anxiety sensitivity, and premenstrual distress share common components which would result in positive correlations.

Second, it was hypothesized that the constructs of rumination, health anxiety, experiential avoidance, and anxiety sensitivity would predict and/ or mediate a relationship with the condition of premenstrual distress. This prediction was based on the results of previous research linking rumination to multiple constructs. This finding, along
with the nature of premenstrual distress, health anxiety, experiential avoidance, and anxiety sensitivity led to the contention that these constructs may be related and also may predict and/ or mediate a relationship with the condition of premenstrual distress. For example, rumination may account for the comorbidity of symptoms in an individual suffering from health anxiety and premenstrual distress. This potential finding is significant given that targeting rumination may be an extremely beneficial treatment goal.

**Method**

Female undergraduates from the University of Maine completed measures assessing for levels of premenstrual distress, anxiety sensitivity, rumination, health anxiety, and experiential avoidance. Participants received experimental credit toward credit points for their introductory psychology classes.

**Acceptance and Action Questionnaire (AAQ)**

The Acceptance and Action Questionnaire is a questionnaire containing 9 self-report items that assess an individual’s tendency to avoid negative attitudes and emotions (experiential avoidance) (Hayes et al., 2004). Items are rated on a 7-point scale: 0 = *never true*, 7 = *always true*. Example items include “If I could magically remove all the painful experiences I’ve had in my life, I would do so” and “I often catch myself daydreaming about things I’ve done and what I would do differently next time”. The AAQ has been proven to have good psychometric properties (Hayes et al., 2004).
**Anxiety Sensitivity Index (ASI)**

The Anxiety Sensitivity Index (ASI; Reiss et al., 1986) is a 16-item self-report index that assesses for fear related to anxiety and/or physical symptoms and the individuals' belief in potential negative consequences related to the symptoms. Participants rate statements on a 0 (very little) to 4 (very much) scale, with the highest score an individual can receive being a 64. Items include statements such as “When I am nervous, I worry that I might be mentally ill” and “Unusual body sensations scare me”. The ASI has been proven to be both a reliable and valid measure in determining individual’s levels of anxiety sensitivity (Reiss et al. 1986; Peterson and Heilbronner 1987).

**Health Anxiety Inventory (HAI)**

The Health Anxiety Inventory is a self-report index containing 18 measures that assess for levels of health related anxiety (Fergus & Valentiner, 2011). Each measure consists of four statements of which respondents are asked to choose the one they feel best describes their feelings over the past six months. Example measures include “(a) As a rule I am not aware of bodily sensations or changes (b) Sometimes I am aware of bodily sensations or changes (c) I am often aware of bodily sensations or changes (d) I am constantly aware of bodily sensations or changes.” The HAI has been proven to be both a reliable and valid measure of health anxiety (Fergus & Valentiner, 2011).

**Menstrual Distress Questionnaire (MDQ)**

The Menstrual Distress Questionnaire (MDQ; Moos 1968) is a questionnaire containing 47 symptoms commonly associated with the menstrual cycle. Each symptom
is rated on a scale of 0 to 4 for the premenstrual, inter-menstrual, and menstrual phases: 0 representing no experience of the symptom, and 4 representing present, and severe symptom(s). Factor analyses has exposed the following the seven factors: Pain (e.g., headache, cramps), Concentration (e.g., forgetfulness, distractible); Behavioral Change (e.g., stay at home, avoid social activities); Autonomic Reactions (e.g., dizziness, faintness, cold sweats); Water Retention (e.g., weight gain, swelling); Negative Affect (e.g., crying, anxiety); Arousal (e.g., orderliness, feelings of well-being); and Control (e.g., chest pains, heart pounding) (Sigmon, Schartel, Hermann, Cassel, & Thorpe, 2009). The MDQ can be completed both retrospectively and prospectively. The MDQ have been proven to be both a reliable and valid form of measurement (Moos, 1968).

Response Styles Questionnaire (RSQ)

The Response Styles Questionnaire (RSQ; Nolen-Hoeksema and Morrow 1991) is a questionnaire containing 32 items, which measures individual’s levels of rumination. In the questionnaire participants are asked to specify to what extent they typically do or think each item listed when they feel sad, down, or depressed. Each item in the RSQ is rated on a 0(almost never) to 3(almost always) scale. Items include statements such as “Think about a recent situation, wishing it had gone better” and “Think about how passive and unemotional you feel”. The RSQ has been proven to have good psychometric properties (e.g., Nolen-Hoeksema and Morrow 1991).
## Results

The participants were 715 undergraduate women ($N = 715$) attending the University of Maine. The mean age of the sample was 19.47 ($SD = 3.59$). With regard to ethnicity, 92.9% were Caucasian, 1.4% were Hispanic, .6% were African American, 2.2% were Native American, 1.3% were Asian, and 1.7% indicated other ethnicity. The average number of education in years was 13.46 years ($SD = .91$).

Pearson’s correlations were conducted to examine 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 correlational analysis are presented in Table 1.

### Table 1. Means, Standard Deviations, and Correlations Between Measures ($N = 715$)

<table>
<thead>
<tr>
<th>Measure</th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HAI Total</td>
<td>12.65</td>
<td>6.19</td>
<td>.392**</td>
<td>.597**</td>
<td>.334**</td>
<td>.471**</td>
<td></td>
</tr>
<tr>
<td>2. AAQ Total</td>
<td>58.85</td>
<td>11.46</td>
<td></td>
<td>.434**</td>
<td>.273**</td>
<td>.544**</td>
<td></td>
</tr>
<tr>
<td>3. ASI Total</td>
<td>16.47</td>
<td>10.91</td>
<td></td>
<td></td>
<td>.328**</td>
<td>.557**</td>
<td></td>
</tr>
<tr>
<td>4. MDQ Total</td>
<td>75.48</td>
<td>20.3</td>
<td></td>
<td></td>
<td></td>
<td>.430**</td>
<td></td>
</tr>
<tr>
<td>5. RSQ Total</td>
<td>38.21</td>
<td>13.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: HAI= Health Anxiety Inventory, AAQ= Acceptance and Action Questionnaire, ASI= Anxiety Sensitivity Index, MDQ= Menstrual Distress Questionnaire, RSQ= Response Styles Questionnaire. Totals for all measures may not equal 715 due to missing data. **p < .001.

Results indicate that rumination is highly related to experiential avoidance and anxiety sensitivity. Results also indicated that rumination is moderately related to levels
of premenstrual distress and health anxiety. Descriptive statistics, including mean and standard deviations for these variables, are also presented in Table 1.

**Regression Results**

Based on the correlational analyses that suggest anxiety sensitivity, experiential avoidance, premenstrual distress, health anxiety, and rumination are significantly correlated, a multiple regression analysis was preformed with all four independent variables, using premenstrual distress as the dependent variable. A stepwise regression indicated that health anxiety and rumination predicted premenstrual distress  

\[ R^2 = 0.20, \ p < 0.001. \]  

Experiential avoidance and anxiety sensitivity did not contribute significantly to the regression. Results are presented in Table 2.

**Table 2.** Variables identified by stepwise regression analysis (N=715)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized Coefficient (β)</th>
<th>Unstandardized Coefficient(SE)</th>
<th>Standardized Coefficient(β)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>RRS Total</td>
<td>.047</td>
<td>0.08</td>
<td>0.32</td>
<td>5.75</td>
<td>.001*</td>
</tr>
<tr>
<td>ASI Total</td>
<td>.013</td>
<td>0.12</td>
<td>0.07</td>
<td>1.23</td>
<td>.22</td>
</tr>
<tr>
<td>AAQ Total</td>
<td>0.14</td>
<td>0.1</td>
<td>0.01</td>
<td>0.15</td>
<td>.88</td>
</tr>
<tr>
<td>HAI Total</td>
<td>0.43</td>
<td>0.2</td>
<td>0.13</td>
<td>2.4</td>
<td>.001*</td>
</tr>
</tbody>
</table>

Note: HAI= Health Anxiety Inventory, AAQ= Acceptance and Action Questionnaire, ASI= Anxiety Sensitivity Index, MDQ= Menstrual Distress Questionnaire, RRS= Ruminative subscale of the Response Styles Questionnaire. Totals for all measures may not equal 715 due to missing data.  

* is significant at \( p < .001. \)
Meditational Analysis

To test the hypothesized mediating role of rumination in the relationship between symptoms of premenstrual distress and health anxiety, a meditational analysis was conducted. A variable can be considered a mediator if an effect is transmitted from the independent variable (IV) to the dependent variable. If a variable is found to be a full mediator this means the mediating variable completely accounts for the concurrence of symptoms between the independent variable (IV) and the dependent variable (DV). If a variable is discovered to be a partial mediator this means the mediator partially accounts for the concurrence of symptoms between the independent variable (IV) and the dependent variable (DV). Given that only health anxiety and rumination predicted premenstrual distress in the regression analysis above, only health anxiety and rumination were examined in relation to premenstrual distress severity.

In the first equation, health anxiety (IV) was regressed on premenstrual distress (DV) $\beta = .10, p < .001$. In the second equation, health anxiety (IV) was regressed on rumination (hypothesized mediator) $\beta = .21, p < .001$. In the third equation rumination (hypothesized mediator) was regressed on premenstrual distress (DV) $\beta = .30, p < .001$. 
All relationships were significant and are presented in Figures 1, 2, and 3.

**Figure 1**: Path models of total effect of health anxiety on premenstrual distress

![Path model of total effect](image)

**Figure 2**: Path model of the total effect of health anxiety on rumination

![Path model of total effect](image)

**Figure 3**: Path model of the total effect of rumination on premenstrual distress

![Path model of total effect](image)

In the fourth equation, a Sobel test was performed to test for significance of the relationship between health anxiety (IV), rumination (IV) and premenstrual distress (DV) \( \beta = .81, p < .001 \). The results from the meditational analysis indicate that rumination is a partial mediator in the relationship between health anxiety and premenstrual distress. Path models demonstrating the mediating role of rumination are presented in Figure 4.
Discussion

The primary goal of this study was to explore transdiagnostic factors and their potential role in women’s psychological health conditions and constructs. The results of the analyses indicate quite clearly, that all examined constructs and conditions (i.e., rumination, health anxiety, experiential avoidance, anxiety sensitivity, and premenstrual distress) are positively correlated. The analyses also indicate that rumination is a meditational factor in the relationship between health anxiety and premenstrual distress. These findings support the hypothesis that rumination is a transdiagnostic factor in specific women’s health constructs. Transdiagnostic would mean that rumination
significantly accounts for the comorbidity of symptoms between certain psychological health constructs and conditions, in the case of this study, health anxiety and premenstrual distress.

Recently rumination has been shown to be a transdiagnostic factor in depressive disorders and anxiety disorders (McLaughlin & Nolen-Hoeksema, 2010). The mediating role of rumination, which may account for the comorbidity of symptoms between psychological disorders, may be explained by the fact that numerous disorders share etiological factors (McLaughlin & Nolen-Hoeksema, 2011). Despite this fact, little research has extended the study of rumination as a transdiagnostic factor to include the trait constructs of health anxiety, experiential avoidance, anxiety sensitivity, and the condition of premenstrual distress. The current study addresses this gap in the literature by comparing multiple predictive independent variables (i.e., rumination, distress, health anxiety, experiential avoidance, and anxiety sensitivity) in a multiple regression analysis with premenstrual distress as the dependent variable. Based on the findings in the multiple regression analysis (indicating that rumination and health anxiety are predictors of premenstrual distress), a meditational analysis was conducted examining the relationships between the constructs of rumination, health anxiety, and premenstrual distress.

The regression analysis indicated that rumination (independent variable) and health anxiety (independent variable) predicted premenstrual distress (dependent variable). As hypothesized, the findings imply that health anxiety and/or rumination may represent risk factors for the development and maintenance of premenstrual distress. Unexpectedly, the findings from the regression analysis demonstrated that experiential
avoidance (IV) and anxiety sensitivity (IV) did not independently predict premenstrual distress (DV) when adjusted for rumination and health anxiety. This finding may be due to the encompassing nature of the construct of health anxiety. Health anxiety can be defined as excessive worry about one’s health. It is possible that anxiety sensitivity (fear of anxiety related symptoms) and experiential avoidance (process of evading thoughts, feelings, memories, etcetera) share similar components of the construct of health anxiety. This would account for the lack of a predictive relationship between anxiety sensitivity, experiential avoidance, and premenstrual distress.

The results of this study are similar to previous research findings that have found rumination to be a transdiagnostic factor in reports of psychological distress (McLaughlin & Nolen-Hoeksema, 2010). This is significant in that instead of rumination being a risk factor for the development and maintenance of specific disorders, rumination may account for general vulnerabilities in numerous forms of psychopathology. This has important implications for our understanding of the etiology and treatment of psychological disorders and associated constructs. From a clinical standpoint, targeting a common element associated with multiple disorders has many advantages, as opposed to pursuing risk factors specific to each disorder. Some of these advantages include effectiveness, durability of treatment, and prevention of recurrence (Addis et al., 1999; Barlow et al., 2004; Brown et al., 1995; McEvoy et al., 2009; McLaughlin & Nolen-Hoeksema, 2010). In summary, targeting transdiagnostic factors may prove to be a more encompassing and beneficial form of treatment for comorbid psychological disorders and constructs.

This study has several limitations. For example, participants of the study were
predominantly Caucasian females. Another limitation is that the sample was limited to the undergraduate college population. Future studies may wish to use a more diverse sample so as to make the results more generalizable. Prospective studies may also wish to consider the variation in the experience of premenstrual distress over the course of a woman’s lifespan through the use of a longitudinal study.

In summary, the findings from this study highlight the transdiagnostic nature of rumination. It appears that rumination may not only predict premenstrual distress but may also partially account for the relationship between health anxiety and premenstrual distress. This provides support for the role of rumination as a transdiagnostic factor in women’s psychological disorders and constructs. Continuing to develop an understanding of transdiagnostic factors, such as rumination, may enhance treatment techniques that can be used to help individuals experiencing multiple forms of psychological distress.
Bibliography


McIntosh, W.D., (1996) When does goal nonattainment lead to negative emotional reactions, and when doesn’t it? The role of linking and rumination. In L. L. Martin & A. Tesser (Eds.), *Striving and feeling. Interactions among goals, affect, and self-regulation* (pp. 53-77). Mahwah, NJ: Erlbaum.


Appendix A – Acceptance and Action Questionnaire (AAQ)

ID___________ Date__________ AAQ

Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following scale to make your choice and put the number in the blank before each statement.

1-------------2-------------3-------------4-------------5-------------6-------------7

never   very seldom   seldom   sometimes   frequently   almost always   always   true   true   true   true   true   true   true

_____ 1. I am able to take action on a problem even if I am uncertain what is the right thing to do.

_____ 2. I often catch myself daydreaming about things I've done and what I would do differently next time.

_____ 3. When I feel depressed or anxious, I am unable to take care of my responsibilities.

_____ 4. I rarely worry about getting my anxieties, worries, and feelings under control.

_____ 5. I'm not afraid of my feelings.

_____ 6. When I evaluate something negatively, I usually recognize that this is just a reaction, not an objective fact.

_____ 7. When I compare myself to other people, it seems that most of them are handling their lives better than I do.

_____ 8. Anxiety is bad.

_____ 9. If I could magically remove all the painful experiences I've had in my life, I would do so.
Appendix B- Anxiety Sensitivity Index (ASI)

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- Health Anxiety Inventory (HAI)

Brief HAI

Each question is this section consists of a group of four statements. Please read each group of statements carefully and then select the one which best describes your feelings, over the past six months. Identify the statement by circling the letter next to it, i.e. if you think that statement (a) is correct, circle statement (a); it may be that more than one statement applies, in which case, please circle any that are applicable.

1. (a) I do not worry about my health.
   (b) I occasionally worry about my health.
   (c) I spend much of my time worrying about my health.
   (d) I spend most of my time worrying about my health.

2. (a) I notice aches/pains less than most other people (of my age).
   (b) I notice aches/pains as much as most other people (of my age).
   (c) I notice aches/pains more than most other people (of my age).
   (d) I am aware of aches/pains in my body all the time.

3. (a) As a rule I am not aware of bodily sensations or changes.
   (b) Sometimes I am aware of bodily sensations or changes.
   (c) I am often aware of bodily sensations or changes.
   (d) I am constantly aware of bodily sensations or changes.

4. (a) Resisting thoughts of illness is never a problem.
   (b) Most of the time I can resist thoughts of illness.
   (c) I try to resist thoughts of illness but am often unable to do so.
   (d) Thoughts of illness are so strong that I no longer even try to resist them.

5. (a) As a rule I am not afraid that I have a serious illness.
   (b) I am sometimes afraid that I have a serious illness.
   (c) I am often afraid that I have a serious illness.
   (d) I am always afraid that I have a serious illness.

6. (a) I do not have images (mental pictures) of myself being ill.
   (b) I occasionally have images of myself being ill.
   (c) I frequently have images of myself being ill.
   (d) I constantly have images of myself being ill.

7. (a) I do not have any difficulty taking my mind off thoughts about my health.
   (b) I sometimes have difficulty taking my mind off thoughts about my health.
   (c) I often have difficulty in taking my mind off thoughts about my health.
   (d) Nothing can take my mind off thoughts about my health.

8. (a) I am lastingly relieved if my doctor tells me there is nothing wrong.
   (b) I am initially relieved but the worries sometimes return later.
   (c) I am initially relieved but the worries always return later.
   (d) I am not relieved if my doctor tells me there is nothing wrong.

9. (a) If I hear about an illness I never think I have it myself.
    (b) If I hear about an illness I sometimes think I have it myself.
    (c) If I hear about an illness I often think I have it myself.
    (d) If I hear about an illness I always think I have it myself.

10. (a) If I have a bodily sensation or change I rarely wonder what it means.
(b) If I have a bodily sensation or change I often wonder what it means.
(c) If I have a bodily sensation or change I always wonder what it means.
(d) If I have a bodily sensation or change I must know what it means.

11. (a) I usually feel at very low risk for developing a serious illness.
(b) I usually feel at fairly low risk for developing a serious illness.
(c) I usually feel at moderate risk for developing a serious illness.
(d) I usually feel at high risk for developing a serious illness.

12. (a) I never think I have a serious illness.
(b) I sometimes think I have a serious illness.
(c) I often think I have a serious illness.
(d) I usually think that I am seriously ill.

13. (a) If I notice an unexplained bodily sensation I don't spend as much time on it as I used to.
(b) If I notice an unexplained bodily sensation I sometimes spend as much time on it as I used to.
(c) If I notice an unexplained bodily sensation I often spend as much time on it as I used to.
(d) If I notice an unexplained bodily sensation I always spend as much time on it as I used to.

14. (a) My family/friends would say I do not worry enough about my health.
(b) My family/friends would say I have a normal attitude to my health.
(c) My family/friends would say I worry too much about my health.
(d) My family/friends would say I am a hypochondriac.

For the following questions, please think about what it might be like if you had a serious illness of a type which particularly concerns you (such as heart disease, cancer, multiple sclerosis and so on). Obviously you cannot know for definite what it would be like; please give your best estimate of what you think might happen, basing your estimate on what you know about yourself and serious illness in general.

15. (a) If I had a serious illness I would still be able to enjoy things in my life quite a lot.
(b) If I had a serious illness I would still be able to enjoy things in my life a little.
(c) If I had a serious illness I would be almost completely unable to enjoy things in my life.
(d) If I had a serious illness I would be completely unable to enjoy life at all.

16. (a) If I developed a serious illness there is a good chance that modern medicine would be able to cure me.
(b) If I developed a serious illness there is a moderate chance that modern medicine would be able to cure me.
(c) If I developed a serious illness there is a very small chance that modern medicine would be able to cure me.
(d) If I developed a serious illness there is no chance that modern medicine would be able to cure me.

17. (a) A serious illness would ruin some aspects of my life.
(b) A serious illness would ruin many aspects of my life.
(c) A serious illness would ruin almost every aspect of my life.
(d) A serious illness would ruin every aspect of my life.

18. (a) If I had a serious illness I would not feel that I had lost my dignity.
(b) If I had a serious illness I would feel that I had lost a little of my dignity.
(c) If I had a serious illness I would feel that I had lost quite a lot of my dignity.
(d) If I had a serious illness I would feel that I had totally lost my dignity.
Appendix D- Menstrual Distress Questionnaire (MDQ)

MENSTRUAL DISTRESS QUESTIONNAIRE

Please indicate your **general** experience of the **premenstrual** phase of your menstrual cycle. Using the scale below, place the number that best fits your experience in the blank before the number.

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<td>16. cramps</td>
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<td>26. nausea, vomiting</td>
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<td>29. difficulty concentrating</td>
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<td>30. painful breasts</td>
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<td>31. feelings of well-being</td>
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<td>32. ringing in the ears</td>
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<td>41. decreased efficiency</td>
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<td>42. lowered motor coordination</td>
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<td>43. numbness, tingling</td>
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<td>44. tension</td>
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<td>45. blind spots, fuzzy vision</td>
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<td>46. bursts of energy, activity</td>
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<td>47. Other</td>
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Appendix E - Response Styles Questionnaire (RSQ)

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.
Author’s Biography

Kristina S. Anderson was born in Corvallis, Oregon on January 16, 1990. She graduated from Old Town High School in 2008. Kristina is a psychology major. Upon graduation, she plans to attend graduate school and earn a PhD in clinical psychology.