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DEVELOPMENT AND VALIDATION
OF A MEASURE
OF SELF-CRITICAL RUMINATION

Thesis

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Sciences in the
College of Arts and Sciences
at the University of Kentucky

By

Laura M. Smart

Lexington, Kentucky

Director: Dr. Ruth A. Baer, Professor of Psychology

Lexington, Kentucky

2013

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Abstract of Thesis

SHAME AND BORDERLINE PERSONALITY FEATURES: THE POTENTIAL MEDIATING ROLE OF ANGER AND ANGER RUMINATION

Shame and self-criticism are closely related constructs that have strong associations with many forms of psychopathology as well as general psychological distress. Rumination is a maladaptive form of repetitive thinking that is associated with a number of psychological disorders. Although measures of many different types of rumination (e.g. depressive rumination, angry rumination) have been developed, none assess self-critical rumination. The purpose of the present study, therefore, was to develop a measure of self-critical rumination. An initial pool of items for the Self-Critical Rumination Scale (SCRS) was developed by adapting existing rumination measures and through a writing task administered to both student and clinical samples. Following an evaluation of content validity, a total of 24 items remained in the item pool. These items were then administered to a large sample of undergraduates along with measures of related constructs. Psychometric properties of the Self-Critical Rumination Scale (SCRS) were examined including internal consistency, factor structure, and convergent and discriminant relationships with related constructs. Regression analyses were then performed in which scores on the SCRS were used to predict several different indicators of psychological distress. The SCRS significantly predicted symptoms of borderline personality disorder and overall general distress.

Keywords: Rumination, Shame, Self-Criticism

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April 18, 2013

DEVELOPMENT AND VALIDATION
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For Josh, for everything

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Table of Contents

Acknowledgment	iii
List of Tables	v
Chapter 1: Development and Validation of a Measure of Self-Critical Rumination	1
Shame and Self-Criticism	1
Rumination	3
Potential Utility of a Self-Critical Rumination Scale	5
Chapter 2: Item Development and Content Validity	6
Item Development	6
Evaluation of Content Validity	7
Chapter 3: Factor Structure, Internal Consistency, and Relationships with Related Constructs	8
Method	8
Participants and Procedure	8
Measures of Rumination	9
Measures of Shame and Self-Criticism	11
Measures of Other Constructs	12
Chapter 4: Results and Discussion	15
Data Screening	15
Item-Level Analyses and Internal Consistency	15
Exploratory Factor Analysis	16
Correlations with Other Measures	16
Rumination	16
Shame and Self-Criticism	16
Other Related Constructs	19
Incremental Validity of the SCRS over Other Measures	19
Chapter 5: Test-Retest Reliability	27
Method	27
Results and Discussion	27
Chapter 6: General Discussion	28
References	31
Vita	35

List of Tables

Table 4.1, Item Content and Factor Structure of the Self-Critical Rumination Scale (SCRS) in an Undergraduate Sample	17
Table 4.2, Relationships between the SCRS and Related Constructs.....	18
Table 4.3, Hierarchical Regression Analyses Showing Prediction of General Distress by Rumination.....	20
Table 4.4, Hierarchical Regression Analyses Showing Prediction of General Distress by Shame and Self-Critical Rumination	21
Table 4.5, Hierarchical Regression Analyses Showing Prediction of Borderline Personality Features by Rumination.....	22
Table 4.6, Hierarchical Regression Analyses Showing Prediction of Borderline Personality Features by Shame and Self-Critical Rumination	23

Chapter 1: Development and Validation of a Measure of Self-Critical Rumination

Shame and self-criticism are closely related constructs that have strong associations with many forms of psychopathology. Rumination is a maladaptive form of repetitive thinking about negative emotions and problematic situations that is also associated with many psychological disorders. Although shame and self-criticism can become the focus of rumination, no measures of self-critical rumination are available. Most of the existing research on rumination as it relates to shame and self-criticism has relied on measures of depressive rumination. These measures focus heavily on symptoms of depression and sadness, rather than on shame and self-criticism per se. Although many people with shame and self-criticism are also depressed, some are not, and measures of depressive rumination may not capture the nature of their repetitive thinking. The purpose of the present study, therefore, was to develop a measure of self-critical rumination.

Shame and Self-Criticism

The tendency to feel shame and think critically about oneself is a ubiquitous part of human nature. Despite colloquial use of the word to refer to any negative self-conscious emotion, shame is distinct and specific. It is an intense, negative emotion that involves feelings of inferiority and self-consciousness (Tangney, Miller, Flicker, & Barlow, 1996). Shame, like guilt and embarrassment, falls under the umbrella of what are termed the “self-conscious emotions”. Positive self-referential emotions such as pride also fall in this category (Tracey & Robins, 2004).

Trait shame, or shame-proneness, is the tendency to feel shame readily and across

many situations. It can be contrasted with state shame which is transient and situation-specific. Shame-proneness has been the focus of most of the research in this area. It has been theorized that shame-proneness consists of two components. The first, external shame, concerns the thoughts and feelings about how others view oneself. The second, internal shame, concerns one's own thoughts and feelings about oneself (Gilbert, 2010). Both internal and external shame are characterized by self-criticism (Gilbert & Proctor, 2006; Harman & Lee, 2010), or thoughts marked by self-consciousness, shame, and inferiority. Self-critical thoughts devalue the self and are highly related to shame-proneness (Gilbert & Miles, 2000).

Shame and self-criticism are associated with a number of negative outcomes including several specific psychological disorders as well as psychological distress in general. For instance, individuals who are more prone to experience shame and self-criticism are also more prone to develop depression (Allan, Gilbert, & Goss, 1994; Kim, Thibodeau, & Jorgensen, 2011) and anxiety (Fergus, Valentiner, McGrath, & Jencius, 2010). They are also more likely to develop posttraumatic stress disorder symptoms and somatization symptoms than those low on these traits (Pineles, Street, Koenen, & 2006).

Shame has also been associated with non-suicidal self-injury and suicidal ideation. Hooley, Ho, Slater, and Lockshin (2010) observed that self-critical beliefs were related to having a history of self-harming behaviors. Shame is also associated with suicidal ideation after controlling for depression (Lester, 1998). O'Connor and Noyce (2008) demonstrated that self-criticism was associated with more frequent and severe

suicidal ideation. However, they also demonstrated that rumination fully mediated this relationship indicating that rumination is a key mechanism in the relationship between self-criticism and suicidal ideation.

Shame has also been implicated in borderline personality disorder (BPD). Brown, Linehan, Comtois, Murray, and Chapman (2009) demonstrated that shame predicts self-injurious behaviors in a 12 month longitudinal study of women with BPD. Rüsç et al. (2007) assessed both state and trait shame using implicit and explicit measures in women who had either BPD or social phobia and healthy controls. They found that women with BPD scored higher on each of these shame-related constructs than the healthy controls and the women with social phobia. In response to negative affect inductions, individuals with BPD also exhibit higher levels of shame than individuals with major depressive disorder or healthy controls (Jacob, Hellstern, Ower, Pillmann, Scheel, Rüsç, & Lieb, 2009). It has even been suggested that BPD could be re-conceptualized as an overwhelming shame response (Crowe 2004).

Rumination

Rumination is generally considered a maladaptive, repetitive thinking style (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). It is related to a range of psychopathology (Aldao, Nolen-Hoesksema, & Schweizer, 2010). Response styles theory (Nolen-Hoesksema, 1991) was developed to explain the relationship between rumination and depression and posits that individuals who focus their attention on their depressive symptoms will be depressed longer than those who do not ruminate on these symptoms. Congruent with the theory, rumination has been shown to intensify

the effects of negative cognitions (Ciesla & Roberts, 2007) and has been shown to be a risk factor for dysphoria (Roberts, Gilboa, & Gotlib, 1998).

While most of the literature has focused on depressive rumination, a number of different types of rumination have been described and each has been shown to be important in the conceptualization of psychopathology. For instance, anger rumination, or the tendency to ruminate about anger, has shown to be uniquely related to BPD. Baer and Sauer (2011) found that anger rumination accounted for variance in BPD features above and beyond trait anger and depressive rumination. Anger rumination also has been shown to increase feelings of anger (Rusting & Nolen-Hoeksema, 1998) and aggressive behavior (Bushman, Bonacci, Pederson, Vasquez, & Miller, 2005). Anxiety can also become the focus of rumination. Anxious rumination involves repetitive thinking about an anxious state (Rector, Antony Laposa, Kocovski, & Swinton, 2008). Because the focus of this type of rumination is the anxiety itself, it is distinct from worry which focuses on external events (such as relationships, work, or finances). Anxious rumination has been shown to predict severity of current anxiety even after accounting for worry and depressive rumination (Rector et al., 2008). It is also related to BPD features and general psychological distress (Upton, Peters, Eisenlohr-Moul, & Baer, under review).

Rumination about interpersonal offenses involves repetitive thinking about how one has been hurt or offended by another (Wade, Vogel, Liao, & Goldman, 2008). It has been shown to be related to depression, general psychological distress, anger, hostility, and difficulties forgiving others (Wade et al., 2008). Ruminating about social

interactions, also known as post-event processing, involves repetitive thinking about uncomfortable social interactions and one's perceived inadequacy during those interactions and is related to depression and anxiety (McEvoy, Mahoney, & Moulds, 2010) and BPD features (Upton et al., under review). In individuals with social anxiety, post-event processing is related to recalling negative, self-referential information after social interactions (Mellings & Alden, 2000).

Potential Utility of a Self-Critical Rumination Scale

Like depression, anxiety, or social interactions, shame can also become the focus of rumination (Cheung, Gilbert, & Irons, 2004). Gilbert and Procter (2006, p.354) assert that shame "can easily pull individuals into a ruminative self-critical style, increasing vulnerability to a range of difficulties." Despite the theoretical importance of self-critical rumination, there are no existing measures of the construct. Measures of shame and self-criticism (e.g. The Levels of Self-Criticism Scale; Thompson & Zuroff, 2004) fail to capture the prolonged and repetitive quality of ruminative thoughts, while measures of rumination do not cover self-critical content. Therefore, the purpose of the present study is to develop a self-report measure of self-critical rumination.

Chapter 2: Item Development and Content Validity

Item Development

Three methods were used to develop an initial pool of items for the Self-Critical Rumination Scale (SCRS). First, existing measures of other types of rumination were examined to identify items that could be adapted for use in the SCRS. For example, the Rumination on Interpersonal Offenses Scale (described in more detail below) includes items such as, “When I have been hurt or offended, I can’t stop thinking about how I was wronged by this person.” An item for the SCRS adapted from this scale is, “When I have made a mistake, I can’t stop thinking about how stupid I was.”

Second, a sample of undergraduate students ($n = 25$) were asked to complete an open-ended writing task with the following instructions:

We are interested in the types of thoughts that go through people’s minds when they are criticizing themselves. Please think of a time when you were feeling critical of yourself. You might have made a mistake or done something you thought was embarrassing, stupid, wrong, or foolish. Or you might have been feeling critical of an aspect of yourself, such as your appearance, intelligence, or likeability. Please write down the self-critical thoughts that went through your mind when this happened.

An example of an item developed using this method is “I spend a lot of time wishing I were different.”

Third, a sample of adults receiving outpatient treatment at the Harris Psychological Services Center (PSC; $n = 13$) were provided the same open-ended writing

task. Many clients at this treatment center have high levels of anxiety and depression, which are associated with self-criticism. Inclusion of this sample allowed for better representation of the high end of the distribution of self-criticism. An example of an item developed using this method is “I often think about what a failure I am.” A total of 39 items were written using these methods.

Evaluation of Content Validity

Content validity of the initial set of items was evaluated with a rating task. Raters were four advanced doctoral students in clinical psychology. They were provided with a written explanation of the nature of rumination in general and self-critical rumination in particular. They were then given a list of items in random order that included the 39 new items, 10 items measuring general rumination, 15 items measuring depressive and anger rumination, and 15 items measuring shame and guilt. They were asked to sort these into three categories: items assessing self-critical rumination, items assessing other forms of rumination, and items assessing shame or guilt but not rumination. Next, they were asked to rate each of the proposed new SCRS items for clarity and for how well it reflects the construct of self-critical rumination, using a 4-point scale (1 = not at all, 4 = very well). Items that were misclassified by two or more raters were eliminated (n = 13), as well as items that received means ratings less than 3.0 on either of the 4-point ratings (n = 2) leaving 24 items in the item pool. The 24 remaining items averaged 3.77 on this scale indicating that on average raters believed that the items represented self-critical rumination clearly.

Chapter 3: Factor Structure, Internal Consistency, and Relationships with Related Constructs

Method

Participants and Procedure. Participants in the study were 510 undergraduate students enrolled in introductory psychology courses at the University of Kentucky. Participants completed an online survey for course credit including demographic questions and all of the measures listed below (see Measures). Following data screening procedures (detailed in the Results section), a final sample of 392 was used for all analyses. Participants ranged in age from 18-30 years ($M = 19.00$, $SD = 1.46$). The sample was predominately female (52.3%) and European American (72.2%).

In order to ensure that a range of individuals who experience self-critical thoughts were represented in the sample, email invitations to participate in the study were sent to students who scored within the top 25% of all participants enrolled in introductory psychology courses on a prior administration of a measure self-criticism (Levels of Self Criticism Scale [LOSC]; Thompson & Zuroff, 2004) included in a packet of screening measures administered at the beginning of the semester to identify participants for numerous studies in the psychology department. The LOSC measures both comparative self-criticism (e.g. "I fear that if people get to know me too well, they will not respect me.") and internalized self-criticism (e.g. "Failure is a very painful experience for me."). Participants are asked to rate each item on a 7 point Likert scale from "not at all" to "very well." The LOSC demonstrated excellent internal consistency in the present sample ($\alpha=0.90$).

Measures of Rumination. The Rumination and Reflection Questionnaire (Trapnell & Campbell, 1999) is a measure of the general tendencies to ruminate and reflect. Participants are asked to rate themselves on a five-point Likert scale (1 = strongly disagree, 5 = “strongly agree”). The rumination subscale has 12 items that measure a maladaptive form of repetitive thinking about the self that is associated with neuroticism and motivated by perceived threat, loss, or injustice (e.g. “Sometimes it is hard for me to shut off thoughts about myself.”). The reflection subscale has 12 items that measure a generally more adaptive form of recurrent thinking about the self that is associated with openness to experience and motivated by “epistemic interest in the self” (pg. 297; e.g. “I love exploring my ‘inner’ self.”). The two subscales demonstrated good and excellent internal consistency respectively (reflection $\alpha = .89$, rumination $\alpha = .93$) in the present sample. It was expected that SCRS would correlate positively with the rumination subscale and negatively with the reflection subscale.

The Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991) is a 10 item measure of depressive rumination. Participants are asked to rate themselves on a 4 point Likert scale ranging from “almost never” to “almost always.” It has two subscales which measure brooding (e.g. “think, what am I doing to deserve this?”) and reflecting (e.g. “analyze recent events to try to understand why you are depressed”). The brooding subscale is considered to measure a maladaptive form of repetitive thought this is strongly associated with depression. The reflecting subscale is believed to be somewhat more adaptive and shows mixed relations with depression. Each subscale demonstrated good internal consistency (brooding, $\alpha = .87$, reflecting, $\alpha = .82$) in the

present sample. It was expected that the SCRS would correlate positively with both the brooding and the reflection subscales.

The Anger Rumination Scale (ARS; Sukhodolsky, Golub, & Cromwell, 2001) is a 19 item self-report measure of the tendency to ruminate on “angry moods, recall past anger episodes, and think over the causes and consequences of anger episodes” (pg. 692; e.g. “I keep thinking about events that angered me for a long time.”). Participants respond to each item on a 4 point Likert scale from “almost never” to “almost always.” The ARS demonstrated excellent internal consistency ($\alpha = .95$) in the present sample. It was expected that the SCRS would correlate positively with the ARS.

The Anxious Rumination Questionnaire (ARQ; Rector, Antony, Laposa, Kocovski, & Swinson, 2008) is a 22 item measure of the tendency to ruminate on anxious moods, the perceived inability to cope with those moods, and how likely those moods are to interfere with plans (e.g. “These feelings will interfere with upcoming plans.”). Participants are asked to indicate how often they think each item when they are feeling anxious on a 4 point Likert scale from “never” to “always.” The ARQ demonstrated good internal consistency ($\alpha = .93$). It was hypothesized that the SCRS would correlate positively with the ARQ.

The Rumination on Interpersonal Offenses Scale (RIO; Wade, Vogel, Liao, & Goldman, 2008) is a 6 item measure of rumination about an interpersonal transgression (e.g. “I can’t stop thinking about how I was wronged by this person.”). Participants are asked to rate their agreement with each item on a 5 point Likert scale ranging from “strongly disagree” to “strongly agree.” The RIO demonstrated excellent internal

consistency ($\alpha = .92$) in the present sample. It was expected that the SCRS would correlate positively with the RIO.

The Post-Event Processing Questionnaire – Revised (PEPQ-R; McEvoy & Kingsep, 2006) is an 8 item measure of the tendency to ruminate about past social situations (e.g. “After the event was over, did you find yourself thinking about it a lot?”). Participants are asked to rate themselves on a 100-point visual analogue scale with “not at all” (0) and “totally agree” (100) as the anchors. It demonstrated excellent internal consistency ($\alpha = .91$) in the present sample and was expected to correlate positively with the SCRS.

Measures of Shame and Self-Criticism. The Experiences of Shame Scale (ESS; Andrews Qian, & Valentine, 2002) is a 25 item inventory that measures the experience of shame about a variety of areas including shame about one’s body, personal habits, manner with others, personal ability, whether one has said or done something wrong (e.g. “Have you felt ashamed of any of your personal habits?”). Participants are asked to answer questions on a 4 point Likert scale from “not at all” to “very much.” The ESS demonstrated excellent internal consistency ($\alpha = .96$) in the present sample. It was hypothesized that the ESS would correlate positively with the SCRS.

The Test of Self-Conscious Affect (TOSCA-3; Tangney & Dearing, 2002) was used to assess situational shame and guilt. The TOSCA asks respondents to read 16 scenarios (11 negative and 5 positive) and respond to four possible reactions for each scenario assessing shame-proneness, guilt-proneness, detachment, and externalization. Participants respond on a 5 point Likert scale from “not very likely” to “very likely.” An example item is: “You break something at work and then hide it.” For this scenario, the

possible reactions are “You would think: ‘This is making me anxious. I need to either fix it or get someone else to.” (indicating guilt-proneness); “You would think about quitting” (shame-proneness); “You would think: A lot of things aren’t made very well these days.” (externalization); “You would think: ‘It was only an accident.’” (detached). Only the shame and guilt reactions to the negative scenarios were used in the present study. Both demonstrated good internal consistencies (shame $\alpha = .80$; guilt $\alpha = .84$). It was expected that the shame but not the guilt subscale would correlate positively with the SCRS scale.

The Personal Feelings Questionnaire – 2 (Harder & Zalma, 1990) is a measure of shame- and guilt-proneness. Participants are asked to rate statements on a 4 point Likert scale from “never experience this feeling” to “experience the feeling continuously or almost continuously.” The first subscale measures shame-proneness (e.g. “Feelings of blushing”) and demonstrated good internal consistency ($\alpha = .85$) in the present sample. The second subscale measures guilt-proneness (e.g. “Worry about hurting or injuring someone.”) and also demonstrated good internal consistency ($\alpha = .81$). It was expected that the SCRS scale would correlate positively with the shame-proneness subscale and not with the guilt-proneness subscale.

Measures of Other Constructs. The Self-Compassion Scale (Neff, 2003) is a 26 item measure of compassion towards oneself (e.g. “I’m tolerant of my own flaws and inadequacies.”). Participants are asked to rate statements on a 5 point Likert scale from “almost never” to “almost always.” Internal consistency of the SCS was good ($\alpha = .87$) in the present sample. It was hypothesized that individuals who are more compassionate

toward themselves will ruminate self-critically less than those who are not compassionate toward themselves. That is, it was predicted that the SCS and the SCRS would be negatively correlated.

The Personality Assessment Inventory – Borderline Personality Disorder subscale (PAI-BOR; Morey, 1991) is a measure of BPD features. It has 24 items which are rated on a 4 point Likert scale from “false, not at all true” to “very true” and four subscales which measure different aspects of BPD pathology including self-harm, relationship difficulties, identity problems, and affective instability. It demonstrated good internal consistency ($\alpha = .87$) in the present sample. It was expected that the SCRS would correlate positively with the PAI-BOR.

The NEO Five Factor Inventory (NEO FFI; Costa & McCrae, 1992) is a 60-item, well-validated measure of the domains of personality according to the Five Factor Model. It provides domain scores for each of the five factors including neuroticism, extraversion, openness, agreeableness, and conscientiousness. It was expected that individuals who ruminate self-critically will score higher on neuroticism than those who do not, i.e., that the SCRS will be positively correlated with neuroticism.

The Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1993) is a 42 item measure of stress, anxiety, and depression. Participants are asked to rate statements on a 4 point Likert scale from “did not apply to me at all” to “applied to me very much, or most of the time.” Each subscale of the DASS demonstrated excellent internal consistency (stress $\alpha = .94$, depression $\alpha = .95$, anxiety $\alpha = .93$) in the present sample. It was hypothesized that the SCRS scale would correlate positively with each

subscale of the DASS.

Chapter 4: Results and Discussion

Data Screening

The data were analyzed using SPSS 19.0. Validity questions were included in each measure of interest in the study. Questions included prompts such as “Please choose ‘strongly disagree’ for this question” to ensure that participants were attending to both item content and the response scale. Participants who incorrectly responded to the validity question in the SCRS or who missed more than two validity questions total were excluded from analyses. Remaining responses were also screened for obvious patterns (e.g. answering questions in a straight line). These procedures resulted in the exclusion of 118 participants; therefore, 392 were used for analyses.

Item-Level Analyses and Internal Consistency

Prior to conducting factor analysis, preliminary analyses at the item level were conducted. Items were screened for excessive skew and variability in responses. Although several items ($n = 9$) demonstrated excessive skew (i.e. a skew value greater than three times its standard error), no items were eliminated based on this criterion because the items identified were deemed necessary for content coverage. Item-total and inter-item correlations were also examined. No items had corrected item-total correlations below .50 or inter-item correlations less than .40. Several items ($n=12$) had very high corrected item-total correlations (i.e. $>.80$). These items were examined because it was determined that they included redundant content and were therefore eliminated. The coefficient alpha for the remaining 12 items was .94.

Exploratory Factor Analysis

Responses to the 12 remaining items were then subjected to an exploratory factor analysis using principal axis factoring with an oblique rotation to allow any possible factors to correlate. A single factor emerged with an eigenvalue greater than 1 and examination of the scree plot revealed a clear single-factor solution to the data. This factor accounted for just over 60% of the variance. All factor loadings were well above .4. Factor loadings are presented in Table 4.1.

Correlations with Other Measures

Relationships between the SCRS and each of the measures listed above were examined. All correlations between scores on the SCRS and other measures are listed in Table 4.2. Due to the large number of analyses conducted, only those with $p < .01$ were considered to be significant.

Rumination. As predicted, the SCRS was significantly correlated with each of the other measures of rumination indicating that individuals who are likely to ruminate self-critically are also likely to ruminate about other topics, including depression, anger, anxiety, interpersonal offenses, and uncomfortable social interactions. The SCRS was not significantly correlated with the reflection subscale of the RRQ ($r = .092, p = .070$) indicating that self-critical rumination is not associated with the generally more adaptive introspective thinking measured by the subscale.

Shame and Self-Criticism. Scores on the SCRS were significantly and positively associated with all measures of shame as predicted. Contrary to prediction, the SCRS was also significantly correlated with the guilt subscale of the PFQ ($r = .670, p < .001$)

Table 4.1

Item Content and Factor Structure of the Self-Critical Rumination Scale (SCRS) in an Undergraduate Sample (n = 392)

Item	Factor Loadings
1. My attention is often focused on aspects of myself that I'm ashamed of.	.72
2. I always seem to be rehashing in my mind stupid things that I've said or done.	.73
3. Sometimes it is hard for me to shut off critical thoughts about myself.	.75
4. I can't stop thinking about how I should have acted differently in certain situations.	.76
5. I spend a lot of time thinking about how ashamed I am of some of my personal habits.	.77
6. I criticize myself a lot for how I act around other people.	.68
7. I wish I spent less time criticizing myself.	.71
8. I often think about what a failure I am.	.79
9. I spend a lot of time thinking about how inadequate I am.	.84
10. I often worry about all of the mistakes I have made.	.82
11. I spend a lot of time wishing I were different.	.78
12. I often berate myself for not being as productive as I should be.	.67
Percentage of variance accounted for	60.15

Table 4.2

Relationships between the SCRS and related constructs (n = 392)

	Self-Critical Rumination Scale
RRQ Reflect	.092
RRQ Rumination	.801**
RRS Brooding	.683**
RRS Reflect	.515**
Anger Rumination	.688**
Anxious Rumination	.605**
RIO	.533**
PEPQ	.650**
ESS	.737**
TOSCA shame	.547**
TOSCA guilt	.127
PFQ shame	.689**
PFQ guilt	.670**
Self-Compassion	-.634**
BPD features	.661**
Neuroticism	.684**
Extraversion	-.352**
Openness	.106
Conscientiousness	-.234**
Agreeableness	-.263**
Stress	.627**
Depression	.573**
Anxiety	.499**

Note: RRQ Reflect = reflection subscale of the Ruminative Responses Questionnaire, RRQ ruminate = rumination subscale of the Ruminative Responses Questionnaire RRS brood = brooding subscale of the Ruminative Response Styles Questionnaire, RRS Reflect = reflection subscale of the Response Styles Questionnaire, RIO = Rumination on Interpersonal Offenses scale, PEPQ = Post-Event Processing Questionnaire, ESS = Experiences of Shame Scale, TOSCA-3 shame = shame subscale of the Test of Self-Conscious Affect scale, TOSCA-3 guilt = guilt subscale of the Test of Self-Conscious Affect scale, PFQ shame = shame subscale of the Personal Feelings Questionnaire, PFQ guilt = guilt subscale of the Personal Feelings Questionnaire
*p<.01 **p<.001

and narrowly missed the threshold for significance with the guilt subscale of the TOSCA-3 ($r = .127$ $p = .013$), although this latter relationship was much smaller. These findings indicate that self-critical rumination is associated with guilt. While distinctions are often made between guilt and shame, they tend to be highly correlated; therefore, relationships with the SCRS may not be surprising.

Other Related Constructs. As expected, scores on the SCRS were negatively related to scores on the SCS indicating that individuals who engage in self-critical rumination tend to be less compassionate toward themselves. Scores on the SCRS were also positively associated with scores on the PAI-BOR indicating that individuals who ruminate self-critically tend to endorse more borderline personality features. The SCRS was also positively associated with each subscale of the DASS as expected indicating that individuals who engage in more self-critical thinking tend to experience more depression, anxiety, and stress.

Relationships between the SCRS and each of the five domains of personality were also analyzed. As expected, higher scores on the SCRS were associated with higher levels of neuroticism. The SCRS was negatively associated with extraversion, agreeableness, and conscientiousness.

Incremental Validity of the SCRS over Other Measures

To evaluate whether self-critical rumination is a unique predictor of general distress and borderline personality features after accounting for other measures of rumination or shame, four hierarchical linear regressions were conducted. Results of these analyses can be seen in Tables 4.3, 4.4, 4.5, and 4.6, respectively. Because of the

Table 4.3

Hierarchical regression analyses showing prediction of general distress by rumination

Step	Predictor(s)	R ²	ΔR ²	β
1	Gender			
	Model Total	.002	.002	-.049
2	Gender			-.083
	Measures of Rumination			
	RRQ ruminate			.024
	RRS brood			.193*
	ARS			.341**
	ARQ			.111
	RIO			-.093
	PEPQ			.170
	Model Total	.442	.439**	
	3	Gender		
Measures of Rumination				
RRQ ruminate				-.157
RRS brood				.116
ARS				.286**
ARQ				.079
RIO				-.053
PEPQ				.151
SCRS				.334**
Model Total		.470	.029**	

Note: RRQ ruminate = rumination subscale of the Ruminative Responses Questionnaire, RRS brood = brooding subscale of the Ruminative Response Styles Questionnaire, ARS = Anger Rumination Scale, ARQ = Anxious Rumination Questionnaire, RIO = Rumination on Interpersonal Offenses scale, PEPQ = Post-Event Processing Questionnaire, SCRS = Self-Critical Rumination Scale

*p<.01, **p<.001

Table 4.4

Hierarchical regression analyses showing prediction of general distress by shame and self-critical rumination

Step	Predictor(s)	R ²	ΔR ²	β
1	Gender			-.023
	Model Total	.001	.001	
2	Gender			.037
	Measures of Shame			
	ESS			.346**
	TOSCA-3 shame			.080
	PFQ shame			.220**
	Model Total	.323	.323**	
3	Gender			-.038
	Measures of Shame			
	ESS			.126
	TOSCA-3 shame			.002
	PFQ shame			.078
	SCRS			.476**
	Model Total	.404	.080**	

Note: ESS = Experiences of Shame Scale, TOSCA-3 shame = shame subscale of the Test of Self-Conscious Affect scale, PFQ shame = shame subscale of the Personal Feelings Questionnaire, SCRS = Self-Critical Rumination Scale

*p<.01, **p<.001

Table 4.5

Hierarchical regression analyses showing prediction of borderline personality features by rumination

Step	Predictor(s)	R ²	ΔR ²	β
1	Gender			-.014
	Model Total	.000	.000	
2	Gender			-.059
	Measures of Rumination			
	RRQ ruminate			.161*
	RRS brood			.173*
	ARS			.326**
	ARQ			.069
	RIO			.091
	PEPQ			.075
	Model Total	.584	.584**	
3	Gender			-.068
	Measures of Rumination			
	RRQ ruminate			.051
	RRS brood			.126
	ARS			.291**
	ARQ			.048
	RIO			.113
	PEPQ			.061
	SCRS			.212*
Model Total	.596	.012*		

Note: RRQ ruminate = rumination subscale of the Ruminative Responses Questionnaire, RRS brood = brooding subscale of the Ruminative Response Styles Questionnaire, ARS = Anger Rumination Scale, ARQ = Anxious Rumination Questionnaire, RIO = Rumination on Interpersonal Offenses scale, PEPQ = Post-Event Processing Questionnaire, SCRS = Self-Critical Rumination Scale

*p<.01, **p<.001

Table 4.6

Hierarchical regression analyses showing prediction of borderline personality features

by shame and self-critical rumination

Step	Predictor(s)	R ²	ΔR ²	β
1	Gender			-.003
	Model Total	.000	.000	
2	Gender			.048
	Measures of Shame			
	ESS			.358**
	TOSCA-3 shame			.059
	PFQ shame			.310**
	Model Total	.416	.416**	
3	Gender			-.027
	Measures of Shame			
	ESS			.143
	TOSCA-3 shame			-.015
	PFQ shame			.171*
	SCRS			.464**
	Model Total	.492	.076**	

Note: ESS = Experiences of Shame Scale, TOSCA-3 shame = shame subscale of the Test of Self-Conscious Affect scale, PFQ shame = shame subscale of the Personal Feelings Questionnaire, SCRS = Self-Critical Rumination Scale

*p<.01, **p<.001

number of analyses conducted, only those with p values less than $< .01$ were considered to be significant. Despite the relatively high correlations between all of the independent variables, all VIF values were well below the suggested maximum value of 10 (Myers, 1990).

The first analysis examined whether the SCRS was a unique predictor of general distress (as measured by the total score of the DASS, described earlier) after accounting for all other measures of rumination described in the methods section. Gender was entered at Step 1 and did not account for significant variance in overall distress ($R^2 = .002$, $\beta = -.049$, $p = .382$). All the measures of rumination were then entered simultaneously at Step 2, resulting in a significant increase in R^2 to $.44$ ($p < .001$). In the final step, the SCRS was entered, resulting in a significant increase in R^2 to $.47$ ($p < .001$) indicating that self-critical rumination accounts for significant variance in general distress above and beyond other measures of rumination. In the final model, only anger rumination and self-critical rumination were significant independent predictors of general distress.

The second analysis examined whether the SCRS was a unique predictor of general distress after accounting for the measures of shame described in the methods section. Gender was entered at Step 1 and did not account for significant variance in overall distress ($R^2 = .001$, $\beta = -.023$, $p = .677$). All measures of shame were then entered simultaneously at Step 2, resulting in a significant increase in R^2 to $.32$ ($p < .001$). In the final step, the SCRS was entered, resulting in a significant increase in R^2 to $.40$ ($p < .001$). This indicates that self-critical rumination accounts for significant

variance in general distress above and beyond measures of shame. In the final model, self-critical rumination emerged as the only significant predictor of general distress over all measures of shame.

The third analysis examined whether the SCRS emerged as a unique predictor of borderline personality features above all other measures of rumination. Again gender was entered at Step 1 and did not account for significant variance in borderline personality features ($R^2 = .001$, $\beta = -.014$, $p = .801$). All measures of rumination were then entered simultaneously at Step 2, resulting in a significant increase in R^2 to .58 ($p < .001$). In the final step, the SCRS was entered, resulting in a significant increase in R^2 to .60 ($p = .002$) indicating that self-critical rumination accounts for significant variance in borderline personality features above and beyond other measures of rumination. In the final model, only anger rumination and self-critical rumination were significant predictors of borderline personality features.

The fourth and final analysis examined whether the SCRS was a unique predictor of borderline personality features above all measures of shame. Gender was entered at Step 1 and again did not account for significant variance in borderline personality features ($R^2 = .001$, $\beta = -.003$, $p = .954$). All measures of shame were then entered simultaneously at Step 2, resulting in a significant increase in R^2 to .42 ($p < .001$). In the final step, the SCRS was entered, resulting in a significant increase in R^2 to .49 ($p < .001$) indicating that self-critical rumination accounts for significant variance in borderline personality features above and beyond measures of shame. In the final model, only the

PFQ shame scale and self-critical rumination emerged as significant predictors of borderline personality features.

Chapter 5: Test-Retest Reliability

Method

A second sample was collected to assess test-retest reliability of the SCRS. Participants in this sample were 85 undergraduate students enrolled in introductory psychology classes who completed an online survey for course credit. Of the initial 85 participants, 15 did not respond to the invitation to complete Time 2, leaving a sample of 70 who participated in both time points. The sample was predominantly female (89.9%) and European American (91.3%). Participants were asked to complete a demographic questionnaire and the SCRS at Time 1. Two weeks later they were emailed invitations to re-complete the SCRS. Participants completed Time 2 between 13-37 days after completing Time 1 ($M = 16.80$ days, $SD = 4.02$).

Results and Discussion

Correlations between scores on Time 1 and Time 2 were calculated. The test-retest correlation for the SCRS was .86, indicating good test-retest reliability. A paired sample t test indicated that on average, participants' scores on Time 1 ($M = 1.90$, $SE = .08$) were not significantly different than their scores on Time 2 ($M = 1.83$, $SE = .08$), $t(68) = 1.81$, $p = .07$.

Chapter 6: General Discussion

The purpose of this project was to develop a measure of self-critical rumination. Several methods were used to generate items including a writing task administered to both a student sample and a clinical sample as well as adapting items from other validated measures of rumination. Using these methods, a total of thirty-nine items were written. These items were evaluated for content validity and items that were rated as unclear or not adequately measuring self-critical rumination were eliminated from the item pool. Items were also eliminated if they demonstrated excessively high item-total correlations in order to reduce the number of items with redundant content. Following these analyses, twelve items were left in the item pool. These remaining items were then subjected to a factor analysis which indicated that a single-factor solution best fit the data. The final scale also demonstrated excellent internal consistency, good test-retest reliability, and correlated overall in the expected directions with measures of related constructs.

A series of regression analyses were then conducted to determine if the SCRS demonstrated incremental validity in predicting general distress and borderline personality features above and beyond other measures of rumination or shame. In each of the analyses, the SCRS accounted for variance in these dependent variables above and beyond measures of shame alone or measures of other types of rumination. An important criticism of the Ruminative Responses Scale (Nolen-Hoeksema & Morrow, 1991) is that some of the items confound the occurrence of specific depressive symptoms with the tendency to ruminate about these symptoms (Treyner, Gonzalez, &

Nolen-Hoeksema, 2003). For example, a high score on “think about how alone you feel” could reflect simply feeling alone, rather than ruminating about feeling alone. Similarly, a low score on “think about how hard it is to concentrate” could reflect either not having concentration problems or not ruminating about concentration problems. Several studies have addressed this problem by using only the items that reflect the tendency to ruminate when feeling sad or depressed in general (e.g., “isolate yourself and think about the reasons why you feel sad”), without confounding by the presence or absence of specific symptoms that not all depressed people experience. Similarly, items for the SCRS were written to ask people about their thinking patterns when feeling self-critical in general.

Several limitations of this study must be noted. Firstly, while both student and clinical samples were used during the creation of the initial item pool, only a student sample was used to validate these items. This process should be replicated in a clinical sample to determine if the psychometric properties of the scale are the same in both populations. Secondly, a confirmatory factor analysis should be conducted on the SCRS in a new sample to determine if the results of the exploratory factor analysis are the same across different samples.

Finally, the SCRS demonstrated large correlations with the other measures of rumination administered. While it is expected that individuals who ruminate on one topic are more likely to also ruminate on other topics, the magnitude of the correlations between the SCRS and these other measures raises some concerns about the independence of self-critical rumination as a construct. Despite these concerns, the

ability of the SCRS to predict outcomes such as general distress and borderline personality features above and beyond these other measures is indicative of the SCRS's incremental validity. Future research should attempt to replicate these relationships in other samples in order to resolve this issue. Taken together, these results indicate that SCRS is a valuable addition to the literature on the different forms of rumination.

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