



Gender differences in rumination: A meta-analysis

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ABSTRACT

Starting in adolescence and continuing through adulthood, women are twice as likely as men to experience depression. According to the response styles theory (RST), gender differences in depression result, in part, from women's tendency to ruminate more than men. A meta-analysis was performed to evaluate gender differences in rumination in adults ($k = 59$; $N = 14,321$); additionally, an analysis of subtypes of rumination – brooding and reflection – was conducted ($k = 23$). Fixed effects analyses indicated that women scored higher than men in rumination ($d = .24$, $p < .01$, $SEd = .02$), brooding ($d = .19$, $p < .01$, $SEd = .03$) and reflection ($d = .17$, $p < .01$, $SEd = .03$); there was no evidence of heterogeneity or publication bias across studies for these effect sizes. Although statistically significant, the effect sizes for gender differences in rumination were small in magnitude. Results are discussed with respect to the RST and gender differences in depression.

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1. Introduction

Gender differences in rates of depression are well documented in the literature; beginning in adolescence, rates of depression in women are greater than in men, and by adulthood, women are twice as likely as men to become depressed (for a review, see Kessler, 2006). Numerous theories have been set forth to explain the gender differences in depression, citing psychological, sociocultural, and biological factors (for reviews, see Boughten & Street, 2007; Hankin & Abramson, 2001; Hyde, Mezulis, & Abramson, 2008). A prominent psychological theory, the response styles theory (RST; Nolen-Hoeksema, 1987, 1991), purports that women have a greater tendency to ruminate on their depressive symptoms and distress than do men, and this contributes to greater rates of depression in women. According to the RST, rumination involves repetitively and passively focusing on symptoms of distress and on the possible causes and consequences of these symptoms. Because rumination enhances the effects of depressed mood on thinking, impairs effective problem solving, interferes with instrumental behavior, and erodes social support, the initial symptoms of depression among people who chronically ruminate are likely to become more severe and evolve into episodes of major depression and rumination may prolong current depressive episodes (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). The RST has spurred a

large body of empirical research on the role of rumination in the onset and duration of depression (for reviews, see Nolen-Hoeksema, 2012; Nolen-Hoeksema et al., 2008). Furthermore, the theoretical assumptions of the RST have been incorporated into broader models of depression risk (e.g., Hankin & Abramson, 2001; Hyde et al., 2008).

Although evidence for gender differences in rumination has emerged consistently in the literature, the magnitude of this difference has varied from study to study. In an effort to systematically review the rumination literature in children and adolescents, Rood and colleagues (2009) conducted a meta-analysis of gender differences in rumination in youth. Results of their analysis indicated that gender differences in rumination are quite small in children ($d = .14$) with girls significantly more likely to ruminate than boys. In adolescence, this gender difference was significant and larger in magnitude ($d = .36$). The authors reported that these results provide some evidence of the RST in youth and suggest that during adolescence, the increased magnitude of gender differences in rumination may parallel that seen in rates of depression.

Another meta-analysis, conducted by Tamres and colleagues (2002), examined gender differences in coping mechanisms and included 10 studies reporting on gender differences in rumination. Results yielded a small but significant effect of gender on rumination ($d = .19$), with women more likely to ruminate than men. However, the Tamres analysis differs from the current study in several important ways. First, Tamres and colleagues focused on methods of coping (e.g., their search terms included “coping”, “stress management”) in response to a broad range of stressors, including relationship stress, physical pain, and health issues

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(e.g., cancer, artificial insemination). Thus, their analysis was based on a much broader definition of rumination (i.e., including thoughts about physical pain, academic performance, relationships) rather than specifically on depressive rumination as defined above. Secondly, their review included studies of children and adults and results were collapsed across these groups, thus obscuring potential influences of developmental stages on the gender differences in rumination (Rood et al., 2009). In contrast, the current study focuses specifically on depressive rumination in adults so as to directly address the tenets of the RST.

Despite the prominence of the RST in the field, no quantitative analysis of gender differences in depressive rumination has been conducted in the adult literature. The current review was conducted to provide a meta-analysis of the literature on gender differences in rumination in adult samples. We reviewed studies that included a measure of rumination, focusing on depressive rumination, which is most commonly measured by the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991) and the Rumination on Sadness Scale (RSS; Conway, Csank, Holm, & Blake, 2000), both of which are self-report measures. The RRS is a 22-item subscale from the Response Styles Questionnaire; participants rate how often they experience each response when they feel sad, blue, or depressed. Items focus on the meaning of rumination, on the subjective feelings related to depressed mood, on symptoms, and on consequences and causes of the mood (Luminet, 2004). Sample items on the RRS include, “Think, ‘What am I doing to deserve this?’” and “Go away by yourself and think about why you feel this way.” The RSS is a 13-item measure assessing how often participants experience each response in situations in which they feel sad, down, or blue. Items focus on the intensity and repetitive quality of ruminative thoughts, the difficulty with stopping ruminative thoughts, attempts at understanding the nature of one’s distress, and the lack of instrumental goal orientation (Luminet, 2004). Sample items on the RSS include “I repeatedly analyze and keep thinking about the reasons for my sadness” and “I exhaust myself by thinking so much about myself and the reasons for my sadness.” A review of the psychometric properties of the RRS and RSS can be found in Luminet (2004).

In addition to our analysis of global measures of depressive rumination, we examined gender differences in subtypes or components of rumination – brooding and reflection – obtained from a factor analysis of the RRS items that remained after eliminating items that could be argued to overlap with depressive symptoms (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). This scale consists of five items assessing brooding, or passive, perseverative, maladaptive self-focused thought, and five items assessing reflection, a neutrally valenced, less maladaptive self-reflective strategy. Compared to reflection, brooding may be more strongly associated with depression severity, particularly over time, and some evidence suggests that gender differences in brooding may be greater than gender differences in reflection (e.g., Treyner et al., 2003). By estimating the overall effect size of gender differences in rumination, as well as the brooding and reflection components of rumination, we sought to provide the field with a quantitative analysis of past research and examine the basic tenets of the RST regarding gender differences in rumination in adults. Furthermore, the results of the current study may serve to guide future research efforts in elucidating the gender differences in rates of depression.

2. Material and methods

2.1. Literature search and inclusion criteria

We followed two steps to ensure we reviewed all published papers reporting on gender differences in rumination. First, using the

citation index in Web of Science, we reviewed all studies through October 2011 citing the original publication of the RRS (Nolen-Hoeksema & Morrow, 1991) or the RSS (Conway et al., 2000), as they are the most commonly used self-report measures of individual differences in the tendency to engage in depressive rumination. Next, we searched the PsycINFO and Web of Science databases through October 2011 using combinations of the search terms *gender difference(s)* or *sex difference(s)*, paired with *rumination*. After identifying relevant studies (approximately 650), we reviewed the methods and results section of each manuscript for reports of gender differences in rumination and applied our inclusion criteria.

Inclusion criteria for our analysis were as follows: (a) used a measure assessing depressive rumination, (b) published in English in a peer-reviewed journal, (c) utilized an experimental design suitable for calculating one or more effect size, and (d) included adult samples only (i.e., college age or older).

In addition to reviewing studies that reported on gender differences in rumination, we also included studies in our analysis that did not explicitly report on gender differences, but did administer a measure of depressive rumination to a sample that included adult men and women. Using the citation index in Web of Science, we reviewed the studies that cited the original publication of the RRS (Nolen-Hoeksema & Morrow, 1991), but *did not* report on gender differences in rumination. We limited this search to studies published between 2008 and 2011 to increase our likelihood of receiving the necessary data, on the assumption that compared to authors of older papers, authors of more recent papers would be more likely to have the raw data required for examining gender and rumination in their study. Using the same inclusion criteria described above, we identified 71 studies and contacted the corresponding author of each study requesting statistical values necessary for calculating an effect size. Of the 71 authors contacted, 30 (43%) replied and provided the necessary values. Those authors who replied but were unable to provide values said that they were no longer able to access the data.

We focused specifically on depressive rumination rather than including other rumination constructs – such as anger rumination or rumination on specific events – so as to review the literature most relevant to RST. We included both clinical and non-clinical samples as the basic tenets of RST do not suggest that gender differences in rumination should change in magnitude as a function of diagnostic status. When data from the same study was included in more than one paper, we used the data from the paper with the largest sample size. In the case of studies that reported on multiple independent samples, a separate effect size was computed for each sample. When gender differences were examined in a paper and the paper reported that there were no significant gender differences but did not provide means or results from statistical tests, the authors were contacted and means and standard deviations for men and women were requested. Additional data were requested for five studies and were received for two of those studies. For the remaining three studies (two in the rumination analysis, one in the brooding and reflection analysis), a conservative effect size estimate of $d = 0.00$ was imputed.

2.2. Analyses

All analyses were completed in *Comprehensive Meta Analysis, Version 2.2.064*. To examine the extent to which women ruminate more than men, we computed Cohen’s d as an index of effect size. Cohen’s d was calculated for each study from group means and standard deviations, correlation coefficients, independent sample t -test values, or regression coefficients. An aggregate effect size weighted by sample size was computed to provide an overall effect size for gender across studies.

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