

MEDIATORS OF THE GENDER DIFFERENCE IN RUMINATION

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Rumination is engaging in a passive focus on one's symptoms of distress and on the possible causes and consequences of these symptoms. Women are more likely than men to engage in rumination. This study examined whether gender differences in the following beliefs would mediate the gender difference in rumination: the controllability of emotions, the appropriateness of rumination as a coping strategy, responsibility for the emotional tone of relationships, and mastery over negative events. The sample was 740 community-dwelling adults between 25 and 75 years of age, who completed a survey by mail. The combination of beliefs about control of emotions, responsibility for the emotional tone of relationships, and mastery over negative events fully mediated the gender difference in rumination. Alternative hypotheses that the gender difference in rumination was due to gender differences in distress, emotional expressivity, and the tendency to give socially desirable answers were not supported.

Based on several studies over the last decade, researchers have suggested that an important predictor of people's tendency to become depressed, and to remain depressed for extended periods of time, is rumination (for reviews, see Nolen-Hoeksema, 1991, 1995). *Rumination* is engaging in behaviors and thoughts that passively focus attention on one's symptoms of distress and on all the possible causes and consequences of these symptoms (Nolen-Hoeksema, 1991). Examples include sitting alone thinking about how tired and unmotivated one feels, worrying that one's moods will interfere with one's job, and passively reviewing all the things wrong in one's life that might be contributing to those moods. Rumination differs from more adaptive emotion-focused coping responses, such as reframing a situation and seeking social support, in that it entails individuals focusing attention on their symptoms of distress and the problems associated with those symptoms, rather than providing opportunity for repair of negative emotions (cf. Stanton, Danoff-Burg, Cameron, & Ellis, 1994, for discussion of various forms of emotion-focused coping). Indeed, experimental studies have shown that

inducing distressed people to ruminate interferes with good problem-solving and worsens their mood (Lyubomirsky & Nolen-Hoeksema, 1995). Naturalistic studies show that people who tend to ruminate when distressed are more likely to experience prolonged symptoms of depression and episodes of major depression, compared to people who do not tend to ruminate when distressed (Nolen-Hoeksema, 1998, 2000; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994; for similar results from other investigators, see the review by Ingram, 1990). Rumination continues to be a significant predictor of future depression even after controlling for initial levels of depression.

Women appear more likely than men to engage in rumination when sad or depressed. In an observational laboratory study, Butler and Nolen-Hoeksema (1994) found that women in a depressed mood were more likely than men in a depressed mood to choose to focus on their moods. In a naturalistic study, Nolen-Hoeksema and colleagues (1993) asked men and women to record their experiences of distress, and what they did in response to these moods, each day for a month. Women were significantly more likely than men to report engaging in ruminative, self-focused responses to their distress. Similarly, studies of adolescents and adults in the community have shown that girls and women were more likely than boys and men to report that they engaged in rumination when distressed (Allgood-Merten, Lewinsohn, & Hops, 1990; Blanchard-Fields, Sulsky, & Robinson-Whelen, 1991; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema et al., 1994).

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In turn, these gender differences in rumination appear to mediate the observed gender differences in depression (Nolen-Hoeksema et al., 1999; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema et al., 1994). That is, when gender differences in rumination are statistically controlled, the commonly observed greater rate of depression in women compared to men becomes nonsignificant. Thus, women's greater tendency to ruminate appears to contribute to their greater tendency toward depression compared to men.

Why would women be more prone than men to engage in ruminative coping when distressed? Research has shown that women's tendency to engage in rumination more than men is fostered by experiences resulting from women's subordinate social status. Nolen-Hoeksema and colleagues (1999) argued that women experience more negative, uncontrollable events than men do and that this gender difference contributes to the gender difference in rumination by causing women to be vigilant for danger and for ways they might be able to control their environment (cf. Miller, 1976). They showed that women experience greater levels of chronic strain due to lack of affirmation from their partners, role burden, and parenting strain, compared to men, and that this gender difference in chronic strain contributed to the gender difference in rumination. Similarly, Nolen-Hoeksema (1998) found that the greater lifetime prevalence of sexual and physical assault among women compared to men contributed to women's greater tendency to ruminate compared to men.

In the work reported here, we investigated whether beliefs resulting from women's subordinate status might also mediate the gender difference in rumination. Based on past research on gender socialization and gender beliefs, we hypothesized that women are more likely than men to believe that they should focus on their emotions rather than taking action on their environment, that negative emotions and the events that cause them are uncontrollable, and that they are responsible for the emotional tone of their interpersonal relationships. We hypothesized that these beliefs cause women to focus intently on their own emotional states, particularly their negative ones; to be wary of taking actions on their environment to address the sources of their distress; and, thus, to engage in more rumination than men.

Beliefs About Emotion-Coping

People appear to hold strong gender beliefs about emotion. Women are viewed as more emotionally labile and less in control of their emotions, particularly sadness and fear, compared to men (Fabes & Martin, 1991). People also hold gender beliefs about the emotion-coping strategies that are appropriate for women versus those that are appropriate for men (Maccoby & Jacklin, 1974). Parents encourage their young sons more than their young daughters to suppress emotions like sadness or fear and to take action to overcome the sources of these emotions (Dunn,

Bretherton, & Munn, 1987; Kuebli, Butler, & Fivush, 1995). In contrast, mothers engage their daughters in significantly more discussion of sadness and fear than they do their sons, which is then linked to a greater sensitivity in girls than in boys to emotions in the self and others. In addition, Hops (1995) found that depressed adolescent girls are positively reinforced by their parents more than depressed adolescent boys for their expressions of sadness and depression. Thus, it appears that expressions of, and attention to, sadness and fear are encouraged more in girls and women than in boys and men. Expression, rather than suppression, of sadness and fear may be healthy if it leads to the provision of assistance from others or is the first step toward overcoming the sources of the sadness and fear. But for some individuals, expression and attention to sadness and fear may evolve into rumination because others do not respond positively or helpfully (Nolen-Hoeksema & Davis, 1999) or because the individual does not move on from expression of these emotions to problem-solving around their sources.

Not all women and men will incorporate these gender beliefs about emotion and coping into their self-expectations (Deaux & Major, 1987). Thus, the prediction derived from gender belief theories is that there will be individual differences among women and men in beliefs about the uncontrollability of negative emotions. Moreover, we predicted that women and men who believe that emotions are uncontrollable and that the appropriate response to these emotions is to ruminate would be more likely to engage in rumination. But we also predicted that women as a group would be more likely than men as a group to have these beliefs, which would partially account for the gender difference in rumination.

Women and men may also differ in their beliefs about the controllability of events that make them distressed and in their ability to change distress-creating situations (Bandura, 1986). Women may often be correct in believing that the conditions leading to their distress are difficult to change. But regardless of how controllable these conditions truly are, women's beliefs that they can change these conditions should affect their willingness to take actions toward change. Thus, we predicted that women (and men) who have low perceived mastery would be more likely to engage in rumination. In addition, we predicted that women would have lower perceived mastery than men and that this would partially account for the gender difference in rumination.

Finally, women and men may differ in their beliefs about their responsibilities for the emotional tone of their relationships with others. Several theorists have argued that women are hypervigilant both to their own emotions and to the emotions of others in an attempt to keep these emotions in balance and to prevent deterioration of the positive emotional tone of interactions (Gilligan, 1982; Helgeson, 1994; Jack, 1991; Miller, 1976). Hypervigilance to emotions in oneself and others is likely to lead to a ruminative consideration of possible causes for these emotions

as one tries to decide how to respond to these emotions. Thus, we predicted that women and men who hold themselves more responsible for the emotional tone in their relationships would be more likely to engage in rumination on their emotions. In addition, we predicted that women would be more likely than men to hold themselves responsible for the emotional tone in relationships and that this would partially account for the gender differences in rumination.

In summary, we predicted that the people most likely to develop a maladaptive, ruminative style of responding to distress would be those (a) who have beliefs that emotions are often uncontrollable and that the appropriate response to these emotions is to self-focus, (b) with low perceived mastery expectations for changing their environment, and (c) who hold themselves responsible for the emotional tone of their relationships. We also predicted that women would be more likely than men to develop these beliefs that contribute to rumination.

Addressing Alternative Explanations

One alternative explanation for the gender difference in rumination is that it is entirely attributable to the gender difference in distress. That is, women may ruminate more than men because they have more distress to ruminate about. We tested this hypothesis in this study.

A second alternative explanation for the gender difference in rumination is that it is due simply to women's greater emotional expressiveness compared to men. Women appear more comfortable than men in expressing and acknowledging at least some emotions, including sadness and fear (e.g., Brody, 1993; Nolen-Hoeksema & Rusting, 1999). In addition, women typically score higher than men on scales assessing expressiveness to others, such as the Personal Attributes Questionnaire (Twenge, 1997). Women's greater tendency to ruminate, and particularly to acknowledge rumination on self-report questionnaires, may be simply an extension of women's greater comfort in admitting to and exploring negative emotions such as sadness and anxiety, compared to men. We tested this alternative hypothesis in this study as well.

A related third alternative hypothesis is that women are more willing than men to admit to socially undesirable behaviors, such as rumination (cf. Joubert, 1985), and this accounts for their higher scores on rumination. We also tested this alternative hypothesis in this study.

METHOD

Participants

The participants were men and women living in the greater San Francisco Bay area. These participants were recruited through random-digit dialing of telephone numbers in San Francisco, San Jose, and Oakland, California. These communities were chosen because of their ethnic

diversity. Residential telephone numbers in these communities were chosen randomly and then called. The person answering the telephone was asked if anyone living in the household was between the ages of 25 and 35, 45 and 55, or 65 and 75. These age groups were targeted to ensure that we had sufficient samples of young, middle-aged, and older adults in the study. Only one person per household was recruited into the study. Of the 1,789 people called and identified as meeting the age criterion for the study, 19.3% said they were not interested in participating, 3.3% said they did not have time to participate, and 3.7% said they would participate but then did not return repeated telephone calls to schedule a first interview, resulting in a sample of 1,317 (74% of those who met the age criterion) who participated in the first interview. Of these, 1,132 people (86%) participated in a second interview one year later.

Approximately one year after the second interview, the 1,132 participants who completed the first and second interviews were contacted by mail and asked to complete a questionnaire. This questionnaire included several measures pertinent to the hypotheses presented above, which were not included in the first or second interviews. Thus, only the data from the follow-up questionnaire are used in the analyses presented here. Of the original 1,132 people who participated in the first interview, 740 (65%) returned the completed questionnaire. There were no significant differences between these 740 people and the original 1,132 in gender distribution, distress levels, or rumination.

Demographic information for the full sample, arranged according to gender, is presented in Table 1. Of the 740 respondents in the current study, 219 were in the 25- to 35-year-old group (128 of these were women), 328 were in the 45- to 55-year-old group (183 of these were women), and 193 were in the 65- to 75-year-old group (106 of these were women). Statistics for the greater San Francisco Bay area for 1990 (about 6 years before this study was conducted) indicated that the ethnic distribution of the area was 69% European American, 15% Latina/o, 15% Asian American, 9% African American, and 7% other ethnicities. Thus, this sample had more European Americans and fewer people of color than the population from which it was drawn. The median income of the sample was \$50,000 to \$60,000, somewhat higher than the median income of the greater Bay area of \$38,000. This sample was better educated than the general population of the Bay area, where only 10% have a graduate or professional degree and 18% have a college degree. The partnership status of the sample is similar to the greater Bay area statistics, which show that 54% of the population is married, 30% is single, 6% is widowed, and 10% is divorced.

Procedures

Data for the current study were collected by a mail survey. The mailing included a cover letter explaining the study and procedures, a questionnaire packet including

Table 1
Sample Demographics by Gender

Variable	Percentage (Number)		
	Full Sample 100% (740)	Women 56% (417)	Men 43% (323)
Age			
25–35	30 (219)	31 (128)	28 (91)
45–55	44 (328)	44 (183)	44 (145)
65–75	26 (193)	25 (106)	27 (87)
Ethnicity			
African American	6 (42)	6 (26)	5 (16)
Asian American	6 (45)	7 (28)	5 (17)
European American	76 (560)	75 (312)	77 (248)
Latina/o	7 (50)	7 (28)	7 (22)
Other	6 (43)	6 (23)	6 (20)
Household income			
Up to \$25,000	16 (116)	20 (81)	11 (35)
Up to \$50,000	28 (203)	29 (118)	27 (85)
Up to \$80,000	24 (169)	24 (97)	23 (72)
Above \$80,000	32 (232)	27 (110)	39 (122)
Education			
Less than high school	4 (32)	4 (16)	5 (16)
High school diploma	11 (81)	13 (54)	8 (27)
Some college	26 (192)	30 (123)	22 (69)
College degree	23 (171)	23 (97)	23 (74)
Some graduate/professional school	12 (88)	11 (44)	14 (44)
Graduate/professional degree	23 (172)	20 (82)	28 (90)
Partnership Status			
Single	13 (96)	11 (47)	15 (49)
Married	52 (380)	47 (197)	57 (183)
Cohabiting	6 (45)	6 (25)	6 (20)
Separated	1 (10)	1 (3)	2 (7)
Divorced	13 (95)	15 (62)	10 (33)
Widowed	10 (72)	14 (59)	4 (13)
Committed and not cohabiting	3 (24)	3 (12)	4 (12)
Single parent	2 (14)	3 (11)	1 (3)

Note: Percentages are based on non-missing cases. Percentages may not add to 100 because of rounding error.

questions for the present study and the larger study on gender differences in depression, and a postage-paid return envelope. Additionally, \$1 in cash was included with each questionnaire packet in an attempt to increase response rates to mail surveys. Those who completed and returned the questionnaire packet by a given deadline were entered in a lottery to win up to \$1,000. About one month later, follow-up postcards were sent thanking people for their participation and as a reminder to those who had not yet returned their responses.

Measures

Rumination. A 10-item version of the 22-item Ruminative Responses Scale (cf. Jackson & Nolen-

Hoeksema, 1998) was used to assess the participants' tendency to ruminate in response to their own symptoms of negative emotion. The instructions were as follows:

Everyone gets upset—sad, blue, nervous—some of the time. People deal with being upset in many different ways. For each item, please write in the blank the one number that best describes what you *generally* do when you are *upset*. Choose the most accurate response for *you*, not what you think “most people” would say or do. There are no right or wrong answers.

For each item, the respondents indicated they *never* or *almost never* (1), *sometimes* (2), *often* (3), or *always* or *almost always* (4) engaged in the response when

upset. The 10 items described responses to distress that are self-focused and symptom-focused (e.g., Self-focused: I think about all my shortcomings, failings, faults, and mistakes; I think, "Why can't I handle things better?" Symptom-focused: I think about how upset I feel; I think about my feelings of fatigue and achiness). We chose to have respondents report on what they do when "upset" rather than what they do when "depressed," as did the original Ruminative Responses Scale, because previous studies have suggested that the original Ruminative Responses Scale predicted anxiety as well as depression (Nolen-Hoeksema, 2000) and because there is tremendous overlap in anxiety and depression (Clark & Watson, 1991). Scores in this study on the 10-item version of the Ruminative Responses Scale ranged from 1 to 3.80, with a possible range of 1 to 4. The coefficient alpha for this scale was .85.

Although the construct validity and test-retest reliability of this short, new version of the Ruminative Responses Scale have not been established, the original, longer version of the scale shows good construct validity and test-retest reliability. Nolen-Hoeksema and Davis (1999) found that the longer version of the Ruminative Responses Scale exhibited high levels of internal consistency over a two-year period (i.e., Cronbach's $\alpha > .89$), despite the fact that participants had experienced a traumatic death of a loved one during the course of the study. In addition, the long Ruminative Responses Scale has demonstrated acceptable convergent and predictive validity (Butler & Nolen-Hoeksema, 1994; Just & Alloy, 1997; Nolen-Hoeksema & Morrow, 1991), as well as discriminant validity with respect to such constructs as neuroticism and extraversion. Finally, scores on the Ruminative Responses Scale predict the participants' choice to emotion-focus or focus away from emotions when in a sad mood (Butler & Nolen-Hoeksema, 1994). Time limitations in this investigation necessitated the use of the short Ruminative Responses Scale rather than its longer counterpart, but the two have been shown to be highly correlated, $r = .90$.

Distress. Participants completed the 13-item form of the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) for a self-report measure of current depressive symptoms (e.g., sadness, hopelessness, suicidal ideation, sleep, and appetite changes) on a scale ranging from 0 (e.g., *I do not feel sad*) to 3 (e.g., *I am so sad or unhappy that I can't stand it*). The BDI is one of the most widely used self-report instruments for detecting depressive symptoms. The possible range of scores on the BDI is 0 to 39. Scores in this study on the BDI ranged from 0 to 32. The coefficient alpha in this study was .85.

Participants also completed the 21-item version of the Beck Anxiety Inventory (BAI; Beck & Steer, 1990). The BAI is a self-report measure of levels of anxiety that taps

the somatic, affective, and cognitive symptoms that are characteristic of anxiety (e.g., "heart pounding or racing," "nervous," and "fear of losing control") on a scale of 0 (*not at all*) to 3 (*severely*). The possible range of scores on the BAI is 0 to 63. Scores in this study on the BAI ranged from 0 to 52. The coefficient alpha for the BAI in this study was .89.

BDI and BAI scores were correlated at .64 for men and .59 for women. Because these correlations were so high and because the rumination scale asked about both depression and anxiety, we decided to combine these scores into one overall Distress score. This Distress score was calculated by first standardizing BDI and BAI scores separately, then averaging them. The coefficient alpha for this composite Distress measure was .92.

Controllability of negative emotions. A 3-item measure constructed for this study was used to assess participants' beliefs about how much control they have over experiencing negative emotions. They rated on a scale from 1 (*very hard*) to 10 (*very easy*) the extent to which they were able to make themselves feel less sad, angry, and afraid, respectively. For example, the item concerning sadness read, "In general, when you are really *sad*, how hard or easy is it to make yourself feel less *sad*?" Controllability of Negative Emotions was computed by taking a mean of these three responses. Scores on this scale ranged from 1 to 10. The alpha for this scale was .90.

Should ruminate. A modification of the 10-item version of the 22-item Ruminative Responses Scale (cf. Jackson & Nolen-Hoeksema, 1998) was used to assess the participants' beliefs about whether they think they should ruminate in response to their own symptoms of negative emotion. The items and response scale were the same as those for the Ruminative Coping scale above, except the instructions were as follows:

You have just answered what you generally do when you are upset. This time, for each item please indicate the one number that best describes what you think you should do when you are upset. Don't indicate what you actually do, but indicate what you think you should do when you are upset.

Scores on this scale ranged from 1 to 4. The coefficient alpha for this scale was .83.

Perceived mastery over one's circumstances. The Perceived Mastery Scale (Pearlin & Schooler, 1978) was used to index the sense of mastery versus helplessness that respondents felt about their lives. This 7-item measure is comprised of items such as "I can do just about anything I really set my mind to" and "I often feel helpless in dealing with the problems of life." Participants responded on a scale from 1 (*strongly agree*) to 4 (*strongly disagree*).

Scores reported in this study covered the full possible range from 1 to 4. This scale had a coefficient alpha of .81.

Emotional expressivity. The Personal Attributes Questionnaire (PAQ) Expressivity 8-item subscale was used to measure the participants' tendency to outwardly convey thoughts and feelings (Spence & Helmreich, 1978). Respondents indicated on a 5-point bipolar scale which end of the scale better represents them. A sample item included deciding between "very cold in relation to others" and "very warm in relation to others." Scores in this study ranged from 1.5 to 5, with a possible range of 1 to 5. The coefficient alpha in this study was .78.

Responsibility for the emotional tone of relationships. To assess the degree to which the participants believed they are unduly responsible for others' emotional needs in close relationships, 9 items from Helgeson's Unmitigated Communion Scale were used (Fritz & Helgeson, 1998; Helgeson, 1994). Sample items included "For me to be happy, I need others to be happy" and "I can't say no when someone asks me for help." These items were rated on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). It has been shown that the unmitigated communion construct is related to, but psychologically distinct from, two alternative "other-orientation" constructs such as communion and empathy (Fritz & Helgeson, 1998). Scores in this study ranged from 1 to 5, with a possible range of 1 to 5. This scale had a coefficient alpha of .70.

Social desirability. The social desirability measure used for this study was the Balanced Inventory of Desirable Responding (BIDR). It is an updated and validated instrument composed of two 20-item subscales—impression management and self-deceptive enhancement—answered on a 7-point Likert scale from 1 (*not true*) to 7 (*very true*; Paulhus, 1991). Impression management measures deliberate self-presentation to an audience, and self-

deceptive enhancement measures the tendency to give self-reports that are honest but positively biased. Sample items for self-deceptive enhancement included "I am a completely rational person" and "I never regret my decisions." Sample items for impression management included "I never cover up my mistakes" and "When I hear people talking privately, I avoid listening." A score for each subscale is computed by assigning a value of 1 to extreme responses (6 or 7) and then counting the number of these responses. Here, impression management and self-deceptive enhancement were combined into a composite Social Desirability variable. The composite Social Desirability variable was made by taking the mean of the Impression Management and Self-Deception subscales. Scores in this study ranged from 0 to 36, with a possible range of 0 to 40. The coefficient alpha for this composite was .79.

RESULTS

The correlations among all the variables for the entire sample are given in Table 2. Distress, the belief that one should ruminate when distressed, and believing one is responsible for the emotional tone of relationships were each significantly positively correlated with rumination. Controllability of negative emotions and perceived mastery over one's circumstances were significantly negatively correlated with rumination. Socially desirable responses and expressivity showed no significant correlation with rumination.

To serve as a mediator between gender and rumination, a variable must both evidence a significant relationship to rumination and significant gender differences in mean scores. Mean scores, standard deviations, and tests for gender differences on all variables are presented in Table 3. Women had significantly higher scores than men on rumination. Women also had significantly higher scores than men on distress, expressivity, socially desirable responses, and feeling responsible for the emotional tone

Table 2
Correlations Among Variables for the Entire Sample

	1	2	3	4	5	6	7	8
1. Rumination	—							
2. Distress	.62**	—						
3. Expressivity	.01	-.03	—					
4. Social desirability	-.05	-.29***	.19***	—				
5. Should ruminate	.38***	.18***	.04	-.04	—			
6. Controllability of negative emotions	-.21***	-.29***	.02	.19***	-.08*	—		
7. Perceived mastery	-.44***	-.48***	.05	.32***	-.17***	.26***	—	
8. Responsibility for relationships	.18***	.21***	.30***	-.02	.19***	-.10**	-.24***	—

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3
Mean Scores and Standard Deviations on All Variables by Gender

Variable	M (SD)			<i>t</i> Test for Gender Difference
	Men	Women	<i>df</i>	
Rumination	1.70 (1.16)	1.93 (0.51)	738	-3.60***
Distress	-0.97 (0.88)	0.71 (0.91)	729	-2.51**
Expressivity	3.80 (0.54)	4.03 (0.50)	733	-6.00***
Social desirability	14.33 (6.54)	15.26 (5.93)	738	-2.03*
Should ruminate	1.54 (0.49)	1.58 (0.46)	732	-1.08
Controllability of negative emotions	6.20 (4.21)	5.59 (1.87)	732	2.64**
Perceived mastery over one's circumstances	3.13 (0.56)	3.05 (0.52)	730	2.05*
Responsibility for relationships	3.12 (0.64)	3.33 (0.68)	734	-4.27***

* $p < .05$, ** $p < .01$, *** $p < .001$.

for relationships. Men, compared to women, reported higher perceived mastery over negative circumstances and that negative emotions were more controllable. However, there was not a significant gender difference in beliefs that the appropriate response to these emotions is to ruminate.

The variables that meet the two criteria for mediating the gender difference in rumination are distress, beliefs about the controllability of negative emotions, perceived mastery over one's circumstances, and responsibility for the emotional tone of relationships.

The final criterion for full mediation is that covarying a variable must reduce the relationship of gender to rumination to nonsignificance (Baron & Kenny, 1989). Partial mediation is established if covarying a variable substantially reduces the relationship of gender to rumination. We first ran a regression analysis to rule out the hypothesis that distress alone would mediate the gender difference in rumination. In the first block of the equation, gender was added. As expected, gender was a significant predictor of rumination (Std $b = .12$, $p < .01$). In the next block, distress was added to the equation and it predicted significant variance in rumination (Std $b = .62$, $p < .001$). Importantly, gender remained a significant predictor of rumination after adding distress to the equation (Std $b = .06$, $p < .03$), meaning that distress did not fully mediate the gender difference in rumination.

We then conducted a regression analysis testing whether beliefs about the controllability of negative emotions, perceived mastery over one's circumstances, and responsibility for the emotional tone in relationships together mediate the gender difference in rumination. (All variables were centered before entering.) In this analysis, rumination was the dependent variable. Gender was added in the first block to predict rumination. Then

controllability of negative emotions, perceived mastery, and responsibility for the emotional tone of relationships were added together in the second block. The relationship between gender and rumination was nonsignificant when these three variables were added to the model (see Table 4). Thus, these three personality variables together mediated the gender difference in rumination.

Although this regression analysis showed that these three variables together mediate the gender difference in rumination, they did not indicate whether any one of the three personality variables mediates the gender difference in rumination on its own. In order to test this, three separate regression analyses were conducted to determine whether controllability of negative emotions, perceived mastery over one's circumstances, or responsibility for the emotional tone of relationships mediated the gender difference in rumination on its own (see Tables 5a, b, and c). In each analysis, rumination was the dependent variable. Gender was added to the equation in the first block and then one of the three personality variables was added in the second block. Not one of the three personality variables by itself fully mediated the gender difference in rumination. Each of the personality variables reduced the relationship between gender and rumination, but none of them brought this relationship down to nonsignificance.

DISCUSSION

In this study, as in several previous studies, women indicated a greater tendency to ruminate in response to distress than did men. Women did not tend to ruminate more than men simply because women were more distressed than men, more expressive than men, or more willing to admit to socially undesirable traits than men.

Table 4
Hierarchical Linear Regression Predicting Rumination From Controllability of Negative Emotions, Perceived Mastery Over Circumstances, and Responsibility for Relationships

<i>DV = Rumination</i>				
	<i>Variable</i>	<i>Std b</i>	ΔR^2	<i>Final b</i>
Block 1:	Gender	0.12**	0.02**	0.05
Block 2:	Controllability of negative emotions		0.25***	-0.20***
	Perceived mastery over one's circumstances			-0.34***
	Responsibility for relationships			0.17***
Total Adj. R^2			0.26	

Note: *Std b* is the standardized beta weight for that variable when its block is first entered into the equation. *Final b* is the standardized beta weight for that variable when all other variables have been added to the equation.

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

Table 5
Three Hierarchical Linear Regressions Separately Predicting Rumination From Controllability of Negative Emotions, Perceived Mastery Over Circumstances, and Responsibility for Relationships

A. <i>DV = Rumination</i>				
	<i>Variable</i>	<i>Std β</i>	ΔR^2	<i>Final β</i>
Block 1:	Gender	0.13**	0.02**	0.11**
Block 2:	Controllability of negative emotions		0.04***	-0.20***
Total Adj. R^2			0.05	
B. <i>DV = Rumination</i>				
	<i>Variable</i>	<i>Std β</i>	ΔR^2	<i>Final β</i>
Block 1:	Gender	0.12***	0.02***	0.09**
Block 2:	Perceived mastery over one's circumstances		0.19***	-0.43***
Total Adj. R^2			.20	
C. <i>DV = Rumination</i>				
	<i>Variable</i>	<i>Std β</i>	ΔR^2	<i>Final β</i>
Block 1:	Gender	0.13***	0.02***	0.11**
Block 2:	Responsibility for relationships		0.03***	0.17***
Total Adj. R^2			.04	

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

We did find that women scored higher on these three variables than men. Expressivity and socially desirable responding did not correlate with rumination, however. And even after we statistically controlled for the gender

difference in distress, the gender difference in rumination remained significant.

Instead, the gender difference in rumination appeared to be mediated by a group of three belief variables. First,

we had hypothesized that women would be more likely than men to believe that negative emotions such as sadness, fear, and anger are difficult to control, and that in turn, people who believed negative emotions were difficult to control would be more likely to ruminate. We asked participants how easy it was for them to control sadness, fear, and anger and found that women reported more difficulty in easing each of these emotions than men. In turn, difficulty in controlling negative emotions was related to a greater tendency to ruminate, and helped to account for the gender difference in rumination. Women may believe that negative emotions are more difficult to control because they were not socialized to use active coping strategies during childhood as much as men were. Women may also believe that they are highly emotional compared to men and that the sources of their negative emotions (e.g., hormones) are less controllable than the sources of men's negative emotions. Regardless of the origins of women's beliefs that negative emotions are relatively uncontrollable, this belief appears to contribute to the gender difference in rumination.

Second, we hypothesized that women would feel more responsible than men for the emotional tone of their relationships and for maintaining positive relationships with others at all costs, and feeling responsible would be associated with greater rumination. Feeling responsible for the emotional tone of relationships may lead women to attend to every nuance of their relationships, always vigilant for trouble, always wondering what others' comments or behaviors mean, always thinking of how they might make others happier. This, in turn, may make women vigilant to their own emotional states as barometers of how their relationships are going, contributing to rumination. Our measure of "feeling responsible" was Helgeson's (1994) unmitigated communion measure (Fritz & Helgeson, 1998). We found that women scored higher on unmitigated communion than men and, in turn, unmitigated communion was correlated with more rumination. Again, unmitigated communion helped to mediate the gender difference in rumination.

We had also hypothesized that women would feel less in control over important events in their lives and this would mediate the gender difference in rumination. Our analyses showed that women scored lower than men on a measure of mastery, and people who were lower on mastery reported more rumination. In turn, low perceived mastery helped to mediate the gender difference in rumination. Indeed, low perceived mastery appeared to be the strongest partial mediator of the gender difference in rumination. This suggests that women's sense that they have less control over important events in their lives, compared to men, is a particularly important contributor to the gender difference in rumination.

None of these three variables fully mediated the gender difference in rumination on its own. This suggests that women both high and low on beliefs about the controllability of emotions, feeling responsible for relationships,

and perceived mastery may be more prone to rumination than men. But the combination of these three characteristics did mediate the gender difference in rumination. Many women may carry some, but not all three, of these risk factors for rumination. For example, even women who are high in perceived mastery may have a tendency to ruminate, perhaps because they are concerned about the emotional tone of their relationships and vigilant for problems in these relationships. In addition, even women who believe that the events in their lives are controllable may feel that negative emotions, when they inevitably arise, are not so controllable, and this contributes to their tendency to ruminate.

Gender belief theories suggest that women might be more likely than men to say they *should* ruminate in response to distress. Yet, we found no significant gender difference in beliefs that one should ruminate. Thus, women know that rumination is not a good idea, but this apparently does not help some women avoid rumination. This is in line with previous studies which showed that people ruminate even though they know they would feel better if they avoided the rumination, perhaps because the emotions and thoughts they are focusing on are very compelling (Lyubomirsky & Nolen-Hoeksema, 1993).

Limitations

The study reported here was cross-sectional and correlational, thus no causal conclusions can be drawn. Longitudinal analyses using the variables assessed in these studies, and perhaps even experiments in which some variables are manipulated directly, are needed to draw causal conclusions.

We chose the variables for this study based on theories of gender roles and gender belief systems. There are likely to be other variables not measured in this study that are related to the gender difference in rumination. One likely candidate is neuroticism (Costa & McRae, 1985). Neuroticism is correlated with distress (Costa & McRae, 1985), so the fact that our primary results remained significant when we controlled for general distress suggests that adding neuroticism to the analyses presented here would not substantially change them.

Conclusions

Although we have emphasized the negative consequences of rumination, this is not to suggest that chronic suppression or avoidance of negative emotions is the positive alternative. A substantial literature attests to the negative health effects of chronic emotional suppression (Cole, Kemeny, Taylor, & Visscher, 1996; Pennebaker, 1990). That literature, taken along with our work on rumination, suggests that neither chronic suppression nor chronic rumination is adaptive, but that some balance control of and attention to negative emotions is necessary.

Previous analyses of the original study of which this study is an extension found that women's greater tendency

to ruminate, compared to men's, was mediated by gender differences in chronic strain and in a history of acute traumas such as sexual abuse (Nolen-Hoeksema, 1998; Nolen-Hoeksema et al., 1999). Is the gender difference in rumination due to gender differences in stressors or to gender differences in personality? Probably both are factors. Nolen-Hoeksema and colleagues (1999) found that chronic strain, low mastery, and rumination each had effects on the other. They argued that women's greater experience of certain types of uncontrollable stressors may lead them to develop low mastery expectations and to ruminate, but low mastery and rumination both interfere with women's ability to overcome the difficult situations they face. Nolen-Hoeksema and colleagues (1999) did not measure the range of personality variables assessed in this study. It is likely, however, that the gender differences in personality characteristics observed in this study are also related to gender differences in chronic strain, histories of abuse, and other contextual factors. Indeed, as we argued earlier, women may develop a sense that they are responsible for the emotional tone of relationships and the belief that their emotions are not easily controlled because they must deal with chronic strains and acute traumas more often than men.

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