

Rumination in Interpersonal Relationships: Does Co-rumination Explain Gender Differences in Emotional Distress and Relationship Satisfaction Among College Students?

Christine A. Calmes · John E. Roberts

© Springer Science+Business Media, LLC 2008

Abstract Rose (Child Dev 73:1830–1843, 2002) found evidence that co-rumination accounts for girls' greater emotional distress as well as their greater friendship satisfaction compared to boys. Co-rumination is defined as a passive, repetitive discussion of symptoms or problems with a close other. The present study explored the associations between co-rumination in various types of close relationships and both emotional distress and relationship satisfaction in college students. First, confirmatory factor analyses demonstrated that co-rumination is distinct from depressive rumination. Further, co-rumination with one's closest friend mediated the relationship between gender and *both* depressive symptoms and friendship satisfaction. Specifically, females reported higher levels of co-rumination with their closest friend, which in turn, predicted their higher levels of depressive symptomatology and friendship satisfaction. In contrast, there were no gender differences in co-rumination in other close relationships, and for the most part, co-rumination in these relationships was not associated with gender differences in emotional distress or relationship satisfaction. Therefore, co-rumination in close friendships may be particularly important in understanding the higher levels of both

depression and relationship satisfaction among females compared to males.

Keywords Rumination · Co-rumination · Social support · Depression · Anxiety · Interpersonal · Distress · Relationship satisfaction

Introduction

It is well established that females are at considerably greater risk for depression and anxiety compared to males (e.g., Kessler et al. 1993; Pigott 1999; Weissman and Klerman 1977). At the same time, females report higher levels of social support (Burda et al. 1984; Stokes and Wilson 1984), which has been shown to buffer against emotional distress (Bolger and Eckenrode 1991; Turner 1994). Furthermore, females report higher levels of self-disclosure in their relationships compared to males (Dindia and Allen 1992), and self-disclosure has been linked to increased relationship satisfaction (Jones 1991). How do we reconcile these conflicting findings suggesting that females are at significantly higher risk for depression and anxiety compared to males while also reporting higher levels of self-disclosure and relationship satisfaction?

One possibility is that certain characteristics of females' style of self-disclosure increase relationship satisfaction while simultaneously placing them at relative risk for depression and anxiety. Following

C. A. Calmes · J. E. Roberts (✉)
Department of Psychology, The University at Buffalo,
State University of New York, Park Hall, Box 604110,
Amherst, NY 14260-4110, USA
e-mail: robertsj@buffalo.edu

this line of thinking, Rose (2002) suggested that males and females differ in the degree to which their conversations with close friends are ruminative in nature. Depressive rumination is defined as a passive, inward focus on depressive symptoms and the causes and consequences of those symptoms (Nolen-Hoeksema 1991), and predisposes individuals to both depression (e.g., Nolen-Hoeksema and Morrow 1993; Roberts et al. 1998) and anxiety (Calmes and Roberts 2007; Nolen-Hoeksema 2000). Rose proposed that rumination may also manifest itself in verbal communication with close others. This so-called “co-rumination” is an interpersonal process in which dyads passively and repetitively discuss symptoms or problems. Specifically, dyads may discuss problems or difficulties in a contemplative manner, posing unanswerable questions and concerns about a problem and its potential implications. In other words, co-rumination is a relatively non-solution-focused discussion of problems. Given that co-rumination is an interpersonal manifestation of depressive rumination, it should increase risk for emotional distress. On the other hand, co-rumination involves self-disclosure, which should lead to greater relationship satisfaction (Jones 1991). In sum, co-rumination has been described as a combination of depressive rumination and self-disclosure, and consequently it may contribute to both positive and negative outcomes.

In Rose’s study (2002) of fifth, seventh, and ninth-grade students, co-rumination accounted for the well-documented finding that girls experience greater symptoms of depression and anxiety (e.g., Kessler et al. 1993; Weissman and Klerman 1977), while simultaneously reporting closer friendships (e.g., Caldwell and Peplau 1982; Jones 1991). In other words, co-rumination mediated the relationships between gender and emotional distress, and between gender and friendship satisfaction. Specifically, girls reported higher levels of co-rumination in friendships, which in turn, contributed to their higher levels of depression and anxiety, as well as their greater friendship satisfaction compared to boys. Upon closer inspection of the mechanism by which co-rumination contributes to emotional distress and friendship satisfaction, Rose found that co-rumination’s overlap with depressive rumination accounted for the relationship between co-rumination and emotional distress. Similarly, co-rumination contributed to friendship satisfaction due to its overlap with self-

disclosure. These findings suggest that co-rumination contributes to both emotional distress and friendship satisfaction through depressive rumination and self-disclosure, respectively.

Although the investigation by Rose (2002) only focused on children and adolescents, there was evidence of developmental trends (see Rose et al. 2007 for disconfirming evidence). In particular, gender and grade interacted to predict levels of co-rumination, such that co-rumination increased with age among females, but not among males. These results parallel the emergence of gender differences in depression and anxiety (Clark and Ayers 1993; Clark and Bittle 1992; Kessler et al. 1993; Weissman and Klerman 1977). Specifically, boys and girls endorse similar levels of depressive and anxious symptomatology until adolescence when females’ risk for depression and anxiety increases while males’ risk remains the same. Likewise, gender differences in various forms of interpersonal intimacy emerge between childhood and adolescence (McNelles and Connolly 1999; Sharabany et al. 1981). Given that gender differences in emotional distress and the importance of interpersonal relationships become increasingly pronounced with age, it seems likely that co-rumination is even more pervasive and may play an even stronger role in these outcomes among young adults compared to adolescents.

It is important to note that research to date has focused exclusively on co-rumination in friendships. However, when considering adult interpersonal functioning, it is likely that co-rumination occurs in a number of close relationships. Specifically, when undergraduates were asked to name the person with whom they shared the most intimate relationship, 14% named a family member, 47% named a romantic relationship, and 36% named a friend (Berscheid et al. 1989). This suggests that relationships with romantic partners, roommates, and parents may also provide avenues for co-rumination. It seems likely that co-rumination would take place across a range of close relationships, and that its consequences would be similar to those of friend-based co-rumination. We would also expect females to report engaging in higher levels of co-rumination in these relationships compared to males. Moreover, females’ greater co-rumination would help explain their elevated risk for emotional distress and their greater relationship satisfaction. Consistent with this hypothesis, past

research suggests that females report greater satisfaction in romantic relationships compared to males (Attridge et al. 1995; Hendrick et al. 1988). Similarly, females report greater social support from roommates compared to males (Lepore 1992). However, the literature is mixed concerning gender differences in satisfaction with parental relationships (Aquilino 1994; Haigler et al. 1995; Lee et al. 1993; Thornton et al. 1995). In sum, co-rumination in relationships with friends, romantic partners, roommates, and parents may contribute to both satisfaction in these relationships, as well as higher levels of emotional distress.

The present study explored the role of co-rumination in the emotional and interpersonal functioning of undergraduates. Specifically, this study extended previous findings by examining co-rumination in a number of close relationships, including relationships with same-sex friends, romantic partners, same-sex roommates, and parents. In terms of co-rumination with friends, we hypothesized that co-rumination with one's closest friend would mediate the relationship between gender and emotional distress. Specifically, females would report higher levels of co-rumination with their closest friend compared to males, which would in turn contribute to elevated levels of depression and anxiety among females. Moreover, the relationship between co-rumination and both depression and anxiety would be accounted for by co-rumination's overlap with rumination. In other words, we hypothesized that the significant relationship between co-rumination and emotional distress would disappear with the addition of rumination, suggesting that co-rumination contributes to depression due to its ruminative nature. Similarly, we hypothesized that co-rumination with one's closest friend would mediate the relationship between gender and friendship satisfaction. Females would endorse higher levels of co-rumination with their closest friend compared to males, which would in turn lead to greater friendship satisfaction among females. As previously discussed, it is likely that co-rumination occurs in numerous close relationships involving self-disclosure and intimate sharing, such as with romantic partners, roommates, and parents. This study explored the role that co-rumination in these other relationships may play in contributing to gender differences in emotional distress and relationship satisfaction. Given that co-rumination in these

relationships has not yet been empirically examined, we investigated these forms of co-rumination on an exploratory basis. Finally, to explore the discriminant validity of co-rumination vis-a-vis depressive rumination, we conducted confirmatory factor analyses comparing a model positing two latent variables that correlated freely to a model constraining the correlation between these two latent variables to unity (in other words a model that posited that these factors are not distinguishable). We also included depressive rumination in the mediation models as a covariate.

Methods

Participants

Participants signed up for the present study in order to fulfill requirements for their introductory psychology course at the University at Buffalo. The total sample consisted of 345 individuals (125 male, 220 female). Participants' ages ranged from 18 to 45 years old (Mean = 19.7, SD = 3.1). The majority of participants were first year students (59%), while 25% were Sophomores, 10% were Juniors, and 6% were Seniors. Fifty-six percent identified themselves as Caucasian, 26% as Asian, 10% as African American, 4% as Hispanic, and 4% as Native American or some other race. Forty-three percent identified themselves as Catholic, 11% as Protestant, 6% as Jewish, 5% as Buddhist, 2% as Muslim, 1% as Hindu, and 28% as belonging to some other religion.

Measures

Beck Anxiety Inventory (BAI; Beck et al. 1988). The BAI is a self-report measure of cognitive and somatic symptoms of anxiety. The BAI contains 21 questions rated on a Likert scale from 0 to 3, anchored at 0 = "not at all" and 3 = "severely, I could barely stand it." Total scores range from 0 to 63, with higher scores signifying greater anxious symptomatology. According to research by Beck and colleagues (1988), the BAI demonstrated good test-retest reliability over a 1-week period ($r = .75$) and high internal consistency in patient samples with anxiety disorders ($\alpha = .92$). Moreover, Beck and colleagues (1988) also found that the BAI has good discriminant validity in distinguishing anxious from non-anxious

groups. In the present sample, internal consistency of this measure was high ($\alpha = .92$).

Beck Depression Inventory-II (BDI-II; Beck et al. 1996). The BDI-II is a self-report measure of depressive symptomatology. The BDI-II contains groups of 21 statements with corresponding scores ranging from 0 to 3, with higher scores indicating greater depressive symptomatology. Total scores on this measure range from 0 to 63. In terms of psychometric properties, Sprinkle and colleagues (2002) reported a high test–retest reliability ($r = .96$ over a period of between 1 and 12 days) among a college population and a strong correlation between this measure and depressive symptoms assessed by the Structured Clinical Interview for *DSM-IV* Axis I Disorders ($r = .83$). Moreover, in the present sample, the internal consistency of the BDI-II was good ($\alpha = .86$).

Co-rumination Questionnaire (Short forms; Parent, Friend, Romantic Partner, Roommate; Rose 2002). The Co-Rumination Questionnaire (CRQ) is a 27-item questionnaire designed to assess the extent to which participants generally engage in co-rumination or attempt to co-ruminate in close relationships. Participants rate how well each statement describes their general interactions using a 5-point Likert scale ranging from 1 = “Not at all true” to 5 = “Really true.” Sample items include “When my friend and I talk about a problem that I have we try to figure out everything about the problem, even if there are parts that we may never understand” and “When I have a problem, my friend always tries to get me to tell every detail about what happened.” More recently, E. M. Lockerd (2005, Unpublished manuscript) created a 16-item version of the CRQ by selecting the two items with the highest factor loadings on each of eight subscales of the full 27-item CRQ. This new shortened measure displayed high internal consistency in the Lockerd sample ($\alpha = .90$). The first 8 items from this abbreviated measure ask how often the friendship pair co-ruminates about the *participant’s problems*, and the second 8 items ask how often the friendship pair co-ruminates about the *friend’s problems*. In other words, these two subscales clarify whether the participant’s or the friend’s problem is the focus of discussion.

In order to assess co-rumination with friends, parents, roommates, and romantic partners, we administered four separate versions of the 16-item

measure with instructions tailored to each of the aforementioned relationships. Instructions from the version of the CRQ assessing co-rumination with a close, same-sex friend, state, “Think about the way you *usually* are with your closest same-sex friend who you do not live with or have a romantic relationship with and circle the number for each of the following statements that best describes you.” Likewise, instructions from the version assessing co-rumination with a romantic partner state, “Think about the way you *usually* are with your romantic partner (must be a partner of at least 1 month) and ...” Instructions assessing co-rumination with parents state, “Think about the way you *usually* are with the parent who you feel closest to and ...” Finally, instructions assessing co-rumination with roommates state, “Think about the way you *usually* are with the roommate you feel closest to who is not a romantic partner and ...” Participants did not necessarily report having each of these four types of relationships, resulting in missing data. Data were available for 342, 339, 251, and 222 participants on relationships with friends, parents, romantic partners, and roommates, respectively. Furthermore, of the 339 participants who completed this measure thinking about the parent with whom they have the closest relationship, 84% of participants completed the questionnaire thinking about their relationship with their mother. Moreover, 64% of these participants reported that they are currently living with their mother.

In the present sample, there were moderate to high correlations between co-rumination about the participant’s problems and co-rumination about the other dyad member’s problems across the four types of relationships (see Table 1). Therefore, we combined the subscale assessing co-rumination about the participant’s problem with the subscale assessing co-rumination about the other dyad member’s problem for all subsequent analyses.¹ Finally, in the present sample,

¹ All analyses were conducted with each of the two subscales separately and yielded the same pattern of results. Therefore, for simplicity’s sake, only the combined results are presented in the paper.

Table 1 Correlations between co-rumination about the participant's problems and co-rumination about the other dyad members' problems across each of the four types of relationships

Type of relationship	<i>r</i>
Roommate	.91
Romantic partner	.83
Friend	.87
Parent	.66

Note: All *p* values < .001

there was high internal consistency in co-rumination across all four types of relationships ($\alpha = .94-.98$).

Ruminative Response Scale (RRS; Nolen-Hoeksema and Morrow 1991). The 22-item RRS measures an individual's tendency to ruminate when faced with depressive symptoms. Participants are asked to indicate what they "generally do when feeling down, sad, or depressed" using a 4-point Likert scale anchored at 0 = "almost never" and 4 = "almost always." The RRS consists of items measuring how often people engage in responses that are self-focused (e.g., "think 'Why am I the only person with these problems'"), symptom-focused (e.g., "focus on the fact that I am always tired"), and focused on the causes and consequences of having a depressed mood (e.g., "think 'I won't be able to do my job/work because I feel so badly'"). The RRS has demonstrated good 5-month test-retest reliability ($r = .80$, Nolen-Hoeksema et al. 1994) as well as high internal consistency ($\alpha = .89$) and validity in terms of predicting depression (Nolen-Hoeksema and Morrow 1991). In the present sample, internal consistency of the RRS was also high ($\alpha = .90$).

Quality of Relationships Inventory (Short Forms; Parent, Friend, Roommate, Romantic Partner; QRI; Pierce et al. 1991). The QRI is a 39-item measure developed to assess three broad dimensions of satisfaction associated with a specific relationship: (1) the perceived availability of support associated with the relationship (support); (2) the positivity, stability, and importance of the relationship (depth); and (3) the conflict and ambivalence in the relationship (conflict). In the present study, we were interested in measuring relationship satisfaction and therefore created a measure comprised of two dimensions of relationship satisfaction: support and depth. We constructed an abbreviated measure of

relationship satisfaction by selecting the three items with the highest factor loadings on the support and depth scales of the QRI (Pierce et al. 1991). The three selected items comprising the support dimension of the measure assessing friendship satisfaction specifically, include, "To what extent can you turn to your friend for advice about problems," "To what extent can you really count on your friend to distract you from your worries when you feel under stress," and "To what extent can you count on your friend to listen to you when you are very angry at someone else." Likewise, the three items comprising the depth dimension of the measure assessing friendship satisfaction specifically, include, "How significant is this relationship in your life," "How close will your relationship be with this person in 10 years," and "How much do you depend on your friend." In a similar manner to the co-rumination measure, we tailored this measure to four different relationships (closest same-sex friend, closest parent, closest same-sex roommate, and romantic partner) by modifying the instructions. Internal consistency of the support ($\alpha = .77-.84$) and depth ($\alpha = .69-.90$) subscales was adequate in the present sample across each of the four relationships. There were also moderate to high correlations between the depth and support subscales across the four types of relationships ($r = .56-.85$), offering justification for our decision to combine these two dimensions for an overall measure of relationship satisfaction.²

Procedure

Participants came to the laboratory to complete a battery of questionnaires in return for course credit. The battery included the BAI, BDI-II, RRS, four versions of the CRQ, and four versions of the QRI to assess levels of anxiety, depression, depressive rumination, co-rumination with closest same-sex friend, closest parent, closest same-sex roommate, and romantic partner, and relationship satisfaction with closest friend, closest parent, closest roommate, and romantic partner, respectively.

² All analyses were conducted with each of the two subscales separately and yielded the same pattern of results. Therefore, for simplicity's sake, only the combined results are presented in the paper.

Analytic Plan

Given the conceptual similarity between co-rumination and rumination, we first tested whether or not these constructs were factorially distinct. Specifically, we used confirmatory factor analysis (CFA) to test how well a model positing two correlated but distinct latent variables (co-rumination and depressive rumination) and a model that fixed the correlation between these latent variables at unity (in other words a model positing that co-rumination and depressive rumination cannot be distinguished) fit the data. Because these are nested models, we were able to test whether or not the model positing two correlated but distinct factors provided a statistically significant increment in model fit compared to the model positing that these two factors are not distinct (Brown 2006).

Our primary hypothesis was that co-rumination would mediate the relationship between gender and both emotional distress and friendship satisfaction. Specifically, we hypothesized that females would report higher levels of co-rumination compared to males, which in turn would contribute to females' higher levels of depression and anxiety. Similarly, we hypothesized that co-rumination would mediate the relationship between gender and friendship satisfaction, such that females would report higher levels of co-rumination compared to males, which in turn would contribute to females' greater friendship satisfaction.

We tested hypothesized mediation models using path analysis on manifest variables with Mplus (Muthen and Muthen 1998) and used the bootstrap method to examine the significance of indirect effects (Efron 1988; Efron and Tibshirani 1985). Within these analyses indirect effects represent mediation paths. Our analyses focused on the nature and statistical significance of the indirect effect of gender on emotional distress and relationship satisfaction. Although the statistical significance of indirect effects is often examined with the Sobel test (Sobel 1982), this approach is associated with inflated Type II errors (Mallinckrodt et al. 2006). MacKinnon and colleagues (2004) have shown that the bias-corrected bootstrap method provides the best balance between Type I and Type II error rates of all available approaches, and we therefore used this method. In order to minimize chance associations, we used 99% confidence intervals (CIs) to examine the indirect effects. Specifically, five hundred bootstrap samples

along with the 99% bias-corrected CIs were used to evaluate the significance of the indirect effects.

Given that our hypothesized mediation models posit gender differences in the presumed mediator (i.e., co-rumination in various types of relationships) and outcomes (i.e., emotional distress and relationships satisfaction), we only conducted path analyses on models in which there was evidence of such gender differences. Also, in order to help rule out alternative models, we tested whether relationship satisfaction or emotional distress mediated the link between gender and co-rumination.

Results

Descriptive Statistics

Zero-order correlations between total scores for co-rumination, relationship satisfaction, and depressive rumination are presented in Table 2 along with means, standard deviations, skew and kurtosis of these measures. According to conventional guidelines for self-report measures of depression and anxiety, the sample was mildly depressed and anxious (means of 10.6 and 12.2, respectively). As seen in Table 2, each of the variables relevant to our analyses had an approximately normal distribution.

Our hypothesized mediation models posited gender differences in co-rumination across a number of relationships, satisfaction with those relationships, and emotional distress. Consistent with these models, females endorsed higher rates of depression (mean female = 11.4; male = 9.1; $t(342) = 2.80, p < .01, d = .32$) and anxiety (mean female = 13.8; male = 9.6; $t(342) = 3.55, p < .001, d = .43$) compared to males. Likewise, females reported greater satisfaction in friendships (mean female = 19.8; male = 17.8; $t(337) = 4.97, p < .01, d = .77$), satisfaction in parental relationships (mean female = 19.6; male = 18.4; $t(337) = 3.00, p < .01, d = .42$), and (at a marginal level of significance) satisfaction in romantic relationships (mean female = 6.9; male = 6.5; $t(239) = 1.83, p = .07, d = .14$) compared to males. Furthermore, as seen in Table 3, there was a significant gender difference in rates of co-rumination in friendships ($t(339) = -6.7, p < .001$, with females reporting significantly higher levels of co-rumination in friendships relative to males. In contrast, there

Table 2 Correlations among relevant variables and descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11	M	SD	Skew	Kurt
1 BDI	–											10.6	7.3	.98	.91
2 BAI	.49**	–										12.2	10.5	1.34	1.99
3 CRROOM	.00	.05	–									36.9	17.0	.46	–.72
4 CRPAR	.01	.15**	.13	–								19.2	7.2	.20	–.63
5 CRPART	.01	.03	–.06	.28**	–							52.7	14.5	–.23	–.28
6 CRFRI	.23**	.21**	.30**	.30**	.40**	–						50.8	15.0	–.23	–.50
7 RSAT	.01	.05	.80**	.06	–.23**	.06	–					13.4	5.2	.07	–.32
8 PSAT	–.04	.07	.17*	.41**	.03	.11*	.23**	–				19.2	3.6	.002	–.07
9 RPSAT	–.06	–.04	–.11	–.01	.50**	.03	–.04	.19**	–			19.8	4.0	–.51	1.48
10 FSAT	.06	.03	.14*	.26**	.17**	.53**	.19**	.26**	.17**	–		19.0	3.6	–.16	1.17
11 RUM	.55**	.49**	.03	.14**	.11	.27**	–.04	.04	–.09	.00	–	43.1	11.1	.53	.04

Note: BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; CRROOM = co-rumination with closest roommate; CRPAR = co-rumination with closest parent; CRPART = co-rumination with romantic partner; CRFRI = co-rumination with closest friend; RSAT = satisfaction in roommate relationship; PSAT = satisfaction in parent relationship; RPSAT = satisfaction in romantic relationship; FSAT = friendship satisfaction; RUM = depressive rumination; Kurt = Kurtosis; * $p < .05$; ** $p < .01$

were no gender differences in co-rumination with parents ($p = .78$),³ romantic partners ($p = .69$), or roommates ($p = .23$). A repeated measures ANOVA using the Greenhouse-Geisser correction confirmed that there were significant gender differences across types of co-rumination as evidenced by a statistically significant Gender \times Type of Co-rumination interaction, $F(2.30, 368.52) = 4.80, p < .01$.

As seen in Table 2 and consistent with our hypothesized model, friend-based co-rumination was positively correlated with both depression and anxiety (r 's = .23 and .21, respectively). In other words, individuals who reported greater friend-based co-rumination also reported more symptoms of depression and anxiety. In contrast, parent-based co-rumination was significantly associated with anxiety ($r = .15$), but not depression ($r = .01$). Furthermore, co-rumination with roommates and romantic partners were not significantly associated with either form of emotional distress (all r 's $< .12$). Co-rumination in each type of relationship was positively correlated with satisfaction in the corresponding type of relationship (all r 's $> .41$). In other words, individuals who reported greater co-rumination also reported greater relationship satisfaction.

³ Given that the majority of participants reported that they had the closest relationship with their mother, we explored whether there were gender differences in co-rumination with mothers. We did not find evidence of gender differences in co-rumination with mothers specifically $t(266) = 1.26, p = .21$.

Table 3 Levels of co-rumination in various relationships across males and females

	Males		Females		Gender differences	
	M	SD	M	SD	t-Score	p -value
CR roommate	34.9	13.5	37.5	18.4	1.40	.18
CR romantic partner	53.5	15.2	52.7	13.7	0.28	.79
CR friend	45.1	13.8	54.8	14.3	6.70	.001
CR parent	19.4	7.5	19.5	7.2	0.40	.69

Note: CR roommate = co-rumination with closest roommate; CR romantic partner = co-rumination with romantic partner; CR friend = co-rumination with closest friend; CR parent = co-rumination with closest parent. T-test comparisons of within-gender differences among males in levels of co-rumination across relationships suggest that co-rumination in each relationship significantly differed from co-rumination in each of the other relationships (all p values $< .001$). Apart from co-rumination with friends and co-rumination with romantic partners among females ($p = .07$), levels of co-rumination in each relationship significantly differed from co-rumination in each of the other relationships among females (all p values $< .001$)

Confirmatory Factor Analysis

We examined two competing models with CFA to test the discriminant validity of friend-based co-rumination and rumination. In both models, we created two latent variables labeled co-rumination and depressive rumination using items from the CRQ and the RRS, respectively. Because of the

large number of items across these two measures (38 items) relative to our sample size, we created parcels for the analysis by combining items from each measure. In the case of the CRQ, we combined items reflecting a focus on the participant's problems (e.g., "When I have a problem, my friend always tries to get me to tell every detail about what happened") and the comparable item that focused on the partner's problems (e.g., "When my friend has a problem, I always try to get him/her to tell every detail about what happened") for a total of 8 parcels that served as indicators of co-rumination. In the case of the RRS, we created a total of 7 parcels that served as indicators of depressive rumination by combining the first 4 items for the first parcel, the second 3 items for the second parcel, the third 3 items for the third parcel and so forth.

In accordance with Brown (2006), we compared two nested models differing only in the manner in which the covariance between co-rumination and rumination was modeled. Specifically, Model 1 contained a freely estimated covariance between the co-rumination latent factor and the depressive rumination latent factor, whereas in Model 2 the covariance between the co-rumination latent factor and the depressive rumination latent factor was constrained to a value of 1. By constraining the covariance in the second model, we forced these two constructs to be equal. Support for co-rumination and rumination as distinct constructs would be found if Model 1 provided an acceptable fit to the data, Model 2 provided a poor fit, and Model 2 provided a statistically significant decrement in fit compared to Model 1.

Model 1 (the model with the freely estimated covariance) provided an acceptable fit to the data (χ^2 87, $N = 332$) = 160.62, $p < .0001$, CFI = .98, TLI = .97, RMSEA = .05, $\chi^2/df = 1.85$). In this model, the latent co-rumination and depressive rumination variables were weakly correlated ($r = .31$, $p < .001$). In contrast, Model 2 (the model with the covariance constrained to a value of 1) provided a poor fit, (χ^2 88, $N = 332$) = 1039.80, $p < .00001$, CFI = .69, TLI = .64, RMSEA = .18, $\chi^2/df = 11.82$). Furthermore, Model 2 led to a significant decrement in overall model fit relative to Model 1 (χ^2 difference (1, $N = 332$) = 879.18, $p < .00001$). These findings provide empirical support for the discriminant validity

between co-rumination and rumination and suggest that these two constructs are factorially distinct.⁴

Mediation Analyses

Preliminary analyses reported above provide initial support for friend-based co-rumination as a mediator of gender differences in depression, anxiety, and friendship satisfaction. In contrast, data were inconsistent with hypothesized models positing that co-rumination in other types of relationships would mediate gender differences in emotional distress or relationship satisfaction. Most importantly, there were no gender differences in these forms of co-rumination. Second, aside from the association between parent-based co-rumination and anxiety, these other forms of co-rumination were not significantly correlated with depression or anxiety. These latter results further disconfirm models positing that co-rumination with roommates, parents, or romantic partners mediate gender differences in depression and anxiety. Therefore, the path analyses reported below only focus on mediation models involving friend-based co-rumination.

The hypothesized model of friend-based co-rumination mediating the relationship between gender and friendship satisfaction is depicted in Fig. 1. Given that the proposed model was fully saturated, overall model fit is not relevant (by definition overall model fit was perfect). Bootstrap analyses indicated that friend-based co-rumination significantly mediated the relationship between gender and friendship satisfaction (beta = .01, 99% CI = .01–1.89), such that females reported higher levels of friend-based co-rumination, which in turn predicted greater friendship

⁴ Similar results were found when substituting co-rumination with parents, romantic partners, and roommates in place of co-rumination with friends in the confirmatory factor analyses. Specifically, the model with a freely estimated co-variance between co-rumination and rumination fit the data well, whereas the model constraining co-rumination and rumination to equality did not provide a good fit to the data. Furthermore, the model in which the covariance between co-rumination and rumination was constrained to equality led to a statistically significant decrement in model fit relative to the model with the freely estimated covariance between co-rumination and rumination. Results were similar in all 4 models examining the discriminant validity between rumination and co-rumination with friends, parents, romantic partners, and roommates, respectively.

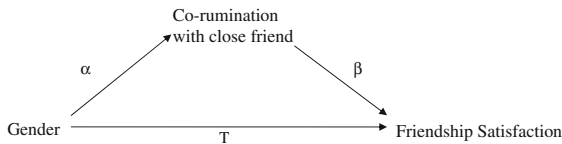


Fig. 1 Hypothesized model in which co-rumination with one's closest friend mediates the relationship between gender and friendship satisfaction. T represents the direct effect of gender, $\alpha\beta$ represents the indirect effect of gender and $T + \alpha\beta$ represents the total effect of gender

satisfaction. Moreover, when accounting for co-rumination, the direct effect from gender to friendship satisfaction was not statistically significant (beta = $-.002$). Finally, a nested-model comparison between the fully saturated model and the mediation model demonstrated that eliminating the direct path between gender and friendship satisfaction did not lead to a decrement in model fit, ($\chi^2(1, N = 339) = 2.12, p > .05$). The mediation model provided an adequate fit to the data based on recommendations from Hu and Bentler (1998) and Quintana and Maxwell (1999), $\chi^2(1, N = 340) = 2.12, p > .05$, CFI = .99, RMSEA = .06. As a more conservative test of this mediation model, we examined whether co-rumination mediated the relationship between gender and friendship satisfaction above and beyond depressive rumination, by adding a path from gender to depressive rumination and paths from depressive rumination to co-rumination and friendship satisfaction in the overall saturated model. Friend-based co-rumination remained a significant mediator of the relationship between gender and friendship satisfaction after controlling for depressive rumination (beta = $.03$, 99% CI = $.003$ – 1.37).⁵

⁵ In light of the recent findings by Treynor and colleagues (2003), suggesting that two distinct dimensions of rumination, brooding and reflection, hold different relationships to depression, we re-ran this mediation analysis twice controlling for each subscale of rumination separately in each mediation analysis. First, we constructed each subscale based on the items used by Treynor and colleagues (2003). Then, one of the rumination subscales was controlled for in the mediation analysis involving gender, co-rumination, and friendship satisfaction by adding paths from gender to the rumination subscale, and from the rumination subscale to both co-rumination and friendship satisfaction. Co-rumination remained a significant mediator of the relationship between gender and friendship satisfaction after controlling for the reflection subscale (beta = $.005$, 99% CI = $.004$ – 1.40) and after controlling for the brooding subscale (beta = $.005$, 99% CI = $.004$ – 1.32).

In order to determine the relative magnitude of the significant indirect effects in the mediation analyses controlling for depressive rumination, we calculated percentages for the direct and indirect effects using the unstandardized path coefficients (MacKinnon and Dwyer 1993). The total effect for the mediation analysis involving gender, friend-based co-rumination, and friendship satisfaction controlling for depressive rumination was $.18$, with almost 99% of the direct relationship between gender and friendship satisfaction being mediated by friend-based co-rumination (see Table 4 for coefficients for each path).

The hypothesized model of friend-based co-rumination mediating the relationship between gender and depression is depicted in Fig. 2. Given that the proposed model was fully saturated, overall model fit is not relevant. Bootstrap analyses indicated that friend-based co-rumination significantly mediated the relationship between gender and depression (beta = $.009$, 99% CI = $.006$ – 1.23), such that females endorsed higher levels of friend-based co-rumination, which in turn predicted higher levels of depression. When accounting for co-rumination, the direct effect from gender to depression was not statistically

Table 4 Coefficients for paths in mediation analysis

Relevant path	Dependent variable (DV)					
	Friendship satisfaction			Depression		
	Beta	β	P	Beta	β	P
Gender to co-rumination	.03	.01	16	.03	.03	22
Co-rumination to DV	.15	2.84	83	.10	.46	76
Gender to DV	.002	.006	1	.003	.00	2

Beta = unstandardized regression coefficient for specified path; β = standardized regression coefficient for specified path; P = percentage of model accounted for by the specified path

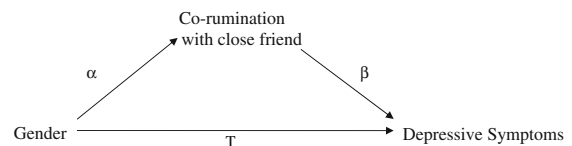


Fig. 2 Hypothesized model in which co-rumination with one's closest friend mediates the relationship between gender and depressive symptoms. T represents the direct effect of gender, $\alpha\beta$ represents the indirect effect of gender and $T + \alpha\beta$ represents the total effect of gender

significant ($\beta = .003$). Finally, a nested-model comparison between the fully saturated model and the mediation model demonstrated that eliminating the direct path between gender and depression did not lead to a decrement in model fit, ($\chi^2(1, N = 339) = 1.04, p > .05$). The mediation model provided an adequate fit to the data based on recommendations from Hu and Bentler (1998) and Quintana and Maxwell (1999), $\chi^2(1, N = 340) = 1.05, p > .05$, CFI = 1.00, RMSEA = .01. The total effect for the mediation analysis involving gender, friend-based co-rumination, and depression was .13, with almost 98% of the direct effect being mediated by friend-based co-rumination (see Table 4 for coefficients for each path). In order to examine the mechanism through which co-rumination is contributing to depression, we added depressive rumination to the mediation model by adding a direct path from gender to depressive rumination and two direct paths from depressive rumination to co-rumination and depression. Co-rumination with one's closest friend was not a significant mediator of the relationship between gender and depression after controlling for depressive rumination ($\beta = -.001, 99\% \text{ CI} = -.41-.69$).⁶

In contrast, we did not find support for co-rumination as a significant mediator of the relationship between gender and anxiety ($\beta = -.003, 99\%$

CI = $-.13$ – 1.43). Furthermore, friend-based co-rumination did not mediate the relationship between gender and anxiety, controlling for depressive rumination ($\beta = -.001, 99\% \text{ CI} = -.69-.87$).

Testing Alternative Mediation Models

In an attempt to more closely examine causality, we tested both depression and friendship satisfaction as mediators as opposed to dependent variables, and co-rumination as a dependent variable, as opposed to a mediator. We did not find support for the indirect effects of either depression ($\beta = .00, 99\% \text{ CI} = -.18-1.44$) or friendship satisfaction ($\beta = -.02, 99\% \text{ CI} = -.79-2.85$) in the relationship between gender and co-rumination.

Discussion

The present study examined co-rumination, emotional distress and relationship satisfaction in a sample of undergraduates. This investigation extended previous work on co-rumination in friendships to examine the influence of co-rumination in a number of close relationships, including relationships with close friends, romantic partners, parents, and roommates. Furthermore, we tested whether or not co-rumination and depressive rumination represent distinct versus overlapping constructs. Results from our CFAs suggest that co-rumination and depressive rumination are distinct constructs that are only weakly correlated ($r = .31$ between these latent variables). The mediation analyses suggested that friend-based co-rumination helps account for gender differences in relationship satisfaction and depression (but not anxiety). Specifically, females reported engaging in greater co-rumination in close friendships than males, and in turn elevated co-rumination was associated with females' higher levels of depression (but not anxiety). Likewise, females' higher levels of co-rumination in close friendships predicted their greater friendship satisfaction. Consistent with findings by Rose (2002), after removing variance associated with depressive rumination from friend-based co-rumination, friend-based co-rumination was no longer a significant mediator of the relationship between gender and depression. This finding suggests that co-rumination predicts depression as a function of its overlap with depressive

⁶ In light of the recent findings by Treynor and colleagues (2003), suggesting that two distinct dimensions of rumination, brooding and reflection, hold different relationships to depression, we re-ran this mediation analysis twice controlling for each subscale of rumination separately in each mediation analysis. First, we constructed each subscale based on the items used by Treynor and colleagues (2003). Then, one of the rumination subscales was controlled for in the mediation analysis involving gender, co-rumination, and depression by adding paths from gender to the rumination subscale, and from the rumination subscale to both co-rumination and friendship satisfaction. Based on findings by Treynor and colleagues (2003) suggesting that the brooding dimension of rumination is more strongly associated with depression, we hypothesized that co-rumination would remain a significant mediator of the relationship between gender and depression after controlling for the reflection subscale of rumination, but not after controlling for the brooding subscale. Our findings were consistent with these hypotheses in that co-rumination remained a significant mediator of the relationship between gender and depression after controlling for the reflection subscale ($\beta = .03, 99\% \text{ CI} = .01-1.23$), but was not a significant mediator of the relationship between gender and depression after controlling for the brooding subscale ($\beta = -.002, 99\% \text{ CI} = -.41-.94$).

rumination. In contrast, after controlling for depressive rumination, friend-based co-rumination continued to mediate the relationship between gender and relationship satisfaction.

In contrast to close friends, we did not find evidence of gender differences in co-rumination in other close relationships (specifically with one's closest parent, closest roommate, and romantic partner) or satisfaction in these relationships. Consequently, there was no evidence that these forms of co-rumination accounted for gender differences in emotional distress or relationship satisfaction among our college age participants. These findings are consistent with the increasing importance of peer relationships during this developmental period. Future studies could test whether parent-based co-rumination plays a relatively stronger role among younger individuals.

Our findings suggest that co-rumination in friendships is a complex process that can contribute to both positive and negative outcomes. While repeatedly discussing problems is associated with greater feelings of satisfaction in the friendship, it is also associated with greater severity of depressive symptoms. To some extent positive and negative facets of co-rumination might be isolated through the inclusion of appropriate covariates into statistical models. Specifically, after statistically accounting for the overlap between friend-based co-rumination and depressive rumination, friend-based co-rumination no longer mediated the association between gender and depression. This finding suggests that co-rumination's negative, repetitive, non-solution-focused nature, as opposed to its overlap with intimate sharing or self-disclosure, accounts for the relationship between friend-based co-rumination and depressive outcomes. In other words, it is the manner in which friendship pairs are discussing problems, as opposed to the fact that they are discussing problems, that makes co-rumination depressogenic. Nonetheless, results from our CFAs suggest that co-rumination and depressive rumination are related, but distinct constructs.

In terms of relationship satisfaction, co-rumination with one's closest friend mediated the relationship between gender and friendship satisfaction. Specifically, females reported higher levels of friend-based co-rumination compared to males, which in turn, predicted females' greater friendship satisfaction compared to males. Although co-rumination in other close relationships (specifically parental, roommate,

and romantic relationships) was significantly correlated with satisfaction in those relationships, there were no significant gender differences in co-rumination in these relationships. Likewise, satisfaction in these relationships did not vary across gender, apart from females reporting greater satisfaction in parental relationships compared to males. Given that males and females did not differ in the extent to which they co-ruminate with parents, co-rumination does not appear to be a viable mechanism accounting for females' greater satisfaction in their relationship with their closest parent.

In considering how the effects of co-rumination varied across relationships, it is important to highlight that the correlations between co-rumination in different relationships were small to medium in magnitude (r 's < .40). In other words, individuals who tended to co-ruminate in one type of relationship did not necessarily co-ruminate in other relationships. Of greater relevance to our hypotheses, the tendency to co-ruminate in relationships other than friendships did not vary across gender. Only friend-based co-rumination predicted gender differences in emotional and interpersonal outcomes. Specifically, females were more likely than males to co-ruminate with friends, and this type of co-rumination predicted elevated depressive symptomatology *and* greater friendship satisfaction. In contrast, males and females did not differ in their degree of co-rumination with parents, romantic partners, and same-sex roommates.

Apart from the significant relationship between co-rumination with one's closest parent and anxiety, co-rumination in relationships other than friendships was not significantly associated with emotional distress. Our cross-sectional data are inconsistent with the idea that co-rumination in relationships with romantic partners or roommates predicts emotional distress in the form of depression or anxiety. Instead, there seems to be something unique about the process of co-rumination with close friends and parents. Perhaps co-rumination in these relationships is more passive, repetitive, and negative compared to co-rumination in other relationships. In turn, the passive, negative nature of co-rumination may serve as a verbal form of depressive rumination, perpetuating depressive symptomatology and anxiety. In other words, it may be that co-rumination with close friends and parents is qualitatively distinct from co-rumination in other relationships. Alternately, individuals may be discussing different problems in

these relationships compared to the topics discussed with roommates or romantic partners. Perhaps the problems discussed are more distressing, severe, or difficult to control. Finally, it may be that individuals who co-ruminate with close friends and parents differ from those who do not in terms of other qualities of these relationships. For example, Waller (2005) reported that parental co-rumination was associated with having an enmeshed relationship with one's parents, which in turn, could contribute to emotional distress. It remains for future research to determine the unique parameters of friend- and parent-based co-rumination that make it maladaptive compared to co-rumination in other relationships.

Several limitations of the present study should be noted. First, the self-report measures of co-rumination used in the present research might not adequately distinguish between co-rumination and more positive forms of self-disclosure and relationship satisfaction. Observational data in future research may prove useful in separating co-rumination, self-disclosure, and relationship satisfaction. Second, while we recruited a relatively large sample, which should increase the generalizability of these results, emotional distress and relationship satisfaction were not significantly correlated in the present data (cf. Remen and Chambless 2001) raising the possibility that our sample might have been unusual. Third, this investigation was cross-sectional in nature limiting our ability to make casual inferences. In fact, recent prospective data suggest that there may be bidirectional relationships between co-rumination and both emotional distress and relationship satisfaction (Rose et al. 2007). Our investigation also focused solely on one individual's perception and report of co-rumination. Given that the interpersonal and emotional impact of this process may vary between individuals within the same dyad, it is important to examine co-rumination from the perspective of both members of the relationship dyad. Finally, given that past studies have demonstrated that both depressive rumination (e.g., Donaldson and Lam 2004; Just and Alloy 1997; Lam et al. 2003) and interpersonal difficulties (e.g., Hammen and Brennan 2002; Zlotnick et al. 2000) play important roles in clinical depression, the present data suggest that it would be valuable for future research to examine the role of co-rumination in the onset, maintenance, and recovery from more severe forms of depression.

References

- Aquilino, W. S. (1994). Later life parental divorce and widowhood: Impact on young adults' assessment of parent-child relations. *Journal of Marriage and the Family*, 56(4), 908–922. doi:10.2307/353602.
- Attridge, M., Berscheid, E., & Simpson, J. A. (1995). Predicting relationship stability from both partners versus one. *Journal of Personality and Social Psychology*, 69(2), 254–268. doi:10.1037/0022-3514.69.2.254.
- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56(6), 893–897. doi:10.1037/0022-006X.56.6.893.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corp.
- Berscheid, E., Snyder, M., & Omoto, A. M. (1989). Issues in studying close relationships: Conceptualizing and measuring closeness. In C. Hendrick (Ed.), *Review of personality and social psychology* (Vol. 10, pp. 63–91). Newbury Park, CA: Sage.
- Bolger, N., & Eckenrode, J. (1991). Social relationships, personality, and anxiety during a major stressful event. *Journal of Personality and Social Psychology*, 61(3), 440–449. doi:10.1037/0022-3514.61.3.440.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: Guilford.
- Burda, P. C., Jr., Vaux, A., & Schill, T. (1984). Social support resources: Variation in sex and sex-role. *Personality and Social Psychology Bulletin*, 10, 119–126. doi:10.1177/0146167284101014.
- Caldwell, M. A., & Peplau, L. A. (1982). Sex differences in same-sex friendship. *Sex Roles*, 8(7), 721–732. doi:10.1007/BF00287568.
- Calmes, C. A., & Roberts, J. E. (2007). Repetitive thought and emotional distress: The roles of rumination and worry in the development of depressive and anxious symptomatology. *Cognitive Therapy and Research*, 30, 343–356. doi:10.1007/s10608-006-9026-9.
- Clark, M. L., & Ayers, M. (1993). Friendship expectations and friendship evaluations: Reciprocity and gender effects. *Youth & Society*, 24, 299–313. doi:10.1177/0044118X93024003003.
- Clark, M. L., & Bittle, M. L. (1992). Friendship expectations and the evaluation of present friendships in middle childhood and early adolescence. *Child Study Journal*, 22, 115–135.
- Dindia, K., & Allen, M. (1992). Sex differences in self-disclosure: A meta-analysis. *Psychological Bulletin*, 112(1), 106–124. doi:10.1037/0033-2909.112.1.106.
- Donaldson, C., & Lam, D. (2004). Rumination, mood and social problem-solving in major depression. *Psychological Medicine*, 34(7), 1309–1318. doi:10.1017/S0033291704001904.
- Efron, B. (1988). Bootstrap confidence intervals: Good or bad? *Psychological Bulletin*, 104(2), 293–296. doi:10.1037/0033-2909.104.2.293.
- Efron, B., & Tibshirani, R. (1985). The bootstrap method for assessing statistical accuracy. *Behaviormetrika*, 17, 1–35. doi:10.2333/bhmk.12.17_1.

- Haigler, V. F., Day, H. D., & Marshall, D. D. (1995). Parental attachment and gender-role identity. *Sex Roles, 33*(3–4), 203–220. doi:[10.1007/BF01544611](https://doi.org/10.1007/BF01544611).
- Hammen, C., & Brennan, P. A. (2002). Interpersonal dysfunction in depressed women: Impairments independent of depressive symptoms. *Journal of Affective Disorders, 72*(2), 145–156. doi:[10.1016/S0165-0327\(01\)00455-4](https://doi.org/10.1016/S0165-0327(01)00455-4).
- Hendrick, S. S., Hendrick, C., & Adler, N. L. (1988). Romantic relationships: Love, satisfaction, and staying together. *Journal of Personality and Social Psychology, 54*, 980–988. doi:[10.1037/0022-3514.54.6.980](https://doi.org/10.1037/0022-3514.54.6.980).
- Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*(4), 424–453. doi:[10.1037/1082-989X.3.4.424](https://doi.org/10.1037/1082-989X.3.4.424).
- Jones, D. C. (1991). Friendship satisfaction and gender: An examination of sex differences in contributors to friendship satisfaction. *Journal of Social and Personal Relationships, 8*, 167–185. doi:[10.1177/0265407591082002](https://doi.org/10.1177/0265407591082002).
- Just, N., & Alloy, L. B. (1997). The response styles theory of depression: Tests and an extension of the theory. *Journal of Abnormal Psychology, 106*, 221–229. doi:[10.1037/0021-843X.106.2.221](https://doi.org/10.1037/0021-843X.106.2.221).
- Kessler, R. C., McGonagle, K. A., Swartz, M., Blazer, D. G., et al. (1993). Sex and depression in the National Comorbidity Survey: Lifetime prevalence, chronicity and recurrence. *Journal of Affective Disorders, 29*(2–3), 85–96. doi:[10.1016/0165-0327\(93\)90026-G](https://doi.org/10.1016/0165-0327(93)90026-G).
- Lam, D., Schuck, N., Smith, N., Farmer, A., & Checkley, S. (2003). Response style, interpersonal difficulties and social functioning in major depressive disorder. *Journal of Affective Disorders, 75*(3), 279–283. doi:[10.1016/S0165-0327\(02\)00058-7](https://doi.org/10.1016/S0165-0327(02)00058-7).
- Lee, G. R., Dwyer, J. W., & Coward, R. T. (1993). Gender differences in parent care: Demographic factors and same-gender preferences. *Journal of Gerontology: Social Sciences, 48*, 9–16.
- Lepore, S. J. (1992). Social conflict, social support, and psychological distress: Evidence of cross-domain buffering effects. *Journal of Personality and Social Psychology, 63*(5), 857–867. doi:[10.1037/0022-3514.63.5.857](https://doi.org/10.1037/0022-3514.63.5.857).
- MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review, 17*(2), 144–158. doi:[10.1177/0193841X9301700202](https://doi.org/10.1177/0193841X9301700202).
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99–128. doi:[10.1207/s1532-7906mbr3901_4](https://doi.org/10.1207/s1532-7906mbr3901_4).
- Mallinckrodt, B., Abraham, W. T., Wei, M., & Russell, D. W. (2006). Advances in testing the statistical significance of mediation effects. *Journal of Counseling Psychology, 53*(3), 372–378. doi:[10.1037/0022-0167.53.3.372](https://doi.org/10.1037/0022-0167.53.3.372).
- McNelles, L. R., & Connolly, J. A. (1999). Intimacy between adolescent friends: Age and gender differences in intimate affect and intimate behaviors. *Journal of Research on Adolescence, 9*(2), 143–159. doi:[10.1207/s15327795jra0902_2](https://doi.org/10.1207/s15327795jra0902_2).
- Muthen, L. K., & Muthen, B. O. (1998–2006). *Mplus user's guide* (4th ed.). Los Angeles, CA: Muthen & Muthen.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of the depressive episode. *Journal of Abnormal Psychology, 100*, 569–582. doi:[10.1037/0021-843X.100.4.569](https://doi.org/10.1037/0021-843X.100.4.569).
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*(3), 504–511. doi:[10.1037/0021-843X.109.3.504](https://doi.org/10.1037/0021-843X.109.3.504).
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology, 61*(1), 115–121. doi:[10.1037/0022-3514.61.1.115](https://doi.org/10.1037/0022-3514.61.1.115).
- Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally occurring depressed mood. *Cognition and Emotion, 7*(6), 561–570. doi:[10.1080/02699939308409206](https://doi.org/10.1080/02699939308409206).
- Nolen-Hoeksema, S., Parker, L., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology, 67*, 92–104. doi:[10.1037/0022-3514.67.1.92](https://doi.org/10.1037/0022-3514.67.1.92).
- Pierce, G. R., Sarason, I. G., & Sarason, B. R. (1991). General and relationship-based perceptions of social support: Are two constructs better than one? *Journal of Personality and Social Psychology, 61*(6), 1028–1039. doi:[10.1037/0022-3514.61.6.1028](https://doi.org/10.1037/0022-3514.61.6.1028).
- Pigott, T. A. (1999). Gender differences in the epidemiology and treatment of anxiety disorders. *The Journal of Clinical Psychiatry, 60*(Suppl 18), 4–15.
- Quintana, S. M., & Maxwell, S. E. (1999). Implications of recent developments in structural equation modeling for counseling psychology. *The Counseling Psychologist, 27*(4), 485–527. doi:[10.1177/0011000099274002](https://doi.org/10.1177/0011000099274002).
- Remen, A. L., & Chambless, D. L. (2001). Predicting dysphoria and relationship adjustment: Gender differences in their longitudinal relationship. *Sex Roles, 44*(1–2), 45–60.
- Roberts, J. E., Gilboa, E., & Gotlib, I. H. (1998). Ruminative response style and vulnerability to episodes of dysphoria: Gender, neuroticism, and episode duration. *Cognitive Therapy and Research, 22*(4), 401–423. doi:[10.1023/A:1018713313894](https://doi.org/10.1023/A:1018713313894).
- Rose, A. J. (2002). Co-rumination in the friendships of girls and boys. *Child Development, 73*, 1830–1843. doi:[10.1111/1467-8624.00509](https://doi.org/10.1111/1467-8624.00509).
- Rose, A. J., Carlson, W., & Waller, E. M. (2007). Prospective associations of co-rumination with friendship and emotional adjustment: Considering the socioemotional trade-offs of co-rumination. *Developmental Psychology, 43*(4), 1019–1031. doi:[10.1037/0012-1649.43.4.1019](https://doi.org/10.1037/0012-1649.43.4.1019).
- Sharabany, R., Gershoni, R., & Hofman, J. E. (1981). Girlfriend, boyfriend: Age and sex differences in intimate friendships. *Developmental Psychology, 17*, 800–808. doi:[10.1037/0012-1649.17.6.800](https://doi.org/10.1037/0012-1649.17.6.800).
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). Washington, DC: American Sociological Association.
- Sprinkle, S. D., Lurie, D., Insko, S. L., Atkinson, G., Jones, G. L., Logan, A. R., et al. (2002). Criterion validity, severity cut scores, and test-retest reliability of the Beck Depression Inventory-II in a university counseling center sample.

- Journal of Counseling Psychology*, 49(3), 381–385. doi: [10.1037/0022-0167.49.3.381](https://doi.org/10.1037/0022-0167.49.3.381).
- Stokes, J., & Wilson, D. G. (1984). The inventory of socially supportive behaviors: Dimensionality, prediction, and gender differences. *American Journal of Community Psychology*, 12, 53–70. doi: [10.1007/BF00896928](https://doi.org/10.1007/BF00896928).
- Thornton, A., Orbuch, T. L., & Axinn, W. G. (1995). Parent–child relationships during the transition to adulthood. *Journal of Family Issues*, 16, 538–564. doi: [10.1177/019251395016005003](https://doi.org/10.1177/019251395016005003).
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27, 247–259.
- Turner, H. A. (1994). Gender and social support: Taking the bad with the good? *Sex Roles*, 30(7–8), 521–541. doi: [10.1007/BF01420800](https://doi.org/10.1007/BF01420800).
- Waller, E. M. (2005). Co-rumination in mother–child relationships during childhood and adolescence. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 67(2-B), 2006, 1173.
- Weissman, M. M., & Klerman, G. (1977). Sex differences in the epidemiology of depression. *Archives of General Psychiatry*, 34, 98–111.
- Zlotnick, C., Kohn, R., Keitner, G., & Della Grotta, S. A. (2000). The relationship between quality of interpersonal relationships and major depressive disorder: Findings from the National Comorbidity Survey. *Journal of Affective Disorders*, 59(3), 205–215. doi: [10.1016/S0165-0327\(99\)00153-6](https://doi.org/10.1016/S0165-0327(99)00153-6).