

EXPLORING CO-RUMINATION AS AN INTERPERSONAL VULNERABILITY TO
DEPRESSION

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ABSTRACT

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Over the past decade, a growing body of literature has developed around the construct of co-rumination, defined as the excessive discussion of problems within close relationships at the expense of engaging in other, potentially more productive activities, such as problem solving (Rose, 2002). Past research on co-rumination has sought to elucidate its relationship with increases in depressive symptoms and, to a lesser extent, greater relationship satisfaction in youth and young adults. Although co-rumination is at its core an interpersonal process, there have been no attempts to understand this behavior in light of other long-established interpersonal vulnerabilities to depression. The present study sought to extend the literature in two key aspects at both a macro and micro level. First, the study examined the interrelations among co-rumination, interpersonal vulnerabilities (dependency and excessive reassurance seeking), depressive symptoms, and relationship quality. Using a longitudinal design, the study tested whether co-rumination mediated the relationships between these interpersonal vulnerabilities and depressive symptoms. Second, using a daily diary paradigm, this study explored how daily co-rumination affected not only daily levels of negative affect, but daily relationship satisfaction as well. A sample of 309 university students completed a baseline questionnaire assessing interpersonal vulnerabilities, relationship quality with their closest confidant, and depressive symptoms followed by a seven-day daily diary that measured target participants' negative mood,

levels of co-rumination with their closest confidant regarding a stressor, relationship satisfaction, and interaction quality. One month later, participants completed a measure of depressive symptoms. Partial support for hypotheses was found. Co-rumination was positively related to other measures of interpersonal vulnerability and relationship quality, but was unrelated to depressive symptoms both concurrently and at the one-month follow-up. Co-rumination was not found to be a moderator or a mediator of the relationships between interpersonal vulnerabilities and depressive symptoms. Co-rumination did moderate the relationships between interpersonal vulnerabilities and relationship quality, with a differential pattern of results across gender. At the daily level, co-rumination was related to negative mood and relationship satisfaction; however, no support was found for co-rumination as a mediator of gender differences in negative mood or relationship quality. Overall, these findings suggest that engaging in co-rumination is associated with relationship quality and satisfaction. More research is necessary to determine under which circumstances and for which young adults co-rumination results in elevations in depressive symptoms, findings that have tended to be more consistent in youth samples.

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CHAPTER 1

INTRODUCTION

Co-Rumination

The Response Styles Theory (RST; Nolen-Hoeksema, 1991; Nolen-Hoeksema & Girgus, 1994) posits that engaging in rumination, defined as a passive and perseverative focus on negative stimuli, such as the causes and consequences of sad mood or negative events, makes an individual more vulnerable to depression. Empirical findings have shown that rumination contributes to the persistence and severity of depression. A similar pattern of results has been observed in adolescent (Rood, Roelofs, Bogels, Nolen-Hoeksema, & Schouten, 2009; Stone, Hankin, Gibb, Abela, 2011), college student (Butler & Nolen-Hoeksema, 1994; Grassia & Gibb, 2008; Just & Alloy, 1997; Nolen-Hoeksema & Morrow, 1991), and adult (Nolen-Hoeksema, Larson, & Grayson, 1999) samples.

One of the most striking findings within the rumination literature is the gender difference in rumination, with women showing greater rumination than men. This difference emerges in adolescence (Broderick, 1998; Jose & Brown, 2008) and continues in adulthood (Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema, Morrow, Fredrickson, 1993). Some research has found that rumination mediates the gender difference in depressive symptoms (Nolen-Hoeksema et al., 1994, 1999; Roberts et al., 1998).

Rumination is generally considered to be a maladaptive coping strategy. Conversely, seeking social support to cope with stressors is thought to be one adaptive coping strategy, and dissatisfaction with one's perceived social support is associated with negative outcomes. It has been found that girls are more likely than boys to use social support to cope with problems

(Stark, Spirito, Williams, & Guevermont, 1989). Girls tend to self-disclose in their same-sex friendships more than boys do (McNelles & Connolly, 1999; Rose & Rudolph, 2006) and enjoy closer and more supportive friendships (Caldwell & Peplau, 1982; Camarena, Sarigiani, & Peterson, 1990; Jones, 1991). In general, girls are socialized, encouraged, and reinforced for expressing emotions and distress in a way that boys are not (Cox, Mexulis, & Hyde, 2010). In sum, self-disclosure, emotional expression, and close friendships are a typical part of a girl's experience. Thus, whereas girls are at higher risk for depression, they also seem to enjoy closer relationships, which are usually thought to be protective factors.

Rose (2002) identified a novel construct of co-rumination to account for these paradoxical findings. Co-rumination has been defined as a distinct construct that lies at the intersection of self-disclosure and rumination (Rose, 2002). Co-rumination is described as excessive discussion of problems within close relationships and is characterized by mutual encouragement of problem-focused talk, rehashing problems, speculating about the problem in terms of causes and consequences, and dwelling on negative feelings at the expense of engaging in other, potentially more productive activities, such as problem solving (Rose, 2002).

Similar to self-disclosure, co-rumination involves sharing inner thoughts and feelings, which may lead to higher levels of intimacy and elicit emotional support in relationships. Although there is a high correlation between co-rumination and self-disclosure, the constructs are thought to be distinct, with the negative, excessive, and repetitive nature of co-rumination distinguishing it from normative self-disclosure (Rose, 2002). Co-rumination shares with rumination these elements of perseveration and a negative focus. Although rumination and co-rumination are theoretically related, a confirmatory factor analysis showed that the two constructs are only weakly correlated in a college-aged sample (Calmes & Roberts, 2008). In

adolescent samples, co-rumination and rumination also showed a low correlation (Stone & Gibb, 2015; Stone, Hankin, Gibb, & Abela, 2011). Rose (2002) posited that it is the explicit and dyadic nature of the discussion distinguishes co-rumination from rumination.

Co-rumination has been shown to relate to depressive symptoms. Cross-sectional studies of children and adolescents have found that co-rumination is associated with current depressive symptoms (Rose, 2002; Rose, Carlson, & Waller, 2007; Calmes & Roberts, 2008). In a retrospective study, Stone et al. (2010) found that youth with a history of depression were more likely to have elevated levels of co-rumination in comparison to children without a history of depression; however, the study design did not allow for conclusive statements as to whether co-rumination was a cause or consequence of a depressive episode. Using a clinical sample, Waller and colleagues (2014) noted that depressed adolescents show higher levels of co-rumination compared to non-depressed peers.

Prospective studies have yielded mixed results regarding the relationship between co-rumination and increases in depressive symptoms in child and adolescent samples. Rose and colleagues (2007) found that co-rumination predicted increasing anxiety and depression, which, in turn, predicted increases in co-rumination, but only for early adolescent girls. Starr and Davila (2009), however, failed to replicate these findings, which may be due to a small effect size reaching statistical significance in Rose and colleagues' larger sample. Similarly, when controlling for baseline rumination, co-rumination did not predict increases in depressive symptoms in high school freshmen over a six-month follow-up (Stone & Gibb, 2015). However, co-rumination was found to have an indirect effect on depressive symptoms by increasing adolescents' tendency to engage in rumination. In a 2-year prospective study of early adolescents, higher baseline levels of co-rumination predicted shorter time to depressive episode

onset (Stone et al., 2011). Hankin et al. (2010) used a methodologically strong, multi-wave, longitudinal design to assess the prospective relationship between co-rumination and internalizing symptoms over a 4-month period and found that co-rumination was prospectively associated with higher levels of depressive symptoms. In a daily diary study utilizing a college-aged sample, White and Shih (2012) found that co-rumination with a close confidant predicted within-day increases in depressed mood.

Despite the growing literature on the negative effects of co-rumination, positive aspects of this behavior also have been identified. Several studies have found that co-rumination is related to higher relationship satisfaction (Calmes & Roberts, 2008; Rose, 2002; Starr & Davila, 2009). More specifically, co-rumination was related to friendship security and communication, as well as to feelings of being interpersonally competent (Starr & Davila, 2009). Boys who reported co-ruminating with friends showed higher levels of friendship satisfaction (Rose, 2002). In a study of mother-child dyads, co-rumination was associated with positive relationship qualities in the pair based on adolescent report; however, the effect was no longer significant when controlling for self-disclosure of adolescent problems (Waller & Rose, 2010). To date, only one prospective study has examined the longitudinal relationship between friendship quality and co-rumination in adolescence. Rose et al. (2007) reported that co-rumination was associated with increasing friendship quality in both boys and girls. Given that this positive aspect of co-rumination is one of the key propositions put forth by Rose (2002), there has been surprisingly little research on this topic, as researchers have focused on the negative aspects of this behavior.

In regard to gender differences, researchers have found parallel findings to the rumination literature. In a sample of third-, fifth-, seventh-, and ninth-grade participants, Rose (2002) found that girls tend to co-ruminate more than boys across this age span (see also: Hankin, et al., 2010;

Rose, Carlson, & Waller, 2007; Stone et al., 2011; Waller & Rose, 2010). This gender difference extends to levels of co-rumination in close friendships of young adults as well (Barstead, Bouchard, & Shih, 2013; Calmes & Roberts, 2008; White & Shih, 2012).

There have been mixed findings regarding the mediating role of co-rumination in the gender difference in depressive symptoms. Co-rumination was found to partially mediate the relationship between gender and internalizing symptoms in young adolescents (Rose, 2002; Tompkins et al., 2011). In a prospective study, co-rumination mediated girls' higher risk for depressive episode onset compared to boys, even after covarying rumination and baseline depressive symptoms (Stone et al., 2011). Calmes and Roberts (2008) found support for a mediation model in a college-aged sample as well; however, once variance associated with depressive rumination was removed from the model, co-rumination was no longer a significant mediator of the relationship between gender and depressive symptoms.

Conversely, only a very small effect of gender as a moderator of the relationship between co-rumination and internalizing symptoms has been found. Rose et al. (2007) obtained a small, marginally significant effect in a large sample, which was not replicated within a moderately-sized sample (Hankin et al., 2010; see also Stone et al., 2010). In an older adolescent sample, White and Shih (2012) failed to find support for gender as a moderator of the effect of co-rumination on daily depressive mood. Additionally, no evidence has yet been obtained for gender as a moderator of the relationship between co-rumination and depressive episode onset (Stone et al., 2011). These sets of findings suggest that co-rumination should be conceptualized as a general risk factor for both males and females, as it does not have a differential effect by gender.

A small number of studies also have examined the mediating effect of co-rumination on the relation between gender and relationship satisfaction. Rose (2002) found that co-rumination partially mediated the relation between gender and positive friendship quality. In a cross-sectional study with an older sample, Calmes and Roberts (2008) found that co-rumination mediated the relationship between gender and relationship satisfaction, even after controlling for depressive rumination. These findings suggest that there is a positive component of co-rumination that makes it so reinforcing, especially for women; however, more research is needed to explore this proposition.

Co-Rumination in Relation to Other Interpersonal Vulnerabilities to Depression

Although co-rumination is conceptualized as a coping strategy in response to negative events, it is also essentially an interpersonal process. Examining the interplay between depression and various interpersonal processes has been established as a fruitful research area. Depression is often associated with interpersonal stressors such as peer rejection (Nolan, Flynn, & Garber, 2003), low levels of familial support and high levels of conflict (Sheeber, Hops, Alpert, Davis, & Andrews, 1997), or the loss of a romantic relationship (Monroe, Rohde, Seeley, & Lewinsohn, 1999). At the same time though, depression also can lead to interpersonal difficulties. Coyne (1976) first proposed an interpersonal model of depression that posits that individuals play a role in creating a social environment that maintains and exacerbates their depression. This theory was expanded into the interpersonal stress generation theory of depression (Hammen, 1991; 2006), which posits that depressed individuals are not simply passive recipients of experiences in their environments or unwitting victims of stressful events, cognitions, and biological vulnerabilities. Rather, through their behaviors and personal characteristics, depressed individuals create interpersonal, dependent stressors that can maintain

and perpetuate their depression. The finding of an increased number of dependent life stressors in individuals with depression compared to their non-depressed counterparts has been replicated in various samples (for a review and exceptions, see Liu & Alloy, 2010). Depression also has been predictive of deterioration of friend (Stice, Randall, & Ragan, 2004) and family (Slavin & Rainer, 1990) support. Conversely, the presence of social support has been shown to be a protective factor against the development of depression in the presence of other vulnerabilities (Garber & Little, 1999).

Dependency. Dependency is conceptualized as a personality style marked by a heightened sensitivity to interpersonal processes (Blatt & Zuroff, 1992). It is suggested that individuals who are high in dependency derive their self-worth from their interpersonal relationships. These individuals have an excessive need for interpersonal attachment and pleasing others, as well as a sense of doubt regarding the strength of their interpersonal relationships.

In a review of cross-sectional studies in adults, Nietzel and Harris (1990) reported a mean effect size of .28 for the relation between dependency and depression, with comparable findings across genders. Although dependency appears to have a clear cross-sectional relationship with depression, it is posited that individuals high in dependency may have a greater vulnerability to depression in combination with interpersonal difficulties such as loss, rejection, or abandonment. This is in contrast to individuals who are high in self-criticism (Blatt & Zuroff, 1992), who derive their sense of self-worth from achievement domains and are more likely to become depressed after a perceived failure in reaching their goals. These personality dimensions led to the formulation of the “congruency hypothesis” (Hammen, Marks, Mayol, & DeMayo, 1985; Zuroff & Mongrain, 1987). At its most basic, the congruency hypothesis (or specific

vulnerability theory; Abela et al., 2003) is a vulnerability-stress model that suggests that individuals are at greatest risk for depression when they experience a loss or failure in their most valued domain. That is, this personality trait serves as a moderator of the relation between stressful life events and depression.

Conversely, dependency also has been associated with a higher level of social support (Mongrain, 1993; 1998; Priel & Shahar, 2000), which is generally considered to be a protective factor against depression. Priel and Shahar (2000) attempted to reconcile this potential discrepancy by suggesting that individuals high in dependency may actively strive to maintain a positive social context and experience distress when this domain is threatened and a high level of interpersonal stress is experienced. Indeed, important measurement issues remain as Blatt and colleagues (Blatt, Zohar, Quinlan & Zuroff, 1995; Blatt, Zohar, Quinlan, Luthar, & Hart, 1996) have shown that the construct of dependency as measured by the DEQ actually contains several items that reflect a healthy relatedness (termed “connectedness”) rather than an excessive dependency on others (“neediness”). Although the majority of studies examine this as a single construct, some studies that will be reviewed below have parsed apart the components of this personality trait.

Dependency also has been examined within a stress generation framework. That is, the individual’s personality contributes to the creation of stressful life events, which, in turn, contribute to distress. There have been mixed findings for this mediation model. In a college-aged sample, Priel and Shahar (2000) failed to find support for the mediation of the relationship between dependency and depressive symptoms by stressful life events, but did find support for a mediation model when self-criticism was examined. It should be noted that this model controlled for gender. In contrast, when systematically examining gender differences, Shih (2006) found

that in women, but not men, higher levels of dependency predicted higher levels of dependent interpersonal stress, which, in turn, predicted higher levels of depressive symptoms. There was no gender difference in levels of dependency nor was there a gender difference in the level of dependent interpersonal events experienced after controlling for prior depressive symptoms and personality characteristics. The absence of gender differences may be related to the age of the sample because studies with younger groups have found that girls tend to generate greater levels of dependent stress (e.g. Rudolph & Hammen, 1999). In a daily-diary study that focused on romantic stress in an all-female sample, Eberhart and Hammen (2010) found that daily conflict stress mediated the relationship between dependency and daily depressive symptoms, but failed to find support for the alternative vulnerability-stress model.

Findings regarding the relationship between depression and dependency also have been mixed in adolescents. In a 3-month prospective study, Little and Garber (2000) found that higher levels of neediness predicted increases in depressive symptoms for both genders independent of stress. On the other hand, connectedness interacted specifically with social stressors to predict increases in depressive symptoms for boys, but acted as a main effect for girls irrespective of stressors. In a longer prospective study (12 months) with a slightly older sample, Little and Garber (2004) reported that both neediness and connectedness interacted with negative peer events to predict increases in depression in girls, but not boys. Little and Garber (2005) also tested a mediational model and found that neediness and connectedness predicted an increase in depressive symptoms via the occurrence of dependent interpersonal events. Shahar and Priel (2003) also found a similar mediating effect of general stressors on the relationship between dependency and depressive symptoms. Although a number of studies have found support for the specific interaction of dependency and interpersonal life events in predicting depression, others

have not (Abela, Sakellaropoulo, & Taxel, 2007; Abela & Taylor, 2003; Shahar & Priel, 2003; Shahar et al., 2004).

Little research has been conducted on the interrelationship between dependency, rumination, and depression. Spasojevic and Alloy (2001) found that the relationship between neediness and prospective depressive episodes was mediated by rumination; however, they did not find a significant relationship between dependency in general and depression.

It could be hypothesized that individuals who demonstrate high levels of dependency may be more likely to turn to their friends as a way of coping with stressful events. However, engaging in co-rumination may make dependent or needy individuals concerned that they may be burdening their friends with their problems, thus increasing their levels of depressive symptoms. Thus, co-rumination may also serve as a mediator between dependency and depression.

On the other hand, it is possible that dependent individuals may enjoy the process of co-ruminating because it gives them a sense of being supported by their friends. Thus, co-rumination also may serve as a mediator between dependency and relationship satisfaction.

Excessive Reassurance Seeking. Coyne's (1976) interpersonal theory of depression suggests that mildly depressed individuals engage in behaviors that create a social environment that can lead to and maintain their depression. One such maladaptive interpersonal style is excessive reassurance seeking (Joiner, Alfano, & Metalsky, 1992). Excessive reassurance seeking has been defined as "the relatively stable tendency to excessively and persistently seek assurances from others that one is lovable and worthy, regardless of whether such assurance has already been provided" (Joiner, Metalsky, Katz, & Beach, 1999, p. 270).

The conceptualization of excessive reassurance seeking has been guided by self-enhancement theory, which suggests that individuals with negative self-concepts would be highly motivated to improve their self-views. It is posited that individuals with mild depression may seek reassurance from others to test the security of the relationship and assuage their own feelings of guilt and doubts about their lovability and self-worth. However, because the depressed individual doubts the sincerity of these assurances, he or she will increase his or her reassurance seeking behavior until close others become frustrated and reject the individual, which exacerbates depressive symptoms (Joiner et al., 1992). Thus, the individual is caught up in a self-fulfilling prophecy: his or her doubts about the strength of close relationships result in unstable relationships and rejection by others.

Based on this conceptualization, it is not difficult to see how excessive reassurance seeking may serve as the behavioral manifestation of the personality trait of dependency. Both share a strong interpersonal orientation and a concern for the safety and security of one's relationships with others. A small number of studies have explored this association. Davila (2001) reported that although dependency and excessive reassurance seeking appear to have similarities, excessive reassurance seeking is indeed a distinct construct. Furthermore, excessive reassurance seeking made a small, but unique, contribution to depressive symptoms, even after controlling for other related interpersonal vulnerability variables such as sociotropy and attachment style. Joiner and Metalsky (2001) reported similar findings in that even after accounting for dependency, excessive reassurance seeking was predictive of an increase in depressive symptoms at a ten-week follow-up.

Other researchers, however, suggest that excessive reassurance seeking is simply the behavioral expression of an anxious attachment style (Brennan & Carnelley, 1999) and not a

distinct construct. In a study of romantic couples, Shaver and colleagues (2005) found support for this argument in that although excessive reassurance seeking was related to depressive symptoms, the relation no longer held when attachment insecurity was taken into account.

Starr and Davila (2008) conducted a meta-analysis on the cross-sectional relationship between excessive reassurance seeking and depression and found a moderate, positive relationship ($r = .32$) between the two variables (38 studies; $N = 6,973$). Notably, they found little variability in results, which they hypothesized is a product of the homogeneity of methodologies and sample characteristics across studies. The majority of studies on this construct has been conducted by one research group (Joiner) and most have used a single self-report measure of excessive reassurance seeking. Notably, Starr and Davila (2008) reported that studies with a higher percentage of women in their sample showed stronger associations between excessive reassurance seeking and depression. Given the cross-sectional nature of these studies, multiple explanations may account for these findings. For example, women may be more likely to seek out reassurance when they are upset and/or they may be more likely to become depressed as a result of excessive reassurance seeking.

Although the relationship between excessive reassurance seeking and depression is conceptualized as a transactional process, with each one theoretically acting on and exacerbating the other, few studies have actually examined the longitudinal relationship between the two constructs and even fewer studies have tried to capture this dynamic relationship at more than two time points. Prospective studies have provided mixed findings on the prospective relationship between excessive reassurance seeking and depressive symptoms. Some studies have found support for the predictive power of excessive reassurance seeking (Davila, 2001;

Joiner & Metalsky, 2001), whereas others have not (Haefffel, Voelz, & Joiner, 2007; Shahar, Joiner, Zuroff, & Blatt, 2004).

One way that this inconsistency has been addressed is to conceptualize excessive reassurance seeking as a vulnerability rather than a direct precursor to depression. Indeed, although Haefffel et al. (2007) failed to find a main effect for excessive reassurance seeking in predicting depression, they did report that reassurance seeking interacted with decreases in perceived social support to predict the prospective development of depressive symptoms. Joiner and Metalsky (2001) showed that excessive reassurance seeking interacted with both interpersonal stressors and achievement failures to predict increases in depressive symptoms, which researchers suggest makes it a general rather than a specific (in contrast to the congruency hypothesis literature) vulnerability. Katz and colleagues (1998) also found that excessive reassurance seeking moderated the relationship between a romantic partner's negative evaluation of the individual and the individual's increase in depressive symptoms. Shahar and colleagues (2004), on the other hand, failed to find a moderating effect for excessive reassurance seeking.

It also has been proposed that excessive reassurance seeking may be related to depression via its contribution to the occurrence of social stressors (i.e., a stress generation model). A small number of studies have tested this proposition. Shahar and colleagues (2004) failed to find evidence for a mediational model for excessive reassurance seeking. On the other hand, Potthoff, Hollahan, and Joiner (1995) found that minor social stressors mediated the relationship between excessive reassurance seeking and depressive symptoms.

In their review, Starr and Davila (2008) noted that most research on excessive reassurance seeking has been conducted with college aged-samples, with only a handful of

studies focusing specifically on children and adolescents. One concern raised by researchers is that normative levels of reassurance seeking have not been established across developmental periods, and it is unknown what constitutes “excessive” levels of reassurance seeking (Starr & Davila, 2008). It could be hypothesized that because children often seek reassurance from parents, this behavior is not viewed as problematic or parents may have a higher tolerance for reassurance seeking behavior from their children than they do from others. Indeed, preliminary findings suggest that reassurance seeking behaviors decline with age (Abela, Zuroff, Ho, Adams, & Hankin, 2006). Thus, elevated levels of reassurance seeking in older children may be perceived as more atypical and may be responded to in a negative manner.

In cross-sectional studies, excessive reassurance seeking has been associated with depressive symptoms (Joiner, 1999) and depressive disorders among a community sample of youths (Abela et al., 2005) and youth psychiatric patients (Joiner, Metalsky, Gencoz, & Gencoz, 2001). A limited number of studies have examined the interaction of excessive reassurance seeking with other variables. Building on the idea that reassurance seeking may be the behavioral manifestation of an insecure attachment, Abela et al. (2005) explored the interaction between attachment and excessive reassurance seeking in a sample of children and young adolescents. Although it should be noted that they used a retrospective design, they found that the interaction of insecure attachment and excessive reassurance seeking (but not either insecure attachment or excessive reassurance seeking alone) was associated with the presence of past episodes of depression and increased severity of past episodes.

In a prospective study that tested a vulnerability-stress model, Abela et al. (2006) found that adolescents who exhibited high levels of reassurance seeking reported greater elevations in depressive symptoms following elevations in hassles than did adolescents who exhibited low

levels of reassurance seeking. Furthermore, this relationship was observed in older but not younger children, suggesting that this behavior becomes problematic when it is developmentally atypical.

Prinstein and colleagues (Prinstein, Borelli, Cheah, Simon, & Aikins, 2005) examined gender differences in the reciprocal relationship between depression and excessive reassurance seeking. Although there were no gender differences in the level of excessive reassurance seeking, there were differential effects of this behavior across genders. Prinstein et al. found a main effect of depressive symptoms predicting increases in reassurance seeking for both genders. The study revealed a main effect of reassurance-seeking predicting depressive symptoms among boys. Girls, however, showed a vulnerability-stress effect in that a higher level of reassurance-seeking behavior in combination with lower levels of positive friendship quality was longitudinally associated with higher levels of depressive symptoms, which suggests that excessive reassurance seeking may exacerbate the effects of poor friendships. The researchers also examined an additional measure of social difficulties. They found that a lower level of likeability by peers was associated with increases in reassurance seeking in the presence of high levels of depressive symptoms for both genders. Furthermore, a lower level of likeability by peers was associated with increases in reassurance seeking for girls, but not boys.

Although no published studies to date have examined the relationship between excessive reassurance seeking and co-rumination, at least one study has examined the association between excessive reassurance seeking and rumination. Weinstock and Whisman (2004) tested both a mediation and moderation model of the effect of rumination on the relationship between excessive reassurance seeking and depression in a cross-sectional study of undergraduates. The researchers found support for a mediation model with rumination fully mediating the relationship

between the interpersonal vulnerability and depressive symptoms. The researchers suggested that rumination may be more proximal to depressive symptoms, whereas excessive reassurance seeking is a more distal vulnerability.

Co-rumination may function in a similar way. Co-rumination may serve as the mechanism by which individuals express their need for reassurance to others. However, given that co-rumination is distinct from rumination because of its interpersonal nature, it is also possible that individuals who tend to co-ruminate also may exacerbate the aversive effects of excessive reassurance seeking. Thus, it is also possible that a moderation model may account for the interrelations among excessive reassurance seeking, co-rumination, and depressive symptoms.

The current study

The present study sought to address several gaps in the literature. First, this study explored the relationships between co-rumination and other established interpersonal vulnerabilities to depression, namely the personality trait of dependency and the behavior of excessive reassurance seeking. This study also explored the potential mediating effect of co-rumination on the relationships between these interpersonal vulnerabilities and depressive symptoms. By utilizing a longitudinal design, this study sought to provide stronger evidence for co-rumination as a mechanism by which these interpersonal vulnerabilities lead to depression. This work aimed to expand our conceptual understanding of the construct of co-rumination by integrating it into the interpersonal vulnerability literature. Characterizing co-rumination as a distinct construct with predictive power over and above other related constructs adds to our

understanding of interpersonal processes and will ultimately contribute to the treatment and prevention of depression.

Second, this study examined co-rumination at the microlevel to explore how changes in daily co-rumination over 7 days influence not only daily mood, but also daily relationship satisfaction over this 7-day period. Although examining risk factors is valuable, it is also important to understand the positive aspects of co-rumination, because it may provide insight into why this behavior is so reinforcing despite its negative consequences. To date, no study has examined these positive associations at this level of detail. This study also aimed to provide preliminary insight into the nature of a co-ruminative interaction by examining how individuals perceive the quality of their interactions when engaging in co-rumination. By utilizing a 7-day daily diary design, this study aimed to more accurately capture an individual's daily experience and reduce biases that are often associated with retrospective studies (Eckenrode & Bolger, 1995; Reiss & Wheeler, 1991).

Hypotheses

Goal 1: To explore the cross-sectional relationships among co-rumination, social support, depressive symptoms, and other interpersonal vulnerabilities (dependency and excessive reassurance seeking) and to assess whether these relationships differ by gender.

Hypothesis 1a: Consistent with prior literature, it was hypothesized that there would be a positive relationship among co-rumination, interpersonal vulnerabilities (dependency, excessive reassurance seeking), and depressive symptoms. A positive relationship between co-rumination and relationship satisfaction was also predicted, whereas a negative relationship was expected among the interpersonal vulnerabilities and relationship quality.

Exploratory Hypothesis 1b: As these associations have not been previously explored in the literature, an exploratory cross-sectional moderation model was tested. It was predicted that co-rumination would moderate the relationship between each interpersonal vulnerability and depression. Co-rumination would also moderate the association between each interpersonal vulnerability and relationship quality, such that these relationships would be stronger in individuals with higher levels of co-rumination than in those with lower co-rumination.

Goal 2: To assess whether co-rumination mediates the relationships between interpersonal vulnerabilities and depressive symptoms using a short-term longitudinal design and to explore whether gender moderates these relationships.

Hypothesis 2a: Controlling for baseline depressive symptoms, average levels of daily co-rumination were expected to mediate the relationship between baseline excessive reassurance seeking and dependency and depressive symptoms measured at a 1-month follow-up.

Exploratory Hypothesis 2b: The effect of this mediation model would be stronger in women than in men.

Goal 3: To replicate prior findings on the relationship between daily co-rumination and daily negative mood using a daily diary paradigm and to extend prior research by assessing whether engaging in daily co-rumination is associated with greater same-day relationship satisfaction. To examine whether co-rumination prospectively predicts increases in negative mood and relationship satisfaction or, alternatively, whether negative mood and relationship satisfaction predict co-rumination prospectively. To examine whether daily co-rumination mediates any gender differences in daily levels of negative mood and relationship satisfaction. To explore whether co-rumination is associated with positive interaction qualities.

Hypothesis 3a: Individuals showing higher levels of daily co-rumination will show increased levels of daily negative mood across the 7-day period. Daily co-rumination will also be predictive of next-day negative mood.

Hypothesis 3b: Individuals who engage in higher levels of co-rumination with a close friend will report higher levels of daily relationship satisfaction across the 7 days. Co-rumination will also predict next-day relationship satisfaction.

Exploratory Hypothesis 3c: Conversely, individuals with higher levels of negative mood and relationship satisfaction will show increases in next-day co-rumination.

Hypothesis 3d: Individuals who endorse higher levels of daily co-rumination with a close friend will report the co-rumination experience as more intimate, pleasant, and supportive.

Hypothesis 3e: Women will show greater levels of daily negative mood and daily relationship satisfaction and this gender difference will be mediated by daily co-rumination.

CHAPTER 2
METHODS

Participants

Participants were recruited from the Temple University undergraduate psychology research pool. Individuals were eligible to participate in the study if they were over the age of 18 and were able to (a) read and speak proficient English to complete the required surveys, (b) have reliable evening Internet access in order to complete the surveys, (c) and reported that they planned to have contact with a self-identified close confidant over the course of the week. A total of 309 individuals completed the baseline questionnaire. Table 1 below shows the demographic characteristics of the baseline sample.

Table 1. Demographic characteristics of baseline sample

Variable	<i>N</i>	<i>M(SD)</i>	%
Gender			
Male	54		17.5
Female	255		82.5
Race/Ethnicity			
White/Caucasian	172		55.66
Black/African-American	41		13.27
Asian	42		13.59
Hispanic	12		3.88
Other/Multicultural	42		13.59
Relationship Status of Confidant			
Friend	157		50.81
Significant Other	88		28.48
Parent	28		9.06
Roommate	21		6.8
Sibling	15		4.85
Age	309	20.73 (3.26)	

Procedure

The Temple University Institutional Review Board (IRB) approved the present study. Prior to beginning the study, participants reviewed and consented to the study procedure. After reading the consent, participants were given the option to participate in the study or decline with no penalties. After consenting, participants were taken to an online survey where they completed baseline measures of depressive symptoms, co-rumination, ruminative response style, excessive reassurance seeking, and dependency/neediness. Participants were asked to identify the nature of the relationship with their closest confidant (e.g., friend, boyfriend/girlfriend, sister/brother, etc.) with whom they have regular contact. Participants then filled out a measure of perceived relationship quality.

At 8pm the following day, participants were emailed a link to their first daily survey. They were asked to complete the survey as close to bedtime as possible in order to capture their whole day. Given that some college students keep late schedules, the survey remained active until 10am the following day. Participants who failed to complete the survey before 9am the next day were sent another reminder to complete the survey.

The daily survey had several parts. First, participants reported on their daily mood. Participants were then asked whether they discussed a problem with or confided with their confidant about a problem or issue that either the participant or his/her confidant had. If participants responded yes, they were asked to briefly describe the event and rate how distressing the event was to them personally. They were then asked to complete short forms of the co-rumination and rumination scales regarding the problem they had identified earlier. Participants

were then asked to report on the quality of their interaction. Finally, participants completed a short measure about their current level of relationship satisfaction.

If participants reported that they did not interact with their confidant, they were asked to identify and describe their most stressful event of the day. They then filled out the rumination subscale. In order to make sure that participants were not biased toward replying “no” to discussing a problem with their confidant in order to shorten the survey, they were asked to fill out a short questionnaire with filler questions of equal length to the co-rumination scale, which asked them about the causes and consequences of their most stressful event of the day. Finally, participants filled out a measure of their current relationship satisfaction.

Participants completed seven daily diary assessments. One month later, participants received a link through email to complete a measure of current depressive symptoms. Participants received psychology course credit for their participation as well as entries into a raffle for a \$25 gift card each semester.

Measures

Trait-Level Co-Rumination. Trait co-rumination at baseline was assessed using the Co-Rumination Questionnaire (CRQ; Rose, 2002). The CRQ is a 27-item questionnaire that covers nine content areas (frequency of discussing problems, discussing problems instead of engaging in other activities, encouragement by the focal individual of the confidant's discussing problems, encouragement by the confidant of the focal individual's discussing problems, discussing the same problem repeatedly, speculation about causes of problems, speculation about consequences of problems, speculation about parts of the problem that are not understood, and focusing on negative feelings) thought to comprise co-rumination. The CRQ has been shown to have

excellent internal consistency and validity (Rose et al., 2007). Internal consistency for this measure was excellent ($\alpha = .96$).

Event-Specific Co-Rumination. The original CRQ was shortened to 4 items to make it more appropriate for daily use and to minimize participant fatigue. The items selected included: “We kept talking about the problem even after we both knew all of the details about what happened,” “We talked for a long time trying to figure out all the different reasons why the problem might have happened,” “We talked a lot about how bad the person with the problem feels,” “We talked a lot about all of the different bad things that might happen because of the problem.” Internal consistency for this measure was good ($\alpha = .83$).

Dependency. Dependency was measured at baseline with the Depressive Experiences Questionnaire (DEQ; Blatt et al., 1976). The DEQ measures three hypothesized personality styles: self-criticism, dependency, and self-efficacy. Only the dependency subscale was used in this study. The scale consists of 29 statements such as “I become frightened when I feel alone” and “I often think about the danger of losing someone who is close to me”. Each of the items is rated on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree”. In a factor analysis, Rude and Burnham (1995) found that the dependency scale is composed of two subfactors: neediness (anxiety about being alone and criticized by others) and connectedness (sensitivity about the effects of one’s actions on others and valuing interpersonal relationships). The internal consistency for both subscales was acceptable (neediness $\alpha = .70$; connectedness $\alpha = .79$).

Excessive Reassurance Seeking. Excessive reassurance seeking was measured at baseline with the Depressive Interpersonal Relationship Inventory—Reassurance Subscale (DIRI-RS;

Joiner, Alfano, Metalsky, 1992). The DIRI-RS measures the tendency to excessively seek reassurance from others about whether they truly care about the target individual. The DIRI-RS is composed of 4 items, each rated on a 7 point scale (items ranged from “never” to a “great deal”), and is averaged across items. The DIRI-RS has been shown to have good internal consistency and validity in previous research (Joiner et al., 1992). The internal consistency in the present study was good ($\alpha = .89$).

Depressive Symptoms. Depressive symptoms were assessed at baseline and the one-month follow-up with the Beck Depression Inventory—Second Edition (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II consists of 21 items that assess cognitive, affective, motivational, and somatic depressive symptoms. It is considered to be a valid and reliable measure of depressive symptoms (Beck et al., 1996). The internal consistency for this measure was high ($\alpha = .92$).

Trait-Level Rumination. Rumination was assessed at baseline with the Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991). The RRS is composed of 10 items, which measure the extent to which individuals respond to depressed mood by focusing on self, symptoms, and the causes and consequences of their mood. The internal consistency for this measure was good ($\alpha = .83$).

Event-Specific Rumination. Rumination about the causes and consequences of stressors during the daily diary period was measured with the Perseverative Attention to Negative Events Scale (PANE; Mezulis, Abramson, & Hyde, 2002). The four items are: “I’ve been replaying the event over in my mind,” “I’ve been thinking about how down I feel,” “I’ve been thinking about what I could have done differently,” and “I’ve had a hard time concentrating on other things in my life.” This measure showed good internal consistency ($\alpha = .81$).

Daily Negative Affect. Daily affect was measured with the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). This is a 20-item self-report designed to assess an individual's current emotional state. Participants record the extent to which they have been experiencing each of 20 emotions (10 positive and 10 negative) on a 5-point Likert scale that ranges from 1 (very slightly or not at all) to 5 (extremely). Only the negative affect items were utilized in this study. Internal consistency for this measure was good ($\alpha = .84$).

Daily Relationship Satisfaction. Relationship satisfaction during the daily diary period was measured with the Relationship Assessment Scale (RAS; Hendrick, 1988). The RAS is a seven-item measure that was originally designed to measure satisfaction within romantic relationships. For the purpose of this study, this scale was modified to capture participants' feelings about their closest confidants in general regardless of their status. Items included in the modified questionnaire were "How well does your [confidant] meet your needs?"; "How satisfied are you with your relationship?"; "How good is your relationship compared to most?" This measure had excellent internal consistency ($\alpha = .94$).

General Relationship Quality. Relationship quality was measured at baseline with the Quality of Relationships Inventory (QRI; Pierce, Sarason, Solky-Butzel, & Nagle, 1991). The QRI measures an individual's relationship specific perceptions of (a) support (i.e., the availability of social support from a specific relationship); (b) conflict (i.e., the extent to which the relationship is a source of conflict and ambivalence); and (c) depth (i.e., the extent to which the relationship is perceived as being positive, important, and secure). The QRI asks participants to reflect on their relationship with their closest confidant and to rate their perceptions of the relationship on a 4-point Likert scale ranging from 1 (not at all) to 4 (very much). The internal consistency across the three subscales was good ($\alpha = .83 - .89$).

Interaction Quality. Participants were asked to rate their daily perception of their interaction with their confidant with four items. Participants used a 7-point Likert scale to rate their perception of the intimacy of the interaction (from “superficial” to “meaningful”), how much they disclosed in the interaction (from “very little” to “a great deal”), how pleasant the conversation was (from “very unpleasant” to “very pleasant”), and how satisfied they were with the interaction (from “dissatisfied” to “very satisfied”). Internal consistency of this measure was acceptable ($\alpha = .77$).

Cognitive Response to Life Events. Participants who did not endorse a daily interaction with their close confidant completed a filler questionnaire based on the Cognitive Styles Questionnaire (CSQ; Alloy et al., 2000; Haefel et al., 2008). Participants reported on the causes and consequences of a daily stressful event. The data from this questionnaire were not used.

Analysis Plan

Preliminary analyses and primary analyses for Goals 1 and 2 were conducted with IBM SPSS 21. To address Goal 1, hierarchical linear regressions were conducted to assess whether co-rumination moderates the relationships between interpersonal vulnerabilities and depressive symptoms as well as interpersonal vulnerabilities and relationship quality. Predictor variables (co-rumination, neediness, excessive reassurance seeking) were centered at their means and gender was dummy coded (0=male; 1=female) (Aiken & West, 1991). Each outcome variable (depressive symptoms or relationship support, depth, and conflict) was first regressed onto each predictor. The two-way interaction terms between each of the predictors were entered in Step 2. Finally, in Step 3, the three-way interaction term between the interpersonal vulnerability, co-rumination, and gender was entered. The macro PROCESS (model=3) for SPSS also was utilized

to calculate the conditional effects at the mean and one standard deviation above and below the mean of the moderator (Hayes, 2013).

Mediation and moderated mediation was tested using the PROCESS macro (model=4 and model= 8, respectively; Hayes, 2013). A bootstrapping method was utilized to test the indirect effects of interpersonal vulnerabilities on depressive symptoms at one-month follow-up via the potential mediating variable of co-rumination, controlling for baseline depressive symptoms. Bootstrapping is a nonparametric method that generates an estimate of the indirect effect, including a 95% confidence interval (Preacher & Hayes, 2008). When zero is not in the 95% confidence interval, one can conclude that the indirect effect is significantly different from zero at $p < .05$ (two-tailed) and, thus, that the effect of the independent variables (interpersonal vulnerabilities) on the dependent variable (depression) is (partially) mediated by the proposed mediating variable (average daily co-rumination). For these analyses, PROCESS was used to calculate bootstrapped (samples=5000) standard errors and bias corrected 95% confidence intervals.

Hierarchical linear modeling (HLM) was used to test Goal 3 of this study (Raudenbush & Bryk, 2002). HLM accounts for the non-independence inherent to the daily diary design. In this study, daily within-subjects measures of co-rumination, rumination, mood, and relationship satisfaction (level-1 model) were nested within participants (level-2 model). Additionally, an HLM approach is better able to manage missing data than traditional analysis techniques, so that individuals who did not complete some of their daily diary entries were not excluded from analyses through listwise deletion. Analyses were conducted using the Hierarchical Linear Modeling 7 software (HLM 7.0; Raudenbush, Bryk et al., 2011).

CHAPTER 3

RESULTS

Preliminary Analyses

All variables were examined for violations of normality. Item level descriptive statistics for the baseline measures are presented in Table 2. Analyses revealed that several variables were not normally distributed. As expected, both baseline and follow-up measures of depressive symptoms were positively skewed. Using the guidelines suggested by Tabachnik and Fidell (2007), both variables were submitted to a square root transformation to satisfy assumptions of normality. The relationship quality subscales were also skewed. Relationship conflict showed a positive skew and was submitted to a square root transformation to satisfy normality assumptions. Relationship depth and support were both negatively skewed. A square root transformation was performed (each score was first subtracted from a constant so that the smallest score was one). There were relatively few outliers (less than 5%) across the study variables, thus all available data were utilized.

For Goal 1, all participants completed all baseline measures. For Goal 2, out of the 309 individuals who completed the baseline measure, 162 participants completed the BDI at a one-month follow-up. Independent samples *t*-tests revealed no differences on demographic and baseline measures for individuals who completed the follow-up compared to those who did not, $t_s < 1.88, p_s > .05$.

For Goal 3, participants completed a mean of 5.03 (SD = 2.55) daily diary entries out of a possible seven. Baseline variables did not predict missing a daily survey ($t_s < 1.51, p_s > .05$), suggesting that data were missing at random (Fitzmaurice, Laird, & Ware, 2004). As recommended by Singer and Willet (2003), individuals who completed at least three daily diary

surveys during which they reported that they co-ruminated with a peer were included in the analyses, which resulted in a final sample of 254 individuals who completed a total 1086 entries.

Primary Analyses

Hypothesis 1a: Consistent with prior literature, it was hypothesized that there would be a positive relationship among co-rumination, interpersonal vulnerabilities (dependency, excessive reassurance seeking), and depressive symptoms. A positive relationship between co-rumination and relationship satisfaction was also predicted, whereas a negative relationship was expected among the interpersonal vulnerabilities and relationship quality.

Table 2 shows the correlations between all baseline measures. As expected, both measures of dependency (connectedness and neediness) as well as excessive reassurance seeking showed a positive correlation with depressive symptoms ($r_s = .26-.36$). Excessive reassurance seeking and neediness, but not connectedness, were positively related to relationship conflict. Connectedness was positively related to perceived social support and relationship depth ($r_s = .26-.28$), whereas excessive reassurance seeking was negatively related to social support ($r = -.13$). Co-rumination was positively related to other measures of interpersonal vulnerability, relationship quality, and relationship conflict ($r_s = .19-.36$). Contrary to predictions, co-rumination was not related to depressive symptoms.

Table 2. Means, Standard Deviations, and Intercorrelations Among All Baseline Measures and Depressive Symptoms at Follow-up

	1	2	3	4	5	6	7	8	9	10	11	12
1. Beck Depression Inventory--Baseline	--											
2. Rumination Response Scale	.46**	--										
3. Excessive Reassurance Seeking	.32**	.39**	--									
4. Co-Rumination	.10	.26**	.24**	--								
5. DEQ-Neediness	.36**	.41**	.37**	.19**	--							
6. DEQ-Connectedness	.26**	.19**	.19**	.21**	.43**	--						
7. QRI-Social Support	-.13*	.06	-.13*	.31**	-.09	.26**	--					
8. QRI-Conflict	.29**	.13*	.36**	.19**	.16**	-.02	-.27**	--				
9. QRI-Depth	-.06	.13*	.02	.36**	.06	.28**	.71**	-.06	--			
10. Gender	.08	.11*	.06	.04	.08	.20**	.26**	-.09	.18**	--		
11. Age	-.08	-.04	.07	-.02	-.08	-.02	-.15**	.17**	-.03	-.10	--	
12. Beck Depression Inventory--Follow-up	.77**	.39**	.30**	.15	.38**	.42**	-.11	.36**	.10	.11	-.06	--
<i>M</i>	9.65	23.42	2.7	3.01	3.62	4.82	3.57	1.74	3.38	0.81	20.68	8.43
<i>SD</i>	9.06	5.97	1.54	0.86	0.88	0.94	0.5	0.55	0.55	0.39	3.15	9.41
<i>N</i>	309	309	309	309	309	309	309	309	309	309	309	162

Note: DEQ=Depressive Experiences Questionnaire; QRI=Quality of Relationships Inventory

** $p < .01$. * $p < .05$

Exploratory Hypothesis 1b: As these associations had not been previously explored in the literature, an exploratory cross-sectional moderation model was tested. It was predicted that co-rumination would moderate the relation between each interpersonal vulnerability and depression. Co-rumination would also moderate the association between each interpersonal vulnerability and relationship quality, such that these relationships would be stronger in co-ruminators than in participants who did not co-ruminate. Finally, gender was explored as a further moderator of the relationships between co-rumination, each interpersonal vulnerability, and depression and relationship quality (i.e., Gender x Co-rumination x Interpersonal Vulnerability interaction).

Co-rumination was not found to be a significant moderator of the relationships between any of the interpersonal vulnerabilities and depressive symptoms, $t_s < .60$, $p_s > .05$. Additionally, there were no differential effects of this moderation when gender was added into the model, $t_s < 1.06$, $p_s > .05$ (Table 3, models 1-3).

Table 3. Interactions between Co-rumination, Interpersonal Vulnerabilities, and Gender Predicting Depressive Symptoms

Step	Variable	β	t	ΔR^2
<u>Model 1--Excessive Reassurance Seeking as Focal Predictor</u>				
1	Gender	0.05	0.92	.10**
	ERS	0.35	2.50*	
	CRQ	-0.14	-0.93	
2	ERS x CRQ	0.08	-0.55	0.01
	ERS x Gender	-0.08	-0.59	
	CRQ x Gender	0.17	1.11	
3	ERS x CRQ x Gender	0.16	1.06	<.01
<u>Model 2--Neediness as Focal Predictor</u>				
1	Gender	0.04	0.71	.13**
	DEQ-N	0.27	2.03*	
	CRQ	-0.02	-0.11	
2	DEQ-N x CRQ	0.08	0.60	0.01
	DEQ-N x Gender	0.09	0.67	
	CRQ x Gender	0.05	0.28	
3	DEQ-N x CRQ x Gender	0.02	0.11	<.01
<u>Model 3--Connectedness as Focal Predictor</u>				
1	Gender	0.04	0.61	.08**
	DEQ-C	0.19	1.07	
	CRQ	-0.14	-0.92	
2	DEQ-C x CRQ	0.02	0.08	0.01
	DEQ-C x Gender	0.07	0.42	
	CRQ x Gender	0.19	1.18	
3	DEQ-C x CRQ x Gender	0.02	0.13	<.01

[^] $p < .10$; * $p < .05$; ** $p < .01$.

Note: ERS=Excessive Reassurance Seeking Questionnaire; CRQ= Co-Rumination Questionnaire; Gender (0=male, 1=female).

DEQ-C=Depressive Experiences Questionnaire-Connectedness Subscale

DEQ-N=Depressive Experiences Questionnaire-Neediness Subscale

A different pattern of results emerged when co-rumination was tested as a moderator of the relationships between interpersonal vulnerabilities and relationship quality and conflict. A significant 3-way interaction emerged between gender, excessive reassurance seeking, and co-rumination in predicting relationship support (Table 4, model 1).

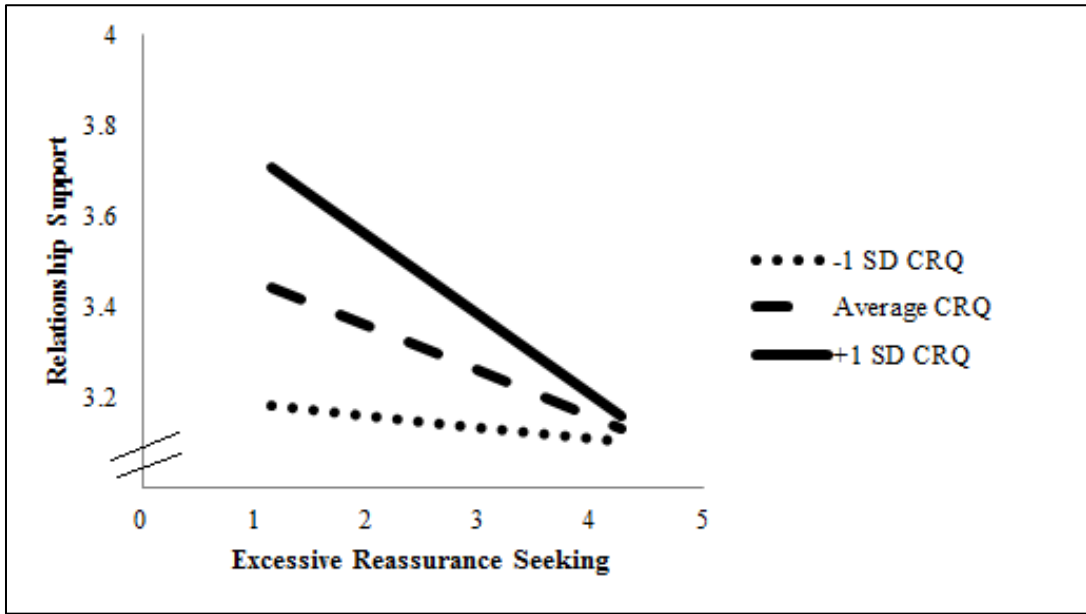
Table 4. *Interactions between Co-Rumination, Excessive Reassurance Seeking, and Gender Predicting Relationship Outcomes*

Step	Variable	β	t	ΔR^2
<u>Model 1--Relationship Support as Outcome</u>				
1	Gender	0.94	2.83**	.22**
	ERS	0.51	1.18	
	CRQ	0.71	3.01**	
2	ERS x CRQ	-1.07	-1.80^	.01
	ERS x Gender	-1.37	-2.55*	
	CRQ x Gender	-0.90	-2.13*	
3	ERS x CRQ x Gender	1.80	2.59*	.02*
<u>Model 2--Relationship Depth as Outcome</u>				
1	Gender	0.16	3.07**	.17**
	ERS	-0.27	-2.05*	
	CRQ	0.11	0.73	
2	ERS x CRQ	-0.36	-2.47*	.01
	ERS x Gender	0.17	1.30	
	CRQ x Gender	0.29	1.96^	
3	ERS x CRQ x Gender	0.41	2.86**	.02**
<u>Model 3--Relationship Conflict as Outcome</u>				
1	Gender	-0.14	-2.57*	.15**
	ERS	0.45	3.33**	
	CRQ	-0.05	-0.35	
2	ERS x CRQ	-0.21	-1.39	.01
	ERS x Gender	-0.17	-1.25	
	CRQ x Gender	0.17	1.16	
3	ERS x CRQ x Gender	0.28	1.93^	.01^

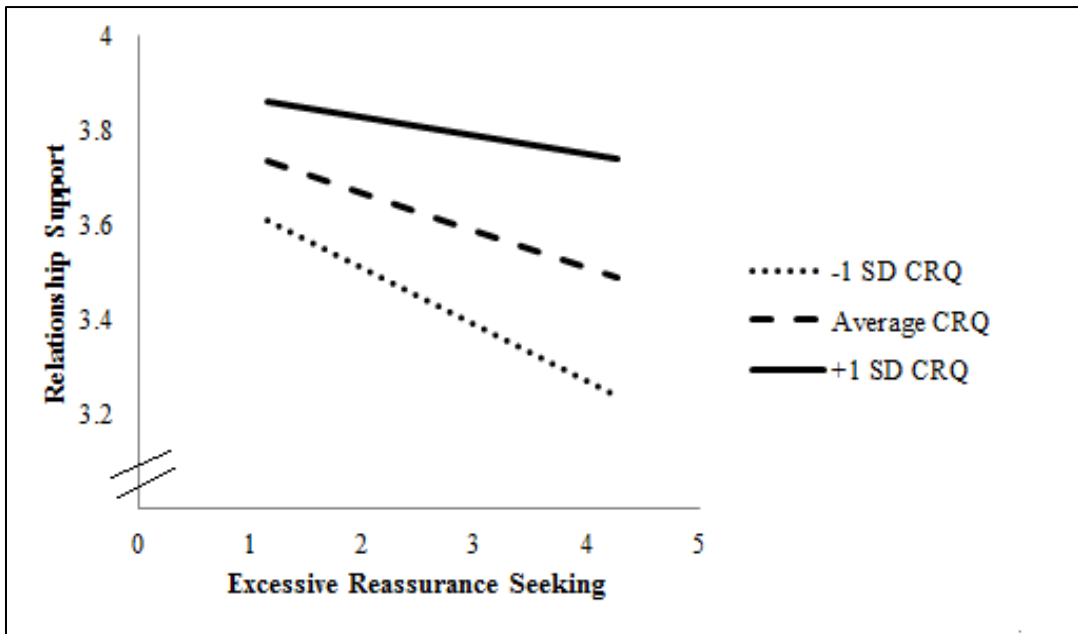
^ $p < .10$; * $p < .05$; ** $p < .01$.

ERS=Excessive Reassurance Seeking Questionnaire; CRQ= Co-Rumination Questionnaire; Gender (0=male, 1=female).

In men, among individuals with lower levels of co-rumination, there was no effect of excessive reassurance seeking on relationship support ($b = -.03, SE = .04, p = .58$). At higher levels of co-rumination, there was a significant negative effect of excessive reassurance seeking on relationship support, such that higher reassurance seeking predicted lower levels of relationship support ($b = -.18, SE = .07, p = .01$). In women, there was a significant negative effect of excessive reassurance seeking on relationship support across all levels of co-rumination; however, the effect was weaker at higher levels of co-rumination ($b = -.12, SE = .03, p < .01$). Figure 1 provides a representation of the model.



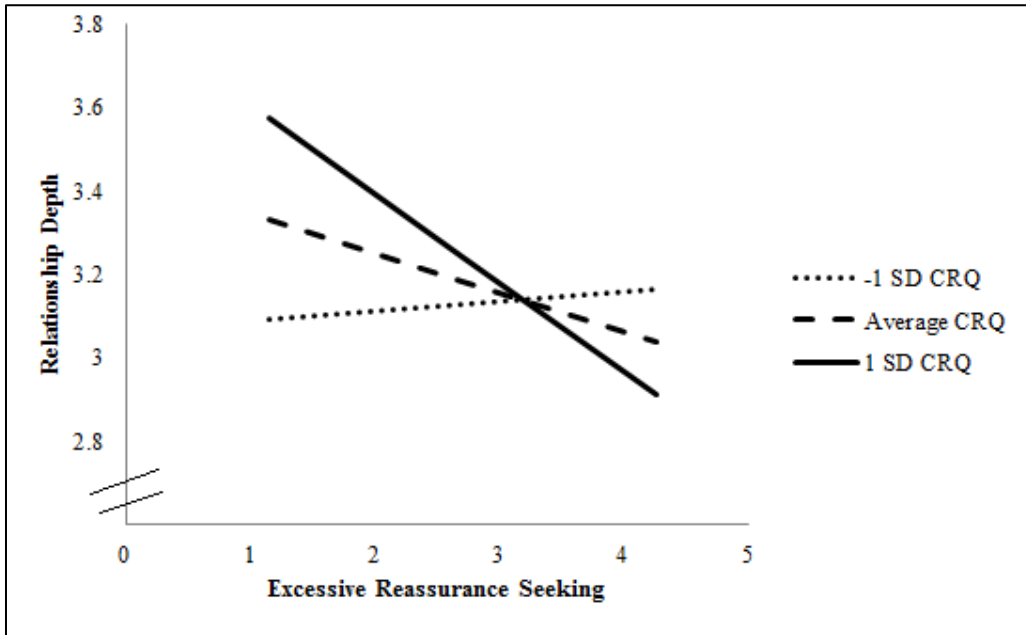
a)



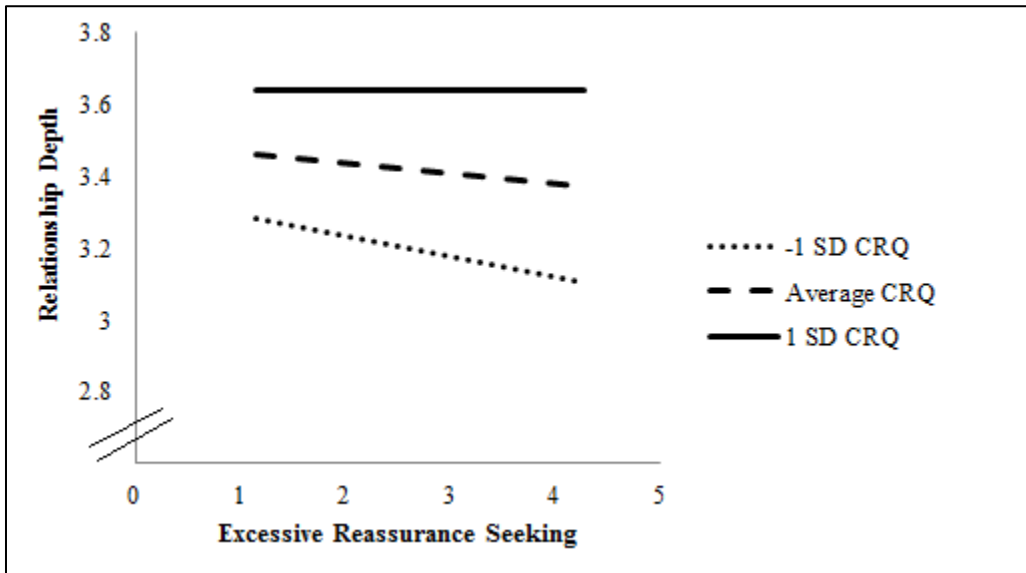
b)

Figure 1. Moderating effects of co-rumination on relationship between excessive reassurance seeking and perceived relationship support in (a) men and (b) women. CRQ = Co-Rumination Questionnaire.

Further, a significant 3-way interaction emerged between gender, excessive reassurance seeking, and co-rumination in predicting relationship depth (Table 4, model 2). At higher levels of co-rumination, there was a significant negative effect of excessive reassurance seeking on relationship depth, but only in men ($b = -.21, SE = .08, p < .01$). Men who engaged in higher levels of co-rumination and higher levels of excessive reassurance seeking reported lower levels of relationship depth. There was no moderating effect of co-rumination in women ($b = .03, SE = .02, p = .13$). Figure 2 illustrates the moderation model.



a)



b)

Figure 2. Moderating effects of co-rumination on relationship between excessive reassurance seeking and perceived relationship depth in (a) men and (b) women. CRQ = Co-Rumination Questionnaire.

There was no significant 3-way interaction between gender, excessive reassurance seeking, and co-rumination in predicting relationship conflict (Table 4, model 3).

No significant 3-way interactions emerged in the relationship between co-rumination, neediness, and gender in predicting relationship outcomes (see Table 5, models 1-3).

Table 5. *Interactions between Co-Rumination, Neediness, and Gender Predicting Relationship Outcomes*

Step	Variable	β	t	ΔR^2
<u>Model 1--Relationship Support as Outcome</u>				
1	Gender	0.28	5.25**	.20**
	DEQ-N	-0.37	-2.87**	
	CRQ	0.26	1.65	
2	DEQ-N x CRQ	-0.05	-0.40	.01
	DEQ-N x Gender	0.22	1.70^	
	CRQ x Gender	0.08	0.54	
3	DEQ-N x CRQ x Gender	0.06	0.49	<.01
<u>Model 2--Relationship Depth as Outcome</u>				
1	Gender	0.18	3.28**	.16**
	DEQ-N	-0.12	-0.90	
	CRQ	0.07	0.45	
2	DEQ-N x CRQ	-0.20	-1.45	.01
	DEQ-N x Gender	0.10	0.75	
	CRQ x Gender	0.30	1.89^	
3	DEQ-N x CRQ x Gender	0.18	1.38	<.01
<u>Model 3--Relationship Conflict as Outcome</u>				
1	Gender	-0.13	-2.24*	.06**
	DEQ-N	0.32	2.29*	
	CRQ	0.08	0.46	
2	DEQ-N x CRQ	0.01	0.09	.01
	DEQ-N x Gender	-0.23	-1.62	
	CRQ x Gender	0.11	0.64	
3	DEQ-N x CRQ x Gender	-0.01	-0.09	<.01

^ $p < .10$; * $p < .05$; ** $p < .01$.

DEQ-N=Depressive Experiences Questionnaire-Neediness Subscale; CRQ= Co-Rumination Questionnaire; Gender (0=male, 1=female).

A significant 3-way interaction emerged between connectedness, co-rumination, and gender in predicting relationship support (Table 6, Model 1; Figure 3). In men, among individuals with lower levels of co-rumination, there was no effect of connectedness on relationship support, $b = .06$, $SE = .08$, $p = .45$. At higher levels of co-rumination, there was a significant positive effect of connectedness on relationship support, such that men who engaged in higher levels of co-rumination and reported higher levels of connectedness reported higher levels of relationship support, $b = .47$, $SE = .16$, $p < .01$.

In women, a reverse relationship was observed. In women who displayed lower levels of co-rumination, there was a positive effect of connectedness on relationship support, $b = .15$, $SE = .05$, $p < .01$, such that higher levels of connectedness related to higher levels of relationship support. At higher levels of co-rumination, there was no effect of connectedness on relationship support, $b = .003$, $SE = .04$, $p = .93$.

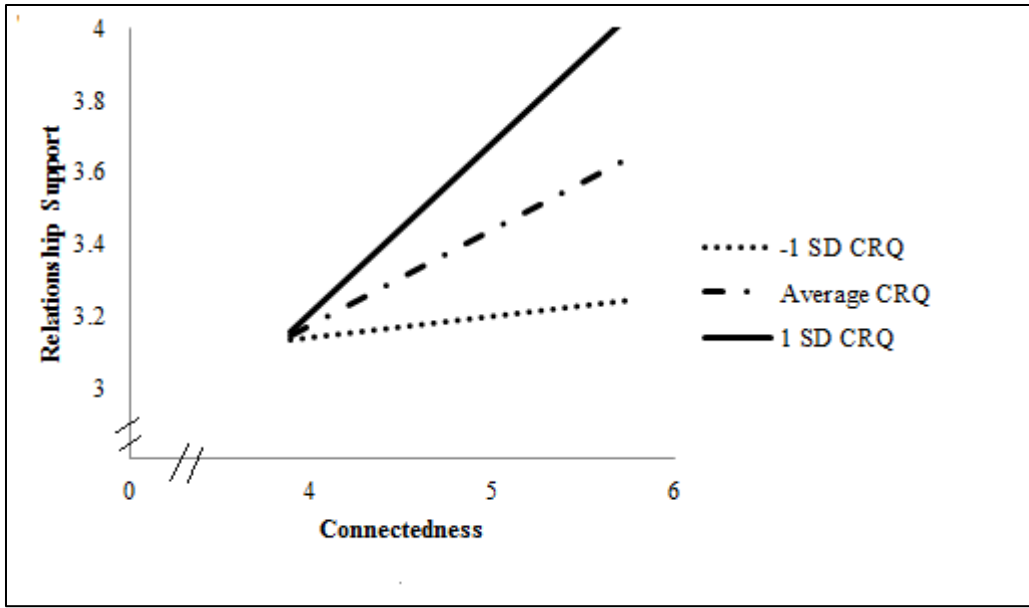
There was no significant 3-way interaction between gender, co-rumination, and connectedness in predicting relationship depth (Table 6, Model 2). Finally, there was no significant 3-way interaction between gender, co-rumination, and connectedness in predicting relationship conflict (Table 6, Model 3).

Table 6. Interactions between Co-Rumination, Connectedness, and Gender Predicting Relationship Outcomes

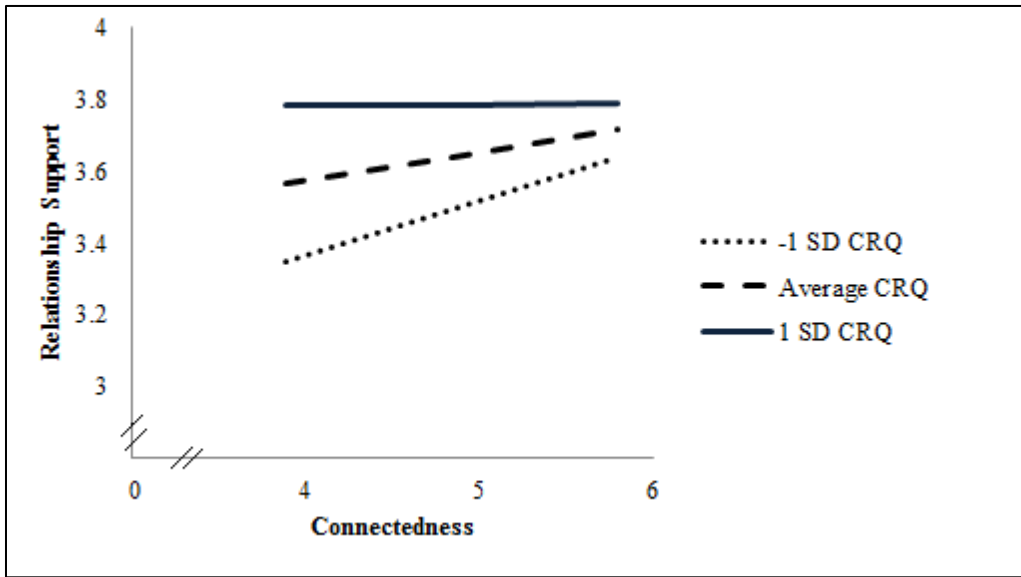
Step	Variable	β	t	ΔR^2
<u>Model 1—Relationship Support as Outcome</u>				
1	Gender	0.19	3.42**	.19**
	DEQ-C	0.51	3.13**	
	CRQ	0.425	2.94**	
2	DEQ-C x CRQ	0.39	2.25*	0.01
	DEQ-C x Gender	-0.33	-2.06*	
	CRQ x Gender	-0.12	-0.81	
3	DEQ-C x CRQ x Gender	-0.49	-2.92**	.02**
<u>Model 2—Relationship Depth as Outcome</u>				
1	Gender	0.09	1.61	.19**
	DEQ-C	0.48	2.89**	
	CRQ	0.24	1.60	
2	DEQ-C x CRQ	0.30	1.69^	<.01
	DEQ-C x Gender	-0.30	-1.86^	
	CRQ x Gender	0.12	0.81	
3	DEQ-C x CRQ x Gender	-0.33	-1.90^	.01^
<u>Model 3—Relationship Conflict as Outcome</u>				
1	Gender	-0.07	-1.16	.05**
	DEQ-C	-0.35	-1.97*	
	CRQ	-0.13	-0.80	
2	DEQ-C x CRQ	-0.56	-2.94**	.01
	DEQ-C x Gender	0.27	1.58	
	CRQ x Gender	0.32	2.05	
3	DEQ-C x CRQ x Gender	0.54	2.91	.03^

^ $p < .10$; * $p < .05$; ** $p < .01$.

DEQ-C=Depressive Experiences Questionnaire-Connectedness Subscale; CRQ= Co-Rumination Questionnaire; Gender (0=male, 1=female).



a)



b)

Figure 3. Moderating effects of co-rumination on relationship between connectedness and perceived relationship support in (a) men and (b) women. CRQ = Co-Rumination Questionnaire.

Goal 2

Hypothesis 2a: Controlling for baseline depressive symptoms, average levels of daily co-rumination would mediate the relationship between baseline excessive reassurance seeking and dependency and depressive symptoms measured at a one-month follow-up.

Exploratory Hypothesis 2b: The effect of this mediation model would be stronger in women than in men.

The hypothesis was examined with a path model (see Figure 4). Baseline depressive symptoms were entered as a covariate. Contrary to predictions, results showed that the indirect effect of excessive reassurance seeking on depressive symptoms through daily co-rumination was not significant $b_{indirect} = .08, SE = .09, CI_{95} = -.02-.36$. Results also showed that the indirect effect of neediness on depressive symptoms through co-rumination was not significant, $b_{indirect} = .22, SE = .19, CI_{95} = -.07-.71$. Finally, co-rumination did not mediate the relationship between connectedness and depressive symptoms, $b_{indirect} = .15, SE = .15, CI_{95} = -.03-.57$.

Moderated mediation also was tested with the PROCESS macro (model=8). Gender did not emerge as a significant moderator of any of the three models tested above, suggesting that these models do not have differential effects in men compared to women.

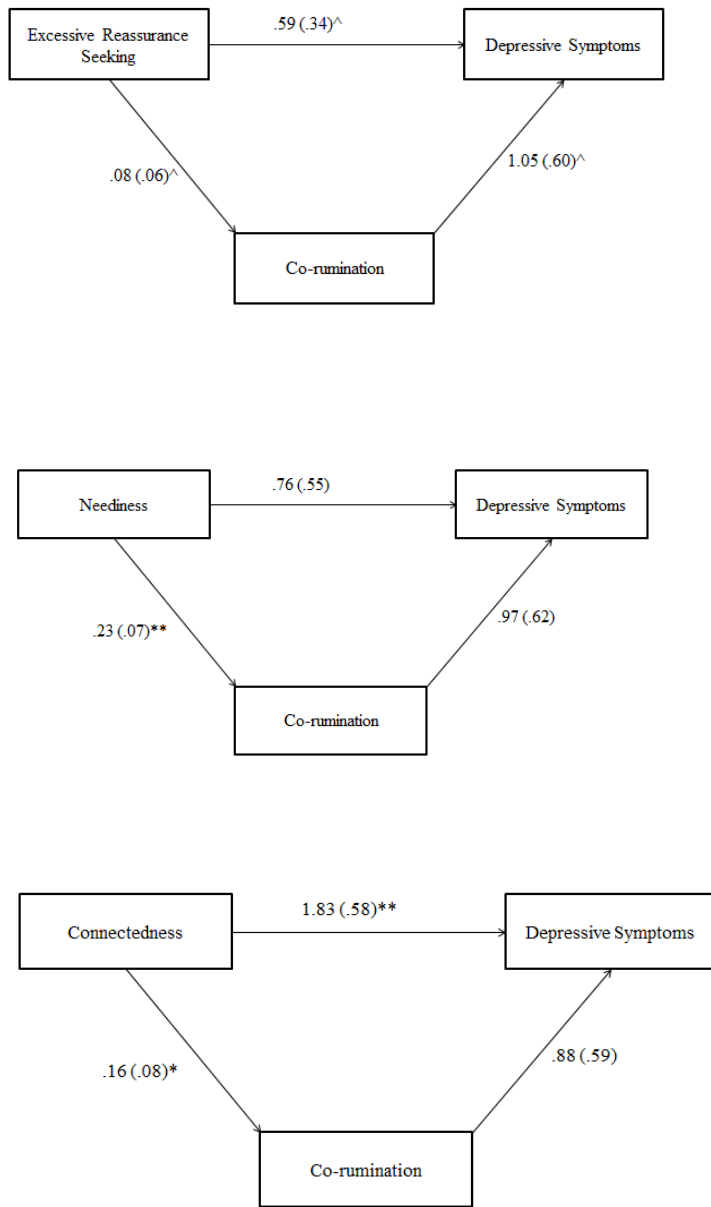


Figure 4. Path models examining the mediating role of co-rumination between interpersonal vulnerabilities and depressive symptoms, controlling for baseline depressive symptoms.

Unstandardized coefficients are presented, with standard errors in parentheses. $^{\wedge}p < .10$, $^{*}p < .05$, $^{**}p < .01$.

Goal 3

Hypothesis 3a: Individuals with higher levels of daily co-rumination would show increased levels of daily negative mood across the 7-day period. Daily co-rumination would also be predictive of next-day negative mood.

Hypothesis 3b: Individuals who engaged in higher levels of co-rumination with a close confidant would report higher levels of daily relationship satisfaction across the 7 days. Co-rumination would also predict next-day relationship satisfaction.

As suggested by Singer and Willett (2003), a null model was initially created to assess whether multilevel modeling was needed. Separate models were created where daily mood and daily relationship satisfaction were entered as outcome variables without any other predictors in the model. The intercept component was found to be significant, suggesting that multilevel modeling was necessary, as there was meaningful between-person and within-person variance for both variables.

A second set of random intercept and random slope models was constructed to assess whether daily fluctuations from a person's average (variable was group-mean centered) co-rumination affected the outcome variables of interest. An example of a basic Level 1 equation estimated to predict daily negative mood from co-rumination is:

$$\text{Negative mood}_{ij} = \beta_{0j} + \beta_{1j}(\text{daily co-rumination}) + r_{ij}$$

In this equation, β_{0j} refers to the intercept, which represents an individual's mean negative mood on a given day, β_{1j} represents the estimate of the slope relating the independent variable to the

dependent variable, and r_{ij} represents the error associated with the outcome measure. Random slopes were specified at Level 2 as well:

$$\begin{aligned}\beta_{0j} &= \gamma_{00} + u_{0j} \\ \beta_{1j} &= \gamma_{10} + u_{1j}\end{aligned}$$

There was a significant relationship between daily co-rumination and daily negative mood ($b = .09, SE = .03, t = 3.07, p < .01$). However, once daily rumination was entered into the model, co-rumination was no longer a significant predictor of daily negative mood ($b = .01, p = .76$). Daily rumination remained a predictor of negative mood ($b = .29, SE = .03, t = 10.36, p < .001$). Daily fluctuations in co-rumination marginally predicted daily fluctuations in relationship satisfaction ($b = .05, SE = .03, t = 1.75, p = .08$); however, once daily rumination was entered into the model, co-rumination became a significant predictor of relationship satisfaction ($b = .07, SE = .03, t = 2.48, p = .01$). Notably, daily rumination was inversely related to daily relationship satisfaction ($b = -.09, SE = .03, t = -2.92, p < .01$).

Daily co-rumination was not a significant predictor of next-day negative mood, controlling for same day negative mood ($b = -.01, SE = .03, t = -.32, p = .76$). Daily co-rumination also did not predict next-day relationship satisfaction, controlling for same day relationship satisfaction ($b < .01, SE = .03, t = .04, p = .97$).

Exploratory Hypothesis 3c: Conversely, individuals with higher levels of negative mood and relationship satisfaction will show increases in next-day co-rumination.

The reverse hypothesis also was not supported, as negative mood was not predictive of next-day co-rumination ($b = .01, SE = .09, t = .09, p = .58$). Relationship satisfaction also did not predict next day co-rumination ($b = .02, SE = .07, t = .07, p = .12$).

Hypothesis 3d: Individuals who endorsed higher levels of daily co-rumination with a close confidant would report the co-rumination experience as more intimate, pleasant, and supportive.

Co-rumination did not predict levels of pleasantness of the interaction ($b = .04, SE = .09, t = .52, p = .60$). On the other hand, co-rumination did predict meaningfulness of the interaction ($b = .78, SE = .07, t = 10.82, p < .01$), as well as satisfaction with the interaction ($b = .26, SE = .08, t = 3.40, p < .01$). Higher levels of co-rumination were also associated with higher reported levels of self-disclosure ($b = .72, SE = .08, t = 9.05, p < .01$).

Hypothesis 3e: Women would show greater levels of daily negative mood and daily relationship satisfaction and this gender difference would be mediated by daily co-rumination.

According to Baron and Kenny (1986), several guidelines must be met in order to demonstrate mediation. First, women would show greater levels of negative mood or relationship satisfaction than men. Second, women would also report higher levels of co-rumination. Third, higher levels of co-rumination would predict higher levels of negative mood or relationship satisfaction. Finally, the relationship between gender and negative mood would be reduced when controlling for co-rumination.

There were no gender differences in daily negative mood ($b = .04, SE = .08, t = .48, p = .63$). Since gender did not predict the outcome variable, a mediation model was not tested.

Gender did marginally predict differential levels of daily relationship satisfaction ($b = .29, SE = .15, t = 1.90, p = .059$). However, gender did not predict differences in daily co-rumination ($b = .11, SE = .11, t = .94, p = .35$). Given that the requirements for testing a mediation model were not met, other steps of the mediation analyses were not tested.

CHAPTER 4

DISCUSSION

Over the past decade, a growing body of literature has developed around the construct of co-rumination. Past research on co-rumination has sought to elucidate its relation to increases in depressive symptoms and, to a lesser extent, greater relationship satisfaction. Although co-rumination is at its core an interpersonal process, there have been no attempts to understand this behavior in light of other long-established interpersonal vulnerabilities to depression.

The present study sought to extend the literature in two key aspects. First, the study examined interrelations among co-rumination, interpersonal vulnerabilities (dependency and excessive reassurance seeking), and depressive symptoms. Using a longitudinal design, the study also tested whether co-rumination mediated the relationships between these interpersonal vulnerabilities and depression. Second, using a daily diary paradigm, this study explored how daily co-rumination affects not only daily levels of negative affect, but daily relationship satisfaction as well.

Goal 1: Examining co-rumination in the context of interpersonal vulnerabilities, depressive symptoms, and relationship quality

The first goal of this study was to examine the cross-sectional relationships between interpersonal vulnerabilities (excessive reassurance seeking, dependency, and co-rumination) and depressive symptoms. I hypothesized that a positive relationship would exist among these constructs. Consistent with past research, excessive reassurance seeking and both aspects of dependency (i.e., neediness and connectedness) were associated with depressive symptoms (Nietzel & Harris, 1990; Starr & Davila, 2008).

Co-rumination was not found to be associated with concurrent depressive symptoms, which adds to the mixed literature that has examined this association in the past. Although research in adolescent samples has been able to find a cross-sectional relationship between co-rumination and depressive symptoms (Rose, 2002; Rose et al., 2007; Starr & Davila, 2009; Stone & Gibb, 2015), findings in young adult samples have been less consistent, which may be due in part to a measurement issue regarding which relationship is the target of co-rumination. In a study where individuals were asked to consider their engagement in co-rumination specifically with their close friends, there was a concurrent relationship between co-rumination and depressive symptoms (Calmes & Roberts, 2008), whereas other studies found null results (Barstead et al., 2013; Davidson et al., 2014). Similar mixed results emerged in studies where participants were asked to report on co-rumination with their “closest confidant,” with one study finding evidence for a relationship between co-rumination and depressive symptoms (Barstead et al., 2013), but another did not (White & Shih, 2012). These findings suggest that, at least in the young adult literature, there is no “gold standard” for measuring co-rumination. It is possible that as youth transition to young adulthood and expand their social networks, co-rumination may no longer have as strong of an association with depressive symptoms as they have access to a greater number of co-rumination partners both virtually through social media or texting or in-person. Indeed, Davila and colleagues (2012) found that individuals who engage in greater levels of co-rumination also show higher levels of social networking use, but did not find a consistent relationship between co-rumination and depressive symptoms. Thus co-rumination may only be associated with depressive symptoms under certain conditions or for certain individuals—factors that were beyond the scope of the current study.

In regard to relationship satisfaction, results generally supported the proposed hypotheses. Excessive reassurance seeking was positively related to relationship conflict and negatively related to perceived relationship support. In regard to dependency, neediness was related to relationship conflict, whereas connectedness was related to perceived relationship depth and support. Co-rumination was positively related to relationship depth and support and surprisingly, simultaneously positively related to relationship conflict, such that individuals who endorsed higher levels of co-rumination found their relationship with their closest confidant to be both a source of greater support as well as greater conflict. To some extent, these findings support the original proposed mechanism of co-rumination (Rose, 2002) that co-rumination may be problematic. It is possible that similar to the construct of dependency, co-rumination may not be a unitary construct and that the repetitive, negative focus of co-rumination creates relationship conflict (or alternatively, the relationship conflict becomes the focus of co-rumination), whereas the self-disclosure component does indeed lead to increased support and relationship depth.

In an extension of past research, co-rumination also was positively related to other measures of interpersonal vulnerability—dependency and excessive reassurance seeking—suggesting that co-rumination is involved in these processes as well. It is possible that individuals who engage in one type of behavior reflective of interpersonal vulnerability are also more likely to engage in other behaviors as well; however, the mechanism of how these processes might interact in relation to depressive symptoms remains to be clarified. Based on the findings of this study, co-rumination did not moderate the relationship between dependency and excessive reassurance seeking and depressive symptoms. That is, the relationships between these interpersonal vulnerabilities and depressive symptoms remained constant in individuals who endorsed high levels versus lower levels of co-rumination, and there were no significant gender

effects on these relationships. Future research utilizing person-centered analyses may be helpful in identifying whether there are certain individuals who are more prone to engaging in a variety of negative interpersonal behaviors and whether they are at higher risk for developing depressive symptoms.

This is also the first study to place co-rumination in the context of other interpersonal vulnerabilities and examine how their interactions may influence relationship quality. As hypothesized, co-rumination did moderate the negative effect of excessive reassurance seeking on perceived relationship support and depth, especially in men, such that at higher levels of co-rumination, there was a stronger negative effect of excessive reassurance seeking on positive relationship qualities. Research has been mixed on whether the effect of excessive reassurance seeking on relationship quality is especially negative for males compared to females, with studies in college samples finding that excessive reassurance seeking in combination with depressive symptoms or negative feedback seeking leads to interpersonal rejection in men and not women (Joiner et al., 1992; Joiner & Metalsky, 1995). Prinstein et al. (2005), on the other hand, found that excessive reassurance seeking had a negative effect on friendship quality in adolescent girls, but not boys.

Findings were mixed with regard to the moderating effect of co-rumination on the relationship between dependency and relationship quality. Contrary to predictions, co-rumination did not serve as a moderator of the associations between neediness and any of the relationship outcomes, either positive or negative. Conversely, the relationship between connectedness and perceived relationship support was moderated by co-rumination. Men who engaged in higher levels of co-rumination and who demonstrated higher trait levels of connectedness described their relationships as a greater source of support compared to men who engaged in lower levels

of co-rumination. On the other hand, women who showed lower levels of co-rumination displayed a positive relationship between connectedness and perceived relationship support. It is possible that co-rumination in men is more akin to self-disclosure rather than excessive problem talk, given that self-disclosure has been shown to be associated with relationship satisfaction (Jones, 1991). Inasmuch as these findings have not been previously explored in the literature, more studies, especially ones of a longitudinal nature that can establish a temporal pattern among these relationships, are needed to replicate these findings.

Goal 2: Examining co-rumination as a mediator between interpersonal vulnerabilities and depressive symptoms

The second goal of the study was to assess whether co-rumination mediated the relationships between interpersonal vulnerabilities and depressive symptoms using a short-term longitudinal design and to explore whether gender moderates these relationships. Similar to the findings of the cross-sectional portion of this study, co-rumination was unrelated to depressive symptoms at a one-month follow-up, which stands in contrast to past studies in adolescent samples that have shown that co-rumination predicts future depressive symptoms (Rose et al., 2007; Hankin et al., 2010). These prior positive findings, however, have been critiqued for their small effect sizes that reached statistical significance because of the large sample sizes rather than exhibit true clinical significance (Starr & Davila, 2009).

To my knowledge, this is the first study in a young adult sample to test the prospective associations of co-rumination and depressive symptoms. It is possible, however, that prospective studies on co-rumination in young adult samples suffer from the file-drawer problem, given these null findings and the mixed findings in cross-sectional studies of young adults that examine the

relationship of co-rumination and depressive symptoms. An alternative possibility is that co-rumination has an influence on prospective depressive symptoms only under certain conditions that were not captured in this study, such as through an interaction with stressful interpersonal events. Future research would benefit from explicitly testing the co-rumination x interpersonal stress interaction in young adult samples.

Finally, this goal sought to explore whether co-rumination could be conceptualized as an analogous dyadic process to the individual process of rumination and serve as a mediator between interpersonal vulnerabilities and depressive symptoms (Spacojevic & Alloy, 2001; Weinstock & Whisman, 2007). Inasmuch as co-rumination was unrelated to the outcome of depressive symptoms, the study failed to find evidence for any mediating effect of co-rumination on the relationship between interpersonal vulnerabilities and depressive symptoms in either men or women. It is possible that co-rumination itself does not increase depressive symptoms, but rather acts through another mechanism. Indeed, a recent study by Stone and Gibb (2015) with high school freshmen found that co-rumination indirectly increased depressive symptoms at a six-month follow-up by increasing rumination, which, in turn, led to increased depressive symptoms; however, the direct effect of co-rumination on depressive symptoms was also not significant. Future studies would benefit from replicating these findings in an adult sample.

Goal 3: Exploring the effect of co-rumination on daily mood and relationship satisfaction

The third goal of this study was to explore how co-rumination may impact both daily negative mood and relationship satisfaction using a diary paradigm. The majority of past studies have focused on the negative aspects of co-rumination and its relationship with internalizing symptoms, and few studies have considered the positive or reinforcing aspects of this behavior.

As hypothesized, daily co-rumination was related to daily negative mood; however, the effect of co-rumination disappeared once daily rumination about the problem was entered into the model. Although past research suggests that trait co-rumination and rumination are distinct constructs (Calmes & Roberts, 2008), they showed a strong correlation at the daily level in the present study. This suggests that once the negative, repetitive focus of rumination is accounted for, co-rumination no longer affects negative mood.

At the same time, when daily relationship satisfaction was considered as the outcome variable, parsing out the effect of daily rumination made co-rumination a stronger predictor of daily relationship satisfaction. That is, engaging in co-rumination was associated with higher ratings of relationship satisfaction. These findings support the initial conceptualization of co-rumination proposed by Rose (2002) that posits that co-rumination lies uniquely at the intersection of rumination and the relationship-building aspect of self-disclosure. Indeed, in further support of this model, individuals who engaged in higher levels of co-rumination reported that their interactions were characterized by higher levels of self-disclosure, and found the interaction to be more meaningful and satisfying.

This study also sought to build on past daily research on co-rumination (White & Shih, 2012) by testing causal models of the relationship between co-rumination, negative mood, and relationship satisfaction. Contrary to hypotheses, co-rumination did not predict next-day increases in negative mood or relationship satisfaction. The reverse hypothesis also was not supported in that negative mood and relationship satisfaction did not predict next day increases in co-rumination. It is likely that the observed small effect of co-rumination on within-day daily negative mood and daily relationship satisfaction is not strong enough to have a longer lasting impact across days.

Researchers have been particularly interested in exploring whether co-rumination can serve as another mechanism that can account for the gender difference in depressive symptoms that emerges in adolescence. Although past research in adolescents (Hankin et al., 2010; Rose, 2002; Rose et al., 2007; Stone & Gibb, 2015) and young adults (Calmes & Roberts, 2008; White & Shih, 2012; for an exception see Barstead et al., 2013) found that females tend to co-ruminate more than males, the present study did not find such a gender difference in daily levels of co-rumination, which limited my ability to test whether co-rumination mediates the relationship between gender and daily negative mood and relationship satisfaction. It is possible that these differences in findings emerged due to a measurement issue, given that the daily co-rumination questionnaire used in this study was significantly shortened compared to the original measure. Additionally, unlike the original co-rumination questionnaire utilized in the studies above, this study asked about co-rumination with a close confidant rather than specifically a best friend.

Strengths, Limitations, and Future Directions

The current study had several strengths related to each of its goals. First, this study utilized a moderately large, diverse sample to capture the relatively small effects of co-rumination on various interpersonal processes. This study also extended previous cross-sectional research to explore how changes in co-rumination affect depressive symptoms by utilizing a short-term longitudinal design. Although these effects had been previously investigated in youth samples, there have been no published studies to date that have explored this relationship in young adults. This study also used a diary design to explore not only the potential negative aspects of the effect of co-rumination on mood, but also its potential positive effects on relationship satisfaction on a daily level.

The findings of this study also must be considered within the context of its limitations. First, this study used a convenience sample drawn from an undergraduate psychology subject pool, which limits the generalizability of these findings to community or clinical samples. Given that the sample had an expected low level of depressive symptoms, future studies should investigate the effect of co-rumination in individuals experiencing significant levels of depression. Indeed, only one past study has considered co-rumination in a clinical youth sample (Waller et al., 2014) and none have occurred in a young adult sample.

In addition, relying on self-report measures has some limitations as it is subject to reporter bias. Although the daily diary portion of this study used multiple assessment points to obtain a more accurate measure of co-rumination, a self-report measure may still be biased and observational studies may provide more information on the process of co-rumination, which has started to occur (Byrd-Craven et al., 2008; Rose et al., 2014). Alternatively, an event-based sampling protocol, in which participants report on their interactions as soon as they occur could provide an even more accurate picture of these interpersonal processes (Conner, Tennen, Fleeson, & Barrett, 2009).

The cross-sectional design of the first goal limits my ability to make causal inferences about the relationships between co-rumination, other interpersonal vulnerabilities, relationship quality, and depressive symptoms. Although research on co-rumination in youth has started to utilize mulitwave, longitudinal designs (Hankin et al., 2010), no studies to date have used this methodology to understand what are likely to be transactional relationships between these different factors in young adult samples. Additionally, the current literature is discrete in nature, with studies conducted with either youth or college-aged samples, which fails to capture the developmental processes that may underlie the maintenance or decline of co-rumination as

individuals' support networks change and expand as they move from childhood to adolescence to early adulthood.

Furthermore, this study, similar to the majority of others on this topic, only obtained one perspective on what is inherently a dyadic process. Future studies would benefit from collecting both partners' experience of co-rumination and relationship satisfaction and depressive symptoms to obtain a more complete picture of how this behavior may affect close others.

Clinical Implications and Conclusions

In sum, this study explored the relationships between co-rumination, interpersonal vulnerabilities to depression, relationship quality and depressive symptoms at both a macro, trait-like level as well as at the micro, daily level. Several main findings emerged from this work. Co-rumination was positively related to other measures of interpersonal vulnerability and relationship quality, but was unrelated to depressive symptoms both concurrently and at the one-month follow-up. Co-rumination was not found to be a moderator or a mediator of the relationship between interpersonal vulnerabilities and depressive symptoms. Co-rumination did moderate the relationship between interpersonal vulnerabilities and relationship quality, with a differential pattern of results across gender. At the daily level, co-rumination was related to both negative mood and relationship satisfaction; however, no support was found for co-rumination as a mediator of gender differences in negative mood or relationship quality.

In terms of clinical implications, several existing treatment approaches such as interpersonal psychotherapy for depression (IPT; Klerman, Weissman, Rounsaville, & Chevron, 1984) and behavioral activation (BA; Lejuez, Hopko, LePage, Hopko, & McNeil, 2001) include techniques that help individuals address both the social withdrawal and isolation often associated

with depression as well as the potential communication difficulties that these individuals experience in their close relationships. To my knowledge, however, none of the existing treatments explicitly address behaviors such as co-rumination and excessive reassurance seeking. Providing clients with psychoeducation about how these seemingly self-reinforcing behaviors may inadvertently contribute to the vicious cycle of depression may be helpful in providing them another tool to manage their depression. Indeed, helping patients understand that although social support is a key component to emotional well-being, not all social support is created equal and that specifically, engaging in repetitive, negative problem talk can be associated with negative mood or an increase in depressive symptoms.

Although a body of research has developed around the construct of co-rumination in both youth and young adults, mixed findings suggest that it is now important to clarify under what specific conditions and in which relationships is co-rumination most detrimental to mental health.

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