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# Gender Differences in Co-rumination, Co-worry, and Internalizing Symptoms in Late Adolescence

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Gender Differences in Co-rumination, Co-worry, and Internalizing  
Symptoms in Late Adolescence

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Gender Differences in Co-rumination, Co-worry, and Internalizing  
Symptoms in Late Adolescence

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TABLE OF CONTENTS

Approval Page	.....	ii
Table of Contents	.....	iii
Abstract	.....	iv
Introduction	.....	1
Methods	.....	20
Results	.....	27
Discussion	.....	35
References	.....	47
Appendix	.....	66

## GENDER DIFFERENCES IN CO-RUMINATION AND CO-WORRY

### Abstract

Beginning in adolescence and continuing into adulthood, internalizing disorders have higher rates of prevalence in females. Cognitive and interpersonal theorists have described etiological factors in the development these symptoms, which may contribute to the symptom disparity across gender. Drawing on aspects of both models, repetitive conversations found in close female friendships have been proposed as a potential contributing factor to this gender disparity in internalizing arising in adolescence. Co-rumination, although associated with both depression and anxiety, does not fully consider anxiety-specific aspects of dyadic conversations, which may be important to understanding the differential developmental trajectory of the disorder. Co-worry, defined as repetitive, dyadic conversations about threat perception, inability to control worry, inability to cope in future scenarios, and anticipation of future negative events, was developed to assess for anxious patterns of communication in relationships. Using a late adolescence sample of college students, the present study sought to expand upon prior findings by examining the role of gender on the relationships between interpersonal conversations and internalizing disorders. Results suggested that both co-rumination and co-worry were associated with internalizing; however, differential patterns emerged by gender. Peer co-rumination was more frequently endorsed by females and associated with support and depth of peer relationships, whereas peer co-worry was more frequently endorsed by males and was not associated with higher quality friendships. For males, higher levels of co-worrying were associated with lower levels of depression and anxiety; the opposite pattern was found for female adolescents. These findings suggest that overlooked aspects of male friendships may be beneficial. Additionally, this study

## GENDER DIFFERENCES IN CO-RUMINATION AND CO-WORRY

substantiates and expands upon findings that conversational tendencies within female friendships may pose inherent risk factors on mental health.

## Introduction

Internalizing disorders are highly prevalent and comorbid during childhood and exhibit increasing prevalence from adolescence into adulthood (Lewinsohn, Clarke, Seeley, & Rohde, 1994; Silberg et al., 1999; van Oort, Greaves-Lord, Verhulst, Ormel, & Huizink, 2009). Despite similar rates of diagnoses across genders in childhood, gender differences in prevalence rates emerge in adolescence, with girls demonstrating greater levels of depressive symptoms (Silberg et al., 1999) and anxiety symptoms (Costello, Egger, Copeland, Erkanli, & Angold, 2011). Cognitive theories of internalizing symptoms account for the high comorbidity of internalizing disorders, whereas interpersonal etiologic factors are better supported in the depression literature and may account for gender differences in both disorders. Parental and peer relationships have been highlighted as salient interpersonal risk factors contributing to the development and maintenance of internalizing disorders, and have increasingly gained empirical support (Barrett, Fox, & Farrell, 2005; Dishion & Tipsord, 2011; Rose, 2002). Parental-specific predictors, including parental psychological symptoms and parenting style, contribute significantly to the development of both childhood depression and anxiety (Burstein, Ginsburg, & Tein, 2010; Lieb, Isensee, Hofler, Pfister, & Wittchen, 2002; Lieb et al., 2000; Van Der Bruggen, Stams, & Bögels, 2008). Peer relationships gain increasing salience over parental relationships in adolescence (Furman & Buhrmester, 1992) thereby posing an additional, understudied risk for the rising prevalence of anxiety and depressive symptoms in adolescents.

Beginning in early childhood, peer relationship patterns begin to exhibit gender variations. For instance, whereas males and females tend to report similarly regarding

their parental relationships, females report engaging in higher quality peer relationships and seek out peer social support more frequently than males throughout childhood and adolescence (Rose & Rudolph, 2006). Although social support is generally predictive of better outcomes in children, adolescents, and adults, a substantial literature base suggests that adolescent girls report better peer relationships than boys yet more depression and anxiety. Studies suggest that some aspects of close friendships may ultimately present mental health risks contributing to the higher prevalence of depression in emerging adolescent females with “better” peer relationships (Alloy et al., 2005; Goodman & Gotlib, 1999; Hankin & Abramson, 2001; Hyde, Mezulis, & Abramson, 2008; Lewinsohn, Gotlib, & Seeley, 1995). A closer examination of these interpersonal relationships suggests that dyadic interchanges, particularly those possessing a depressive or ruminative quality to them, provide links between the protective factors in interpersonal relationships and risk factors associated with greater internalizing distress for females (Calmes & Roberts, 2008; Rose, 2002; Rose, Carlson, & Waller, 2007). With the suggestion that high quality female friendships may contribute to negative outcomes, the identification and analysis of interpersonal risk factors in adolescence may be instrumental in diminishing the higher prevalence of depression and anxiety in females. Gender differences in maladaptive dyadic conversations and internalizing symptoms pose a potentially crucial role in the prediction, prevention, and treatment of depression and anxiety in late adolescence. Expanding upon prior findings, the present study closely examines the role of gender on the association between anxiety and repetitive conversations about worries and internalizing distress in a college sample.



**Internalizing Disorders in Adolescence**

Over the course of adolescence, internalizing disorders reach prevalence rates of 8% for depression (Horowitz & Garber, 2006) and 15-20% for anxiety (Beesdo, Knappe, & Pine, 2009). Wide ranges in reported prevalence likely result from differences in the measurement of diagnostic criteria, informant of psychological symptoms, and length of assessment across studies (Axelson & Birmaher, 2001; Beesdo et al., 2009), yet what remains readily apparent is that these disorders present a significant, increasing mental health concern in adolescence (Costello, Egger, & Angold, 2005). A longitudinal study of childhood psychological illness found that 10% of all participants were diagnosed with either anxiety or depression at some point by the age of 16 years old (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Comorbidity across the disorders is also high. Up to 20% of children with an anxiety disorder meet criteria for a co-morbid depression diagnosis (Costello, Egger, & Angold, 2004), and between 25-50% of depressed children have co-morbid anxiety disorders (Axelson & Birmaher, 2001). Comorbidity of psychological disorders in adolescence heightens the risk of psychological symptoms into adulthood and highlights the need for ongoing research in contributing and maintaining factors.

Gender differences are routinely observed in internalizing symptoms. Beginning at the age of 12, depression becomes more frequently diagnosed in girls than in boys (Nolen-Hoeksema & Girgus, 1994; Silberg et al., 1999). Although findings are mixed on whether girls are more frequently diagnosed with anxiety than boys (Costello et al., 2011; van Oort et al., 2009), depression likely moderates the relationship between gender and anxiety prevalence in adolescents by increasing the likelihood of diagnosis (van Oort et

al., 2009). Both the elevated prevalence of depression in girls and high comorbidity of symptoms of anxiety and depression (Costello et al., 2005) suggest that female gender may pose a risk for internalization of psychological distress in adolescence. Cognitive and relational factors of adolescent females may contribute to this symptom disparity between the genders.

### **Negative Cognitions in Adolescence**

For depression, both cognitive and interpersonal models are widely accepted in the etiology of symptoms; however, cognitive models, not interpersonal models, have largely been the focus of childhood anxiety research (Ingram & Kendall, 1987; Kendall & Chansky, 1991). Across the disorders, common cognitive mechanisms likely underlie the high comorbidity (Brady & Kendall, 1992). Negativity is considered a fundamental, cognitive characteristic of both depression and anxiety. In 1991, Clark and Watson proposed a tripartite model as a theoretical framework for conceptualizing the co-morbid and distinct factors of depression and anxiety. In the model, the latent variable of negative affect underscored similarities between the disorders. Two additional latent factors were associated with the differing symptom manifestations of depression and anxiety. High arousal was found in anxiety, whereas low positive affect was associated with depression. (Clark & Watson, 1991). According to this model, high arousal and low positive affect should aid differential diagnosis when these disorders occur in isolation. Whereas, the co-morbidity between these disorders may be associated with negative affect. Cognitive models of depression (Beck, 2008) and anxiety (Alfano, Beidel, & Turner, 2002; Weems & Watts, 2005) posit that this negative affectivity is related to

cognitive distortions. Therefore, distorted thinking patterns likely contribute directly to the development, maintenance, and/or comorbidity of the disorders.

Despite the overlapping variable of negative affectivity, cognitions associated with negative affect have been separately studied in the depression and anxiety literatures (termed rumination and worry, respectively). These repetitive cognitions both focus on negative affect and problematic experiences. Rumination focuses on past experiences and negative affect, whereas worry focuses on future fears and the ability to cope with those fears (Hong, 2007; Watkins, 2008). Although rumination and worry are hypothesized by many as distinct cognitive tendencies of depression and anxiety, they correlate with each other and with internalizing symptoms of each disorder, suggesting an influence on the comorbidity of symptoms. Rumination is consistently associated with both depression (Abela, Brozina, & Haigh, 2002; Broderick, 2004; Burwell & Shirk, 2007; Hankin, 2008; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007) and anxiety (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Calmes & Roberts, 2007; Jose, Wilkins, & Spindel, 2012; McLaughlin & Nolen-Hoeksema, 2011; 2012; Rieffe, Oosterveld, Miers, Meerum Terwogt, & Ly, 2008). According to a lab study, engagement in either worry or rumination increases negative affect, state anxiety, and depression, but neither process differentially predicts symptoms of either disorder (McLaughlin, Borkovec, & Sibrava, 2007). Both worry and rumination contribute to differential aspects of anxiety and depression likely through repetitively and negative affectivity; however, few studies control for either process in examining their relationships with specific internalizing symptoms (Hong, 2007; Rood, Roelofs, Bögels, & Alloy, 2009; Segerstrom, Tsao, Alden,

& Craske, 2000). The majority of these studies suggest that rumination and worry contribute towards independent aspects of both depression and anxiety. Studies controlling for each process and internalizing symptom type find distinct patterns of prediction (Hong, 2007; Muris, Roelofs, Meesters, & Boomsma, 2004; Watkins, 2004). A study of developmental psychopathology suggests that rumination mediates the association between depression and anxiety in adolescence, but only partially mediates this relationship in adulthood (McLaughlin & Nolen-Hoeksema, 2011). The relationship between rumination and anxiety disorders grows weaker in adulthood suggesting that distinctive cognitive patterns may emerge across development- making them especially influential on anxiety in adolescence (Hong, 2007; McLaughlin & Nolen-Hoeksema, 2011). Taken together, rumination and worry may become increasingly predictive of distinctive depressive and anxious trajectories into adulthood; however, more research is needed to determine the developmental patterns of repetitive thinking.

Gender differences also emerge in the literature on rumination and its relationship to depression. Not unexpectedly, girls ruminate more than boys, yet rumination is also associated with depressive symptoms for both boys and girls (Hart & Thompson, 1996). Therefore, although girls are more likely to ruminative (and more likely to be diagnosed with depression), rumination remains a risk factor for boys as well. Intriguingly, a study looking at a femininity scale- rather than gender- found that depressive rumination is associated with adolescents who identify as more feminine (Cox, Mezulis, & Hyde, 2010). This finding suggests a gendered socialization of internalizing, perhaps implicating an interpersonal influence on cognition. Overall, negative repetitive thinking, operationalized as worry and rumination, is consistently associated with internalizing

symptoms. Better understanding of the significant unique contributions of each cognitive phenomena and their associated patterns with gender will inform the processes by which disorders develop.

### **Interpersonal Factors and Anxiety**

Prior research suggests that parental factors contribute significantly to the development of anxiety (Bögels & Brechman-Toussaint, 2006; Drake & Ginsburg, 2012; Francis & Noël, 2010; Pahl, Barrett, & Gullo, 2012). A review of parent-child transactional patterns of anxiety suggests three primary mechanisms of transmission: parental modeling, information transfer, and reinforcement of anxious or avoidant behaviors (Fisak & Grills-Tauechel, 2007). Despite the growing literature on the parental influences on childhood development of anxiety, published findings have not identified conclusive patterns of directionality of symptoms in these dyads (Barrett et al., 2005; Caster, Inderbitzen, & Hope, 1999; Ginsburg, Grover, Cord, & Ialongo, 2006; Gruner, Muris, & Merckelbach, 1999; Muris & Merckelbach, 1998; Muris, Meesters, Merckelbach, & Hulsenbeck, 2000; Muris, Steerneman, Merckelbach, & Meesters, 1996; Turner, Beidel, Roberson-Nay, & Tervo, 2003) and findings are inconsistent across studies (Ginsburg et al., 2006; Turner et al., 2003). Interestingly, an association between parental behaviors and childhood anxiety was more frequently found when children reported on their parents' behaviors (Fisak & Grills-Tauechel, 2007). The limited observational and multi-informant data and inconsistent measurement use likely underlie these discrepancies (Fisak & Grills-Tauechel, 2007). Few studies have directly analyzed parent-child interactions pertaining to anxiety disorders. A pioneering observational study of parental-child conversations demonstrated that familial problem-solving discussions

magnify an anxious child's avoidant tendencies (Barrett, Rapee, Dadds, & Ryan, 1996). Observational data have suggested that parents of highly anxious children are less supportive, positive, rewarding, and autonomy granting as well as more controlling, intrusive, and negative (Barrett et al., 2005; Dadds, Barrett, Rapee, & Ryan, 1996; Hudson & Rapee, 2001; Siqueland, Kendall, & Steinberg, 1996). Observational studies assessing the impact of parent-child interactions on the development of childhood anxiety across time were not found. Thusly, empirical design concerns have hindered the ability to draw definitive, reliable conclusions on the intergenerational prevalence and trajectory of anxiety and additional studies are needed to examine this relationship.

### **Interpersonal Factors and Depression**

Many studies have assessed the parental and family factors associated with childhood depression. Researchers have long theorized that familial patterns contribute significantly to depression in children (K. A. Dodge, 1990; Goodman & Gotlib, 1999) and recent meta-analyses suggest that parenting and maternal depression contribute to the variance in childhood depression (Goodman et al., 2011; Mcleod, Weisz, & Wood, 2007). In families with a depressed family member, certain parental tendencies, specifically parental rejection, negativity, inattention, hostility, high criticism, and lack of affection and involvement, are characteristic of familial interactions (Blatt & Homann, 1992; Connell & Goodman, 2002; Cummings, Keller, & Davies, 2005; Downing & Coyne, 1990; Gordon et al., 1989; Jacob & Johnson, 1997; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). These families also report more stress (Hammen, Brennan, & Shih, 2004; Messer & Gross, 1995). Children of depressed parents report more negative self-concept and attributional style (Downing & Coyne, 1990). Consistent with the anxiety

literature, children were more accurate self-reporters of depression symptoms (Fleming & Offord, 1990). The depression literature, however, has more thoroughly examined parent-child interactions through observational study; depressed mothers appear to be less rewarding and more critical, negative, aversive, and disengaged than control mothers (Dadds, Sanders, Morrison, & Rebgetz, 1992; Gordon et al.; Messer & Gross, 1995). Subsequently, researchers have posited that any affectionate or responsive interactions between depressed parents and children would likely aid the child's development (Leckman-Westin, Cohen, & Stueve, 2009). Overall, data suggests that more negative interpersonal environments are consistently associated with heightened depression and intergenerational environmental processes are likely bidirectional in nature (Chiariello & Orvaschel, 1995).

**Peer interactions.** As mentioned, the limited research base on peer relationships affecting the development of internalizing symptoms in adolescence represents an area needing further investigation (Bukowski, Adams, & Santo, 2006). Emerging research has begun to span the literatures linking cognitive and interpersonal factors in depression with the increasing salience of peer relationships in adolescence (Parker & Asher, 1993; Prinstein, Borelli, Cheah, Simon, & Aikins, 2005). Close friendships are viewed as protective factors in the developmental peer literature, yet interpersonal factors and interactions are known to correlate with depressive symptoms. It was suggested that peer dyads engaging in conversations which mimicked repetitive, internalized thought patterns might explain the potential risks posed by close friendships (Rose, 2002). Close friendships engaging in this co-rumination may be associated with negative emotional outcomes and maladaptive internalizing cognitions for some adolescents. Rumination and

self-disclosure, sharing one's own experience with someone else, were modeled as the two major components underlying this style of dyadic interchange. Although rumination is frequently associated with worse outcomes, self-disclosure is typically associated with positive indicators of relationships, including positive friendship quality and increased subjective feelings of emotional closeness (Parker & Asher, 1993; Rose, 2002). An exception may be in the case of self-disclosure of negative information which may lead to worse outcomes (Mechanic, 1983).

The association of self-reported co-rumination with rumination and self-disclosure scales suggest that some dyadic processes in close relationships may have negative consequences. Indeed, adolescents and young adults who reported engaging in more peer co-rumination were more anxious and more depressed (Calmes & Roberts, 2008; Rose, 2002). And notably, females reported greater co-rumination. This developing area of research into peer correlates of youth emotional distress merges research on interpersonal and cognitive factors of internalizing with gender differences in peer friendships. Perhaps, both parent and peer conversations contribute to the development of internalizing symptoms across adolescence. Several studies have investigated the effect of parent-child co-rumination on emotional well-being. One study found co-rumination to be associated with positive relationship quality in mother-daughter relationships; however, it was also related to enmeshment in the dyad and adolescent anxiety and depression (Waller & Rose, 2010). Again, the construct is indicative of both adaptive and risky aspects of relationships and adolescent girls were more likely to co-ruminate with their mothers than adolescent boys (Waller & Rose, 2010). A follow-up study found that youth internalizing symptoms correlated with co-ruminating about the mother's problems



(Waller & Rose, 2013). Peer co-rumination mediated the relationship between mother-child co-rumination and anxiety/depression symptoms. Although the directionality is unknown, these authors suggested that adolescents' co-ruminating with friends puts them at more psychological risk than co-ruminating with mothers (Waller & Rose, 2013). In an observational study of parent-child interactions, maternal depression was correlated with more co-rumination and worse observed problem-solving (Grimbos, Granic, & Pepler, 2013); however, co-rumination did not mediate the relationship between maternal depression and child internalizing symptoms. This sample had several pertinent limitations: including only young children with high aggression, including predominantly boys, and relying exclusively on maternal report of children's symptoms. These studies of parent-child co-rumination pose an early link between the emerging research on the construct of co-rumination and the larger literature describing parental contributions on childhood internalizing symptoms. While this area of research has shown promise in providing greater explanation of the bidirectionality of symptoms in parent-child relationships, more research is needed to explain these mechanisms of transmission in dyads.

A handful of studies have investigated self-reported co-rumination in college-aged emerging adults (Boren, 2013; Byrd-Craven, Geary, Rose, & Ponzi, 2008; Byrd-Craven, Granger, & Auer, 2011; Calmes & Roberts, 2008; Ciesla, Dickson, Anderson, & Neal, 2011; Davila et al., 2012; Govindarajan, 2012; White & Shih, 2012). Overall, results supported an extension of the correlation between peer co-rumination with depression and anxiety to the developmental stage of late adolescence/emerging adulthood. Findings also replicated gender patterns of variations in peer co-rumination

(Calmes & Roberts, 2008). In one college-aged sample, co-rumination was extended to include parents, romantic partners, and roommates (Calmes & Roberts, 2007). Results noted that co-rumination with peers was associated with both anxiety and depression; however, co-rumination with parents was associated with anxiety only (Calmes & Roberts, 2008). This contributes to the growing literature that both peer and parent-child interactions contribute to anxiety.

Despite this support, criticism of the literature on co-rumination question the validity and reliability of the findings. Some researchers have argued that is not yet clear if co-rumination is a cause, correlate, or result of depression (Starr & Davila, 2009). In a prospective study of adolescent girls, these researchers found peer co-rumination to be a correlate with depression but not a contributing or diminishing factor in the presence of depressive symptoms over a year time period. Moreover, they failed to find a relationship between depression and co-rumination. They reasoned a small sample size may have contributed to their failure to reject the null hypothesis (Starr & Davila, 2009). Similar to Rose's initial study (2002), small effect sizes were reported for the correlations of co-rumination with internalizing symptoms; therefore, Starr and Davila argued that co-rumination may not contribute enough to depression symptoms to provide meaningful data for clinicians (2009).

**Peer Factors.** Several other aspects of friendships have also been identified as contributing factors of internalizing symptoms. Peer depression may predict friends' depression suggesting a peer contagion effect of depression symptoms (Stevens & Prinstein, 2005). Contagion may also differ along gender lines, such that girls with more social anxiety are more susceptible to depression contagion than boys; on the other hand,

boys with more popularity or lower quality friendships are susceptible to depression (Prinstein, 2007). Researchers suggest that rumination may actually be helpful for some individuals, representing an adaptive coping aspect of depression, but these aspects/instances of rumination are not well understood (Nolen-Hoeksema & Morrow, 1991; Watkins, 2008). For some individuals, co-rumination may be advantageous for resolution of depressive symptoms or may simply not pose serious threat to their mental health; however, these exchanges may put their conversation partner at-risk of increased internalizing symptoms. Since subclinical internalizing symptoms found in community adolescent populations can be precursors to clinically significant impairment (La Greca & Harrison, 2005), community samples present an ideal population for research studies of risk factors and preventative measures.

In an adolescent sample, self-reported negative best friend characteristics (e.g., conflict, criticism) were predictive of both social anxiety and depression (La Greca & Harrison, 2005). As directionality could not be determined, these findings simply supported the conclusion that adolescents with internalizing symptoms also have more negative interpersonal relationships. Positive friend qualities were associated with fewer symptoms of social anxiety but were unrelated to symptoms of depression. Based on these findings, these researchers suggested that positive qualities of friendships (e.g., support, comfort) may contribute to co-ruminative discussions leading to depression (La Greca & Harrison, 2005). This study, however, did not assess general symptoms of anxiety, so it is possible that positive friend qualities are protective against social anxiety but not broader anxiety. Generalized anxiety should be further evaluated to investigate this potential link.

**Linking Interpersonal and Cognitive Literatures**

Similar to rumination and worry, co-rumination is associated with depression as well as generalized, worry-driven anxiety; however, the relationship between co-rumination and social anxiety has been less widely examined. Understanding the relationship between anxiety and co-rumination presents a particularly difficult challenge as interpersonal aspects (like peer conversations) are known to vary for different anxiety diagnoses. Findings in the co-rumination literature have not highlighted the types of anxiety measured; therefore, conclusions may be misleading or difficult to interpret without details about the anxiety measure. In adolescence, it is especially important to measure depression and anxiety separately and consider the type of anxiety to examine (Starr & Davila, 2009). Social anxiety is associated with increased social awareness, increased vulnerability to embarrassment, decreased social support, and decreased social acceptance (Ollendick & Hirshfeld-Becker, 2002). Generally, increased social anxiety in female adolescents correlates with fewer overall friendships and less peer social support, intimacy, and companionship (La Greca & Lopez, 1998). It is unlikely that adolescents with social anxiety would engage in high levels of co-rumination, an interpersonal exchange. Social anxiety involves the avoidance of others; therefore, social anxiety may not be strongly related to peer relational investment and interactions (Starr & Davila, 2009). In a study of adolescent females, depression was positive correlated with co-rumination, but social anxiety was not correlated with co-rumination (Starr & Davila, 2009). After controlling for depression, social anxiety was negatively correlated with co-rumination (Starr & Davila, 2009). In another study, social anxiety had a positive yet indirect effect on co-rumination, which was magnified in female relationships (Jose et al.,

2012). Notably, this study theorized that anxiety led to co-rumination- the opposite directionality hypothesized in other studies.

One possible explanation for the association of co-rumination with both depression and generalized anxiety is that co-rumination may actually be related to a common underlying factor, negative affect (Clark & Watson, 1991). A second possibility is that co-rumination, as originally conceived by Rose (2002), is composed of several constructs, or factors, that are differentially associated with anxiety and depression. It is also possible that co-rumination is associated with common or specific underlying cognitive processes associated with anxiety and depression, namely distorted information processing in which negative events are interpreted as more personally relevant, more likely to impact the individual, and more likely to result in inadequate coping (Beck, Emery, & Greenberg, 1996a; Ingram & Kendall, 1987). Thus it is not clear whether focusing on problems and negative affect is specific to depression, involving a negative, internal focus or whether it additionally involves a negative future worrying about coping with future problems (Beck, Emery, & Greenberg, 1996a). It is possible that two types of problems occur, each with a different focal point, similar to the well-established constructs of rumination and worry (Hong, 2007). Rumination is related to the similar cognitive process of worry, which also involves unproductive, repetitive processing yet results in different coping behaviors than anxiety. Examining specific patterns of dyadic interchange may elucidate common and specific factors in interpersonal relationships that contribute to the development and maintenance of depression and anxiety. Whereas co-rumination is conceptually similar to rumination and both are linked to depression, there may be dyadic conversations that are specific to anxiety (e.g., Barrett et al., 1996). There

may be a common underlying factor of negative repetitiveness that accounts for the association between co-rumination and anxiety, yet provides for specificity in the development of anxiety in particular. As well, gender differences in peer relationships may shed light on differences noted in co-rumination and the prevalence of anxiety and depression.

### **Gender Differences in Interpersonal Relationships**

Gender plays an important role in friendship patterns, which serves as a context for examining potential interpersonal variations in the etiology of depression and anxiety. From an early age, friendships of girls show distinct patterns from those of boys. Prior to elementary school, boys tend to spend more time in friend groups than in friend dyads (Rose & Rudolph, 2006). Although both girls and boys have just as many dyadic friendship pairs, females spend a longer duration engaged in a single pairing. Girls also spend more time self-disclosing with peers, engaging in social conversations, and acting in prosocial ways (Buhrmester & Furman, 1987; Parker & Asher, 1993; Rose & Rudolph, 2006). These findings suggest that girls value close dyadic relationships with individual friend peers from a young age which may lead to higher quality friendships. Of note, boys' friendship networks are more likely to exclusively consist of friends; girls' networks include a mix of friends and rivals. Boys interactions are more likely to center around activities, whereas girls are more likely to spend time in social conversations (Rose & Rudolph, 2006). Evolutionarily, close relationships are theorized to serve an important role over the life course and to potentially support women differentially from men. Although the extent of the adaptive function of close same-sex friendships is not well understood, one study suggests that children with close same-sex friendships benefit

from better social skills than children with opposite-sex friendships (Kovacs, Parker, & Hoffman, 1996). These findings suggest that boys' childhood peer interactions may focus less on emotional distress therefore shielding them from sometimes problematic conversational tendencies.

As friendships gain prominence over parental relationships in adolescence, gender differences continually emerge in the characteristics of these adolescent friendships (Rose & Rudolph, 2006). Studies suggest that adolescent females tend to have both more friends and higher quality friendships than their male counterparts (Rose & Rudolph, 2006). Co-rumination may represent a dyadic quality typical of female same-sex friendships and contribute to the increased internalizing in adolescent girls (Rose, 2002; Silberg et al., 1999; Tompkins, Hockett, Abraibesh, & Witt, 2011). A recent study substantiates the claim that female friendships have the potential to contribute more to negative outcomes in close female peers. Adolescent girls are more likely to feel vicarious distress, called empathetic distress, when a close friend is actually distressed (Smith & Rose, 2011). Interestingly, adolescent girls who endorsed high levels of social perspective taking and co-ruminating were closer with their friend but also more likely to experience empathetic distress. The mounting literature on these negative influences challenges previously held views that close, high quality friendships are wholly beneficial. Adolescent females are more likely to co-ruminate, more likely to be depressed following co-ruminating, and more likely to be depressed in general (Starr & Davila, 2009). Exploring gender differences in interpersonal factors may aid researchers in understanding the development of internalizing symptoms and the discrepancy between rates of depression diagnosis. Ultimately, interpersonal risk factors present an opportunity

to identify and reduce external factors contributing to mental illness in at-risk children and adolescents.

### **The Current Study**

Overall, the literature examining cognitive and interpersonal factors suggests that a promising area of refinement examines interpersonal factors in the etiology and maintenance of internalizing disorders, namely depression and anxiety. Dyadic interchanges may serve an important role in understanding comorbidity of these disorders, peer protective factors, and increased prevalence of internalizing distress during the adolescent years. Expanding the content of dyadic interchanges to more closely follow cognitive models of anxiety and depression, that focus on interpersonal, repetitive processes, may elucidate factors of interpersonal interchanges that contribute to or maintain these patterns of internalizing distress. Differential gender patterns may also be evident due to both developmental considerations in friendships of adolescent boys and girls, as well as differential gender patterns in anxiety and depression. Extending dyadic interchanges to include not only repetitive negative cognitive factors, but examining anxiety-specific as well as depression-specific conversations more closely follows current models of each disorder, and may account for incongruent findings across the co-rumination literature.

The main purpose of the present study was to examine the effect of gender on the relationship between the transactional processes of dyadic interchange, focusing on both co-rumination and co-worry, anxiety-specific interchanges, and anxiety and depressive symptoms. Given the gender differences in rates of internalizing symptoms as well as friendship characteristics, investigation of the differential role of gender in interpersonal



relationship factors has the potential of elucidating common and specific factors that contribute to depressive and anxiety symptoms. The current study will examine the role of gender in the reporting of co-rumination and co-worry in same-sex friendship dyads during late adolescence, and concomitant differential relations to anxiety and depression as a function of gender. It is hypothesized that female adolescents will report more co-rumination and co-worry with peers as females tend to seek out close, one-on-one relationships more frequently than males. It is expected that females will also report higher anxiety, depression, worry, and friendship quality than males.

## Methods

### *Participants*

Participants were recruited based on their enrollment in a general psychology class at the University of Connecticut and inclusion in the psychology department's participant pool. There was no other inclusion or exclusion criteria; since students enrolled at the University of Connecticut, it was assumed they would have adequate reading ability to complete the surveys by virtue of the admission process. Students of any age, gender, sexual orientation, ethnicity and health status were eligible to participate. In total, 401 participants completed the study and ranged in age from 17 to 51 years old. To address questions pertaining to the psychopathology of adolescents, participants not in their late adolescence (age 17 to 19 years) were excluded from the present analyses (98 students). The final sample size for the present analyses was comprised of 303 late adolescents ( $M = 18.27$ ,  $SD = .59$ ) and was primarily female (92 males, 211 females). As expected with our constrained sample, the majority of students were early in their academic careers, specifically freshmen (73.6%), sophomores (25.7%), and juniors (0.7%). Consistent with the ethnic make-up of the university, the sample was comprised primarily of individuals identifying as European American/White (75.9%). 9.2% of the sample identified as Asian/Asian American, 4.3% as African American/Black, 3.3% as Hispanic American/Latino, 3.7% as biracial, and 3% as other race. Two participants in the present sample did not report their ethnicity. Participants were enrolled at both the main campus (71.3%) as well as two regional campuses (28.7%).

The proposed study presented no more than minimal risk to participants. Survey instruments were chosen based on prior successful use in college populations. Given that

some survey questions involved negative mood states, there was a minor risk that discomfort may be experienced as a result of answering these items. To minimize this effect, participants were instructed to skip these questions and/or stop participation at any time. No participants decided to discontinue their participation. As an additional precaution, participants were provided with a list of mental health clinics should they wish to pursue professional help.

### *Procedure*

Participants were first informed about the purpose and nature of the study, given an Information Sheet about the study, and provided with time to ask questions prior to their decision to participate. Students completed a battery of measures regarding anxiety, depression, worry, friendships, and dyad interchanges with a best friend. The surveys were answered anonymously and did not contain any identifying information. Student names were only recorded on a log sheet for the purpose of entering experimental credits for class credit; this log was destroyed after each semester.

### *Measures*

The *Beck Depression Inventory-II* (BDI-II; Beck, Steer, & Brown, 1996b) is a widely used measure of depressive symptoms in college populations. The self-report survey includes 21 items developed to collect information about an individual's self-identified symptoms of depression over the past two weeks. Each item contains four statements about one symptom of interest, and range in point value from 1 to 4 with higher scores indicating more depressive symptom identification. Higher total scores on the BDI-II suggest more symptoms of depression and/or symptoms highly associated

with the disorder. In the present sample, the BDI-II had excellent internal consistency across all items ( $\alpha = .91$ ).

The *Beck Anxiety Inventory* (BAI; Beck & Steer, 1990) is a commonly administered 21-item self-report anxiety measure. Each item describes a physiological symptom frequently associated with anxiety. Using a 4-point scale, participants indicated how much they had been distressed by each symptom over the past week. The measure demonstrates high internal consistency ( $\alpha = .92$ ) and discriminates well between anxious and nonanxious (i.e., depression and control) groups (Beck, Epstein, Brown, & Steer, 1988). In non-clinical samples, the BAI demonstrates acceptable convergent validity with measures of anxiety and good discriminate validity with measures of depression (Creamer, Foran, & Bell, 1995; Fydrich, Dowdall, & Chambless, 1992). The BAI demonstrated excellent internal consistency in the present sample ( $\alpha = .91$ ).

On both Beck inventories (i.e., BDI-II and BAI), possible scores for participants range from 0 to 63 with higher scores indicating either more self-reported depression or anxiety, respectively. In research studies and for clinical report, professionals frequently rely on a cut-off score for each scale to screen for individuals with clinically significant depression or anxiety. Previous studies assessing co-rumination in adolescents have typically used measures that collapsed items of depression and anxiety onto one internalizing scale. Although depression and anxiety are related disorders and often co-occur, the core disorder clusters represent distinctly different symptoms, etiology, and prevalence across the lifespan. Furthermore, the differences between depression and anxiety likely play an important role in the effect of conversations on their development. When collapsed across scales in this sample, the internal consistency for the collapsed

scales was excellent ( $\alpha = .94$ ). The findings of the main hypotheses did not differ when this collapsed, internalizing “scale” was used.

The *Penn-State Worry Questionnaire* (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) is a 16-item self-report measure used to assess trait worry levels in adults. Items in the questionnaire consist of statements about worry (e.g., “Once I start worrying, I can’t stop”), each with a 5-point answer scale ranging from 1 (*not at all typical of me*) to 5 (*very typical of me*). Several items are reverse scored. Overall scores on the PSWQ ranges from 16 to 80, with higher scores indicating greater worry levels. In undergraduate student and community samples, the PSWQ has demonstrated good psychometric properties with studies reporting high internal consistency, convergent validity, and criterion validity (T. A. Brown, Antony, & Barlow, 1992). The PSWQ showed acceptable internal consistency in the present sample ( $\alpha = .78$ ).

For the three measures concerning interpersonal relationships and interactions, participants were instructed to answer questions regarding their closest same-sex friend. The quality of this relationship was evaluated with two subscales from the *Quality of Relationships Inventory, Short Form* (Calmes & Roberts, 2008; QRI-S; Pierce, Sarason, & Sarason, 1991), a 9-item scale with three subscales representing support, depth, and conflict in a friendship. These constructs are defined as (1) the perceived availability of support associated with the relationship, (2) the positivity, stability, and importance of the relationship and (3) the conflict and ambivalence in the relationship, respectively. A participant is instructed to rate how representative each statement is about their relationship from 1 (*not at all*) to 4 (*a lot*). The QRI, Short Scale (QRI-S) is based on the QRI (Calmes & Roberts, 2008; Pierce et al., 1991), a 39-item measure developed to

assess three broad dimensions of satisfaction associated with a specific relationship.

When the QRI was used to measure internal consistency across a sample of adolescents and their parents, the average internal consistencies were 0.80 for the support scale, 0.89 for the conflict scale, and 0.69 for the depth scale (Ptacek, Pierce, Eberhardt, & Dodge, 1999). The QRI also demonstrates an ability to discriminate the relationship specific support from more general social support (Pierce et al., 1991).

The QRI-S was originally designed using the three items with the highest factor loading on each of the three subscales (Calmes & Roberts, 2008) and demonstrated moderate to high correlates across four types of relationships ( $r = .56-.85$ ). Prior research found that the internal consistency for the support ( $\alpha = .69$ ) and depth ( $\alpha = .90$ ) scales was questionable and excellent, respectively. Internal consistency for the abbreviated conflict scale was low, and hence was not utilized in the present study. The three items selected to represent the support dimension of the QRI include, “To what extent can you turn to your friend for advice about problems,” “To what extent can you really count on your friend to distract you from your worries when you feel under stress,” and “To what extent can you count on your friend to listen to you when you are very angry at someone else.” The three items from the depth dimension of the QRI include, “How significant is this relationship in your life,” “How close will your relationship be with this person in 10 years,” and “How much do you depend on your friend.” Internal consistency of the support ( $\alpha = .77$ ) and depth ( $\alpha = .75$ ) subscales was adequate in the present sample. There was a moderate correlation between the depth and support subscales ( $r = .67$ ). Overall, the six-item QRI combining the dual relationship qualities (i.e., depth and

support) had a good internal consistency of  $\alpha = .84$ ; therefore, the analyses were conducted using the total score on all six items.

The *Co-rumination Questionnaire* (CRQ; Rose, 2002) is a 27-item survey designed to measure the degree to which dyadic discussions involve rehashing past problems, speculating about possible future difficulties, and focusing on negative feelings. Participants rate how well each statement describes their general interactions with a specific same-sex friend. Each item is answered using a 5-point Likert scale ranging from 1 = “*Not at all true*” to 5 = “*Really true*.” Sample items include “If one of us has a problem, we will spend our time together talking about it, no matter what else we could do instead,” and “When I have a problem, my friend always tries to get me to tell every detail about what happened.” The 27-item measure has repeatedly demonstrated excellent internal consistency (Rose, 2002;  $\alpha = .96-.97$ ; Rose et al., 2007; Schwartz-Mette & Rose, 2012). The present study also found the scale to have similarly high internal consistency ( $\alpha = .96$ ).

The *Co-worry Questionnaire* (CoWQ) is a 12-item questionnaire constructed to measure the discussion of worries between pairs in relationships (Herzig-Anderson, Dombrowski, & Treadwell, n.d.). To examine the specificity of problem-focused conversations for anxiety, as compared to ruminative discussion associated with depression, items pertained to theoretical content associated with worry, namely repetitive fearful statements, threat perception, and perceived lack of coping ability (Hong, 2007). Participants are instructed to identify a same-sex friend, and to respond to 12 questions regarding how “we talk about our worries.” Participants used a 5-point Likert scale, ranging from 1 to 5, indicating how best the items describe their dyadic

conversations. Items reflecting inability to control worry include, “Once I start discussing my worries with my friend, we find it hard to stop,” threat perception by “When I am worried about a situation, my friend tells me about a similar situation for them that went very badly,” anticipating the likelihood of future negative stressful events by “When we discuss bad things that could happen, we talk as if the bad thing will definitely happen” and inadequate coping perceptions by “After I discuss my worries with my friends, my solution to the problem seems like it won’t work.” In the broader sample with the original 401 participants, the CoWQ demonstrated strong internal reliability with a Cronbach’s alpha of .89, and convergent validity by significant correlation with worry and anxiety ( $p$ ’s < .001). Factor analysis of the co-worry measure resulted in a one factor solution with all eigenvalues > .45. To examine this scale’s relationship with co-rumination, exploratory factor analysis resulted in two distinct factors. Items from the CoWQ fell into two groupings: threat overestimation/underestimation of coping items and repetitive problem-focus items (more similar to co-rumination items). These analyses supported divergent validity of co-worry from co-rumination. In the present study’s adolescent sample, the internal consistency of the scale’s items was good ( $\alpha = .88$ ).

#### *Data Analytic Plan*

The distributions of participants’ scores for the measures were evaluated for skewness and kurtosis. Two outliers (with values more than 3 standard deviations from the mean) on the BDI-II and BAI were identified and eliminated from analyses. All variables demonstrate an approximately normal distribution with skewness at least nearly between -1 and 1 and reflect similar distributions to a published college sample (Calmes & Roberts, 2008). Pearson product moment correlations were conducted to assess the



relationships between anxiety, depression, worry, co-rumination, co-worry, and relationship quality. To test the hypotheses of the current study, a series of regression analyses were conducted to test the main and interactive effects of co-rumination and co-worry on symptoms of anxiety and depression in late adolescence (Baron & Kenny, 1986). For regression analyses, the predictors (i.e., co-rumination, co-worry) were centered to reduce multi-collinearity (Aiken & West, 1991). Multiple linear regression analyses were conducted to examine the effects of co-rumination or co-worry on internalizing symptoms in friendships. Gender was identified as a possible moderating variable for these relationships. When significant interaction terms were identified in these analyses, the PROCESS approach to simple slope analysis was utilized to assess the significance of the slopes for each gender (Hayes, 2013).

#### *Power Section*

Power analyses were conducted prior to the commencement of the project using an statistical power analysis program (Faul, Erdfelder, Buchner, & Lang, 2009). With an alpha of 0.05, the present study was powered to run exploratory factor analyses for 400 participants. Given the adolescent sample of 303 participants, the current study was sufficiently powered (.9983) to detect small effect sizes ( $d = .1$ ) with 3 predictors in multiple linear regression analyses (J. Cohen, 2003).

### **Results**

#### *Demographics*

Mean measure total and item scores were calculated for all variables (Table 1). As expected in a community sample, participants reported subclinical to mild levels of depression ( $M = 10.35$ ,  $SD = 8.45$ ) and anxiety ( $M = 10.60$ ,  $SD = 9.29$ ). In a published

study with a sample of non-clinical adolescents, the rate of depression was measured in the mildly depressed range ( $M = 12.50$ ,  $SD = 10.50$ ); the present study's sample fell below these published scores on the BDI-II (Osman, Barrios, Gutierrez, Williams, & Bailey, 2007) but are similar to a other studies of the college population (Calmes & Roberts, 2008). Using published cut-off scores from the BDI-II manual (Beck, Steer, & Brown, 1996b), 27.2% of the sample had scores in the clinically depressed range (cut off score of at least 14; Osman et al., 2007). Of the participants within the clinical range of depression, 39 reported mild symptoms of depression (13.1% of the sample), 30 reported moderate symptoms (10.1%), and 12 reported severe symptoms (4.0%) over the past two weeks.

Differences were noted between the levels of reported ruminative discussions. Overall, this sample endorsed more co-rumination ( $M = 2.62$ ,  $SD = .83$ ) than co-worry ( $M = 1.93$ ,  $SD = .72$ ) on average ( $t(282) = 16.19$ ,  $p < .001$ ). Given the gender analyses of these variables (to follow), this finding may be influenced by disproportionately fewer males enrolled in the study (see Table 1).

#### *Relationship between co-worry, internalizing symptoms, and interpersonal processes*

To examine a primary hypothesis that co-worry is more strongly associated with anxiety than depression, pearson correlation coefficients were calculated (Table 2). As expected, symptoms of anxiety were strongly associated with symptoms of depression ( $r = .57$ ,  $p < .001$ ). Worries were strongly positively correlated with both anxiety ( $r = .46$ ,  $p < .001$ ) and depression symptoms ( $r = .44$ ,  $p < .001$ ). This appears to be the first study to investigate and establish a positive association between the internal cognitive process of worrying and co-ruminating with peers ( $r = .24$ ,  $p < .001$ ). Consistent with their

theoretical underpinnings, the association between worrying and co-worrying was established ( $r = .20, p = .001$ ).

Similar to prior research on co-rumination, the measure was correlated with both emotional distress (depression [ $r = .12, p = .04$ ] and anxiety [ $r = .17, p < .01$ ]), as well as satisfaction in relationships ( $r = .29, p < .001$ ). Both support and depth dimensions of the relationship satisfaction with a same-sex peer were associated with co-rumination within the relationship ( $r = .30, p < .001$  and  $r = .23, p < .001$ , respectively).

Co-rumination and co-worry were strongly related ( $r = .57, p < .001$ ) and co-worry was similarly associated with higher depression ( $r = .26, p < .001$ ) and anxiety ( $r = .19, p < .01$ ); however, the two constructs were differentially associated with the other variables indicating the measures were capturing distinct constructs. Co-worry was not associated with total peer relationship quality ( $r = -.04, p > .10$ ), yet co-rumination was positively associated with the overall quality of relationship ( $r = .29, p < .001$ ). Higher symptoms of depression and anxiety were associated with lower quality of peer relationship ( $r = -.22, p < .001$  and  $r = -.18, p < .01$ , respectively). Although worrying was not associated with overall friendship quality in this sample, it was negatively associated with perceived support within the friendship ( $r = -.15, p < .01$ ). Therefore, participants who worried more were less likely to feel supported by their friend but did not note any less depth in the relationship ( $p > .10$ ). Rumination, however, was positively associated with both co-rumination ( $r = .24, p < .001$ ) and co-worry ( $r = .20, p < .01$ ).

Correlations were conducted by gender to more fully evaluate the relationships between variables. For females, a few changes in the correlational patterns were noted (Table 9). The small association between depression and co-rumination across

participants no longer met significance. Quality of peer relationship was inversely correlated with worry and a negative correlation between support in relationships and co-worry was trending towards significance. More differences were noted in the correlational data when males were separated (Table 8). Males were less likely to associate heightened internalizing (depression or anxiety) with interpersonal conversations (co-rumination or co-worry). Additionally, depression was not correlated with quality of relationship and relational support was no longer negatively associated with worry for males. These findings hint at the idea that peer relational factors have less impact on emotional distress for males.

#### *Gender Differences in Variables*

To examine the secondary hypotheses, that females would report higher rates of co-rumination and co-worry and that this interpersonal style would be associated with anxiety, t-tests were conducted. Gender differences were noted across all six major variables of interest: depression; anxiety; worry; co-rumination; co-worry; quality of relationship (Table 3). Levene's test was used to assess for the equality of variability in these variables. Except for anxiety, the variability of the measures did not differ by gender. An adjusted t-test was utilized for evaluating a potential mean difference in anxiety for males and females. Females reported more depression ( $t(295) = -2.01, p < .05$ ), anxiety ( $t(246.95) = -4.94, p < .001$ ), worry ( $t(299) = -7.25, p < .001$ ), and co-rumination ( $t(285) = -2.25, p = .03$ ). Females endorsed higher quality of relationship satisfaction ( $t(298) = -2.26, p = .01$ ), including more support ( $t(298) = -1.97, p = .05$ ) and more depth ( $t(299) = -2.89, p < .01$ ) in a close peer relationship. Contrary to predictions, males reported more co-worry ( $t(295) = 2.65, p = .01$ ).

*Gender Differences on Items of Co-worry*

To further investigate gender differences on the co-worry scale, t-tests were conducted on an item-by-item analysis on mean scores by gender. Half of the items (6 of a possible 12 items) statistically differed by gender whereby males scored higher on items 2, 3, 4, 5, 11, and 12, all  $p < .05$  (see Table 6). To facilitate the analysis of male interactional tendencies, the items which differed by gender have been included in the appendix (see Table 7). To avoid over-reporting findings resulting from chance significance, a Bonferroni correction was calculated for these item analyses. Only two items of the six (5 and 11) remained significantly higher for males using the correction ( $p < .004$ ). Overall, the six items that differed fell across the four content areas of co-worry, namely difficulty controlling worry, threatening interpretation of ambiguous situations, feelings of inadequate problem-solving abilities, and future certainty of negative outcome. For the co-rumination scale, an item-by-item analysis of the co-rumination scale also revealed gender differences on 12 of 27 items; however, in contrast to the co-worry scale, female participants reported higher co-rumination on all 12 items ( $p < .05$ ). Using the Bonferroni correction on these analyses, only three items were rated higher by females ( $p < .002$ ). All three items pertained to the centrality of repetitively discussing problems to the relationship, such as: “We spend most of our time together talking about problems that my friend or I have.”

*Moderation Analyses*

To explore the gender variation in co-worry, the present study evaluated the role of gender in the presentation of depression and anxiety symptoms associated with cognitive-interpersonal factors of co-rumination and co-worry. To assess this effect,

regression analyses were conducted (Baron & Kenny, 1986). Both co-rumination and co-worry were correlated with more anxiety and depression (as hypothesized), yet males reported more co-worry than females. As prior research on co-rumination suggested the opposite gender finding and males in our sample continued to have fewer internalizing symptoms than females, further analyses were conducted to investigate these relationships. Prior to moderation analyses, the continuous predictors of co-rumination and co-worry were centered to reduce potential effects of multicollinearity (Aiken & West, 1991). To aid interpretation of the widely-used Beck Inventories, the dependent variables of depression and anxiety were not centered.

In each regression analysis conducted, two steps were used to investigate moderation within the model. Gender was coded as a dichotomous, proxy moderator. Males were coded as 0; females were coded as 1. Both gender and the interpersonal processes (i.e., either co-rumination or co-worry) were entered at the first step of the model. In the second step, the interaction product was added. Main effects were reported for analyses where the interaction term was not significant. When the interaction term was significant, simple slope estimates were calculated for each gender. To visually depict statistical interactions between predictors, the mean estimated values for low, moderate and high co-rumination/co-worry were estimated for both genders. Moderate values were based on mean levels of co-ruminating/co-worrying whereas low and high values were based on co-ruminating/co-worry one standard deviation below and above the mean, respectively. Symptoms of anxiety and depression were investigated separately in the above analyses; however, prior research on the negative effects of co-rumination have primarily focused on overall internalizing symptoms. To investigate the effect of

collapsing these symptoms into one scale on a study's findings, participant's reported symptoms of anxiety and depression were consolidated into one variable and analyses were rerun to observe any differences in outcome. No differences were found

#### *Gender and Co-rumination In Predicting Depression*

The interaction of the predictor co-rumination and the moderator gender on symptoms of depression was evaluated (Table 4). Step 1 demonstrated that the two predictor variables accounted for 2.5% of the variance in depression symptoms in the sample ( $R^2 = .025$ ,  $F = 3.505$ ,  $p = .031$ ). The model testing an interaction effect between gender and co-rumination was not significantly different from the step 1 model ( $R^2\Delta = .001$ ,  $F = .302$ ,  $p = .583$ ) meaning that gender was not a significant interaction term in this model ( $b = .027$ ,  $t = .550$ ,  $p = .583$ ).

#### *Gender and Co-rumination In Predicting Anxiety*

The moderation models tested for anxiety symptoms were similar to the depression models. First, the effect of gender and co-rumination on anxiety was assessed (Table 4). Both gender and co-rumination were predictors of anxiety symptoms ( $b = 4.350$ ,  $t = 3.683$ ,  $p < .001$ ;  $b = .058$ ,  $t = 2.414$ ,  $p = .016$ , respectively), when controlling for the other variable. This model described 7.7% of the variance in anxiety symptoms ( $R^2 = .077$ ,  $F = 11.238$ ,  $p < .001$ ). An added interaction term between gender and co-rumination was not significant ( $b = .084$ ,  $t = 1.578$ ,  $p = .116$ ) and did not significantly improve the prediction of anxiety symptoms ( $R^2\Delta = .008$ ,  $F = 2.491$ ,  $p = .116$ ). Overall, females were more likely to have anxiety symptoms and increased co-rumination contributed to anxiety symptoms across genders.

*Gender Moderations In the Relationship between Co-worry and Depression*

Moderation analyses were conducted to assess a potential gender moderating effect on the relationship between co-worry and depression (Table 5). Step 1 of the model suggested that both gender ( $b = 2.697, t = 2.691, p = .008$ ) and co-worry ( $b = .276, t = 5.092, p < .001$ ) contributed to depression symptoms ( $R^2 = .093, F = 14.749, p < .001$ ). Females were more likely to be depressed. This is the first study to establish a predictive relationship between co-worry and depression. This initial model explained 9.3% of the variance in depression symptoms. Adding the interaction term between gender and co-worry ( $b = .247, t = 2.196, p = .029$ ) significantly improved the model to 10.8% contribution towards variance of depression ( $R^2\Delta = .015, F = 4.823, p = .029$ ). A main effect of gender remained ( $b = 2.464, t = 2.461, p = .014$ ) in this final model. This model was the best model tested for explaining depression symptoms. Overall, females reported more depression symptoms than males, but the effect of co-worry on depression symptoms differed by gender (Figure 1). For males, there was no relationship found between co-worry and depression ( $b = .116, t = 1.275, p = .203$ ). Conversely, for females, more co-worry was associated with more depression symptoms ( $b = .363, t = 5.429, p < .001$ ) suggesting that co-worry may be capturing a maladaptive interactional pattern.

*Gender Moderates the Relationship between Co-worry and Anxiety*

The moderation analyses were also conducted for the effect of gender on the association between co-worry and anxiety. There was a main effect for both gender and co-worry; females were more likely to be anxious ( $b = 5.442, t = 4.930, p < .001$ ) and co-worry was associated with anxiety ( $b = .254, t = 4.213, p < .001$ ). The initial model explained 11.3% of the variance in anxiety ( $R^2 = .113, F = 17.909, p < .001$ ). There was



also a significant interaction effect of gender and co-worry ( $b = .275, t = 2.218, p = .027$ ) and gender remained a significant main effect in the final model ( $b = 5.216, t = 4.738, p < .001$ ). Overall, when controlling for co-worry and the interaction between co-worry and gender, females scored 5.216 points higher on the anxiety measure (BAI) than males in this sample. The interaction pattern for this model was similar to the pattern found between gender, co-worry, and depression. More co-worry was associated with more anxiety for women ( $b = .356, t = 4.714, p < .001$ ) whereas there was no association between co-worry and anxiety for men ( $b = .082, t = .835, p = .404$ ; Figure 2). This model explained a total of 12.8% of the variance in anxiety symptoms ( $R^2\Delta = .015, F = 4.919, p = .027$ ) and was the best model fit for the data on anxiety.

### Discussion

In the current study, the construct of co-worry attempted to better capture the aspects of interpersonal factors as they contribute to anxiety development. Worries tend to focus on potential failures in the future and inability to cope with unexpected or uncontrollable events. Co-worry was developed to investigate whether these discussions could better account for (or supplement) behaviors of anxious individuals than co-rumination. Whereas females are consistently and significantly more likely to develop depression from adolescence into adulthood, these gender patterns of symptomatology are not consistently found for anxiety. Gender differences in depression are, in part, attributed to the maladaptive aspects of particularly close female relationships. However, some research suggests that methodological limitations and biases may limit the positive or benign characteristics of healthy male-male friendships. The purpose of this study of late adolescence was two-fold: (1) to investigate the ability of co-rumination and co-

worry to differentiate between internalizing symptoms of depression and anxiety; (2) to determine the role of gender in the relationship of co-rumination and co-worry to internalizing symptoms.

### **Co-rumination and Internalizing Symptoms**

The present sample appeared to reflect the typical college population in psychology courses, and represents an ideal developmental time period for the assessment of normative levels of anxiety and depression in the general population, or at least the generally college bound population. Typically, late adolescence (between the ages of 17 and 19 as studied in this sample) represents both a transitional period of personality and psychological well-being. Assessment of the interpersonal communication patterns around psychological concerns (internalizing symptoms and cognitions) presents the ability to tackle important, unanswered questions of psychopathology in this developmental stage. Significant environmental changes (e.g., moving to a new place, making new friends, spending less time with members of one's family of origin) and ongoing biological influences (e.g., hormonal, neurological) make the emerging maturational period of later adolescence an especially compelling psychological phase of life. Furthermore, research has suggested that college students experience elevated levels of both depression and anxiety, which raises concern of possible patterns contributing to vulnerability at this stage (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Stallman, 2010). In addition, the predominance of females in the psychology participant pool also allows for intricate inspection of a known vulnerability to internalizing symptoms for women.

Participants reported symptoms of depression and anxiety in the mild to subclinical level. Symptoms of depression and anxiety were strongly correlated. Additionally, depression and anxiety were both strongly correlated with self-reported worries. As expected, females endorsed higher depression, anxiety, worries, and friendship quality than their male counterparts. Despite the robust body of evidence bolstering the view of friendships as protective, this study supports emergent research suggesting that certain characteristics of close friendships and relationships may increase the risk of internalizing symptoms.

The present study supported previous findings suggesting a relationship between co-rumination and internalizing symptoms. Co-rumination was mildly correlated with depression and anxiety; although prior studies have found stronger associations ( $r = .20$ ;  $r = .23$ ) between co-rumination and depression than the present study (Calmes & Roberts, 2008;  $r = .12$ ; Rose, 2002). Additionally, this may be the first study to establish an association between co-rumination and worries. As expected, co-rumination was moderately correlated with quality of relationship, as judged by the shortened, self-report quality of relationship inventory. Neither subscales of support and depth in the peer relationship were associated with co-worry. The present findings again suggest that our sample was typical of adolescent and college samples previously studied (Calmes & Roberts, 2008; Rose, 2002) which found co-rumination to be related to emotional distress as well as quality in friendship.

Consistent with prior research, co-rumination was more commonly reported in female friendships than male friendships. To better understand the role of gender in the relationship between co-rumination and internalizing symptoms, moderation analyses

were conducted. Controlling for co-rumination, gender did not predict depression symptoms. No interaction effect was seen between gender and co-rumination on internalizing symptoms. This study substantiates prior literature that co-rumination and female gender predict symptoms of depression and represent some maladaptive effects of female friendships. For anxiety, both co-rumination and female gender significantly predicted symptoms (even when controlling for the other variable). No interaction of gender and co-rumination was noted in this anxiety model. These findings reiterate that females are more likely to be depressed and those who co-ruminate are more likely to be depressed and anxious. As noted in prior research (Calmes & Roberts, 2008), the association between co-ruminating and internalizing symptoms is consistently found for anxiety symptoms and depression symptoms. The relationship between co-rumination and anxiety may even be stronger than the relationship between co-rumination and depression.

### **Co-worry and Gender Differences**

As the first study of the construct of co-worry, the presented results are the first to describe relationships between this construct and other aspects of experience. Similar to co-rumination, co-worry was correlated with depression, anxiety, and worries. Given the overlap of construct development with measures of co-rumination, rumination, and worry, these associations with negative psychological features were expected, but co-worry and worry were less strongly associated than expected ( $r = .20$ ). Co-worry and co-rumination were strongly associated; however, unlike co-rumination, co-worry was not correlated with quality of relationship in the peer dyad suggesting co-worry may not be a seemingly positive characteristic of close relationships. Unlike co-rumination, co-worry was more

common in male friendships which may help explain the lack of correlation between quality of relationship with the measure.

Moderation analyses were probed to aid in understanding co-worry's correlation with internalizing symptoms yet higher rates in males. The statistical analyses for anxiety and depression were similar for co-worry. When controlling for co-worry, gender was associated with reporting of depression and anxiety, such that: females reported higher psychological symptoms. Although co-worry appears to have an overall positive, meaning maladaptive, association with depression and anxiety, an interaction effect between gender and co-worry emerged in this relationship. Different directional relationships between co-worry and internalizing symptoms emerge by gender. Females who co-worry more are more likely to have depression and anxiety symptoms whereas males who co-worry more are no more likely have these symptoms; males' reporting of co-worry did not predict their reporting of depression or anxiety. These gender findings were consistent for both disorders of internalizing, suggesting that co-worrying in female friendships, which is highly associated with co-ruminating, may capture a negative, problematic aspect of peer relationships associated with internalizing symptoms. Males, on the other hand, may not experience these repetitive, prospective discussions as contributing to their internalizing. These results suggest that aspects of peer relationships may differ substantively by gender.

The failure of this present research to find an association between co-worry and internalizing, despite higher reported endorsement of the interpersonal style by males, is consistent with prior research suggesting that male friendships have been inaccurately portrayed in the literature. Although boys report lower friendship quality, boys report

feeling just as satisfied with their friendships as girls (Parker & Asher, 1993) meaning that the construct of friendship quality may be inadequately defined. Generally speaking, boys may have different motivations for their friendships than girls which appear to make them a poorer quality friend in external assessment or on self-report measures (Rose, Swenson, & Robert, 2009). By only measuring and highlighting some seemingly positive friendship characteristics, findings imply that boys do not act “prosocially;” however, they may be acting in ways that are prosocial in the long-term but not the short-term. The gendered styles of interacting may also belie differing motivations of boys and girls (Rose & Asher, 2004). Girls are routinely found to both be more prosocial in relationships and have more prosocial goals for interactions with their friends, yet boys’ behaviors may guise prosocial behaviors (i.e., distraction, humor, etc.). Co-worry may target a pattern found in male relationships of providing useful information about situations in the future; rather, than focusing on retrospective assessment and failures like co-rumination. It is also possible that boys simply respond differently to friendship questionnaires and do not accurately portray their relationships. Multi-source research is encouraged to investigate this potential confound.

To further investigate the interpersonal tendencies of late adolescent male, same-sex friendships, item-by-item analysis of gender differences were conducted for the co-worry and co-rumination scales. Half of the items on the co-worry scale differed by gender in the direction of higher reporting by males, but using a Bonferroni correction, only two items differed by gender. These items pertained to self-reported anticipation of heightened embarrassment and identification of potential future problems in conversations with the friend. On the co-rumination scale, females more highly endorsed

items about repetitively discussing problems in the friendship. These analyses suggest that male participants endorsed more worry-focus in peer conversations whereas female participants were more co-ruminative in peer conversations.

Considerable research has explored aspects of interpersonal interactions that influence the development of internalizing symptoms in children and adolescence. In addition to peer relational research, numerous studies have identified parenting behaviors and parent-child interaction patterns associated with clinical levels of both depression and anxiety symptoms. In interactions with their anxious children, parents display several patterns of behavior, including focusing less on positive outcomes of ambiguous situations, emphasizing negatives of the situation, disagreeing with their child's suggestions, being less supportive of their child's autonomy, and intruding more on the children. In families with a depressed individual, several characteristics of familial interactions emerge. Parents tend to be more rejecting, inattentive, hostile, and critical in addition to exhibiting less affection and involvement. These families report their lives as more stressful and family interactions as more negative than control families. Similar to families with anxious tendencies, depressed parents are more critical, more negative, and less involved. Although several characteristics of anxious families overlap with depressed families, emerging differences likely contribute to the differential development of the two disorders. The majority of this research examining parent-child interactions has focused on attachment behaviors, very young children, or school-age children; therefore, less is understood about the interactions of parents and their adolescents. The contributions of peer and parental relationships on potentiating internalizing symptoms in adolescence is an area of ongoing clinical and empirical interest.

Internalizing symptoms increase over the course of childhood and adolescence with female diagnoses of depression eclipsing males in early adolescence. Researchers have proposed that peer relationships, paralleling parental relationships, may contribute significantly during this developmental period when peer friendships and romantic relationships gain importance (Rose, 2002). Particularly for females, the seemingly adaptive, helpful functions of close peer relationships may ultimately undermined female adolescents' ability to cope adequately with stressors. The construct of co-rumination has served to supplement findings depicted in interpersonal, parental interactions within the family with peer interactions styles. Co-rumination focused on maladaptive aspects of depressogenic families, including negativity and poor problem-solving, and an added maladaptive concept of rumination within the dyad. Not only are negative, critical interactions maladaptive, the repetitive nature of these interactions exacerbates these relationships. Literature on families with children who are anxious or depressed has not assessed the impact of co-rumination and co-worry.

### *Limitations*

The implications of the present study are limited by the scope of the sample. Ethnic minorities were not well represented; therefore, the findings, including the role of gender on the development of depression and anxiety, may not depict peer relationships in other cultures. It is likely that cultural values pertaining to gender roles, socialization, friends, community, and family may affect the way interpersonal relationships develop and the extent to which individuals utilize friendships for coping. In cultures that value strong familial relationships, it is possible that parent-child or siblings relationships in late adolescence mimic the peer findings of this study. Furthermore, cultural emphasis on



community support and interpersonal relationships more generally may also increase the likelihood that individuals cope by engaging in interpersonal, dyadic discussions.

The present study examined interpersonal relationships of adolescence; however, the adolescent population utilized in this study may not reflect interpersonal interactions of younger adolescent populations. Prior research on the study of interpersonal factors impacting internalizing symptoms, including parent-child and peer relationships (Barrett et al., 1996; Rose, 2002), originally investigated younger children and adolescents. It is plausible that the effect of interpersonal conversations on the development of psychopathology may be strongest before cognitive tendencies solidify in early adulthood. Later adolescents transitioning into adulthood may have interactional patterns that reflect more mature, adult-like styles. Furthermore, a college population may also engage in co-rumination and/or co-worry with romantic partners (Calmes & Roberts, 2008; Ciesla et al., 2011); the effect of relationship type on the likelihood to engage in these maladaptive tendencies and long-term outcomes has yet to be fully investigated. Investigations of peer co-rumination has only focused on the interactions of same-sex peer relationships. Although children engage in more same-sex friendships than opposite-sex friendships (Rose & Rudolph, 2006), these studies, including the present one, have yet to investigate potentially maladaptive effects of opposite-sex friendships. Additionally, published studies on peer co-rumination have not controlled for the reporter's sexuality; therefore, little is understood about the interplay between an individual's sexual orientation and their tendency to co-rumination in friendships, including cross-sex platonic relationships.

Although the present study more thoroughly examined the effect of dyadic exchanges on internalizing symptoms by measuring depression and anxiety separately,

some major limitations in measurement remain. First, the measurement of all variables was conducted through self-report measures so variables are likely to be more strongly associated. Second, clinical assessment of psychological symptoms is best conducted through multiple differing modalities (e.g., interview, self-report). Therefore, conclusions about the impact of co-rumination and co-worry on clinical levels of mental illness should be made only cautiously. Third, the measurement of anxiety in the present study was an improvement on many previous studies on co-rumination in the area of child development; however, the findings observed in the present study are limited by the construct validity of the anxiety measure. The BAI is commonly used in research and clinical practice to quickly assess for general symptoms of anxiety, yet research on the concurrent validity of the measure with clinical assessment suggests that the measure may not capture broad characteristics of anxiety disorders (Leyfer, Ruberg, & Woodruff-Borden, 2006). Rather, the BAI is most accurate at predicting panic disorder and may not accurately ascertain general anxiety symptoms (Leyfer et al., 2006). Fourth, several items on the QRI were similar in content to items on the CRQ and CoWQ resulting in higher correlational associations between the scales. Of note, QRI items from the support subscale appear to draw on extremely similar aspects of peer relationships as these two relatively newer scales. These findings suggest that our research makes the boldest claims for symptoms of panic disorder. Follow-up studies should consider using multiple-methods of assessment, independent measures of depression and anxiety, and measurement of different types of anxiety.

The single measurement time point is another major limitation of the current study. These findings bolster the claim that interpersonal processes, specifically peer

interactions, are associated with increased symptoms of psychological distress. However, the study did not investigate these associations across multiple time points so causality in these relationships cannot be examined. Co-rumination, and now co-worry, have been theorized to increase the symptoms of depression and anxiety. Several studies have examined these relationships over several time points and supported the theoretical viewpoint that co-rumination in peer dyads results in increasing symptoms of depression and anxiety (Hankin, Stone, & Ann Wright, 2010; Stone, Hankin, Gibb, & Abela, 2011). Future research may examine directionality of effect between co-worry and internalizing symptoms. As co-worry may help explain positive aspects of male peer relationships which have been downplayed in the body of literature, it is suggested that exploration of differences in gender peer relationships and their relationship to mental illness continue.

Finally, the analyses conducted in this study were completed with the assumption that co-worry and co-rumination are phenomena that lead to future internalizing symptoms. Numerous prior studies on the construct of co-rumination have presumed this assumption; however, some researchers have questioned this assumed directionality including one short-term longitudinal study of adolescent girls that did not find a predictive or resultant relationship between depression and co-rumination (Starr & Davila, 2009). This study, although limited in scope, suggested that co-rumination may simply be a correlate or marker of internalizing symptoms/disorders. Prior research on cognitive analogues of co-rumination and co-worry- rumination and worry- found that both processes predict future depression and anxiety symptoms, respectively (Hong, 2007; Muris et al., 2004; Watkins, 2004). Given that co-rumination and co-worry constructs draw on prior literature on these cognitive processes and interpersonal parent-child

relational processes, analyses were run with the assumption that repetitive interactions would likely increase symptomatology. It should be noted that the findings are reliant upon this theoretical decision and additional research investigating the directionality of these constructs should be thoroughly conducted.

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### Appendix

Table 1.

Means and Standard Deviations for Study Variables

Variables	Mean (SD)	Item Mean (SD)
Depression (BDI-II)	10.22 (8.19)	.49 (.40)
Anxiety (BAI)	10.45 (8.99)	.50 (.44)
Worry (PSWQ)	49.05 (13.88)	3.07 (.88)
Co-rumination (CRQ)	70.83 (22.50)	2.62 (.83)
Co-worry (CoWQ)	23.17 (8.59)	1.93 (.72)
Quality of Relationships- Short (QRI-S)	20.78 (3.24)	3.46 (.54)
QRI- support dimension	10.70 (1.68)	
QRI- depth dimension	10.07 (1.89)	



Table 2.

Correlations Among Study Variables

						Quality	
Variables	Depression (BDI-II)	Anxiety (BAI)	Worry (PSWQ)	Co-rum. (CRQ)	Co-worry (CoWQ)	of Rel. (QRI-S)	QRI- support
Dep. (BDI-II)							
Anxiety (BAI)	.57***						
Worry (PSWQ)	.44***	.46***					
Co-rum. (CRQ)	.12*	.17**	.24***				
Co-worry (CoWQ)	.26***	.19**	.20**	.57***			
Ql. of Rel. (QRI-S)	-.22***	-.18**	-.10	.29***	-.04		
QRI- support	-.26***	-.20**	-.15**	.30***	-.05	.90***	
QRI- depth	-.14*	-.13*	-.05	.23***	-.05	.92***	.67***

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

Table 3.

T-tests for Gender Differences on Study Variables

Variables	Levene's Test of					
	Females	Males	Equality of			
	Mean (SD)	Mean (SD)	Variances			
			<i>F</i>	<i>p</i> -value	<i>t</i> -score (df)	<i>p</i> -value
Depression	<b>10.85</b> <b>(8.23)</b>	8.78 (7.94)	.27	.604	- 2.01 (295)	.045*
Anxiety	<b>11.91</b> <b>(9.62)</b>	7.19 (6.32)	15.62	< .001***	- 4.94 (246.95)	< .001***
Worry	<b>52.58</b> <b>(13.06)</b>	40.91 (12.26)	1.50	.221	- 7.25 (299)	< .001***
Co-rumination	<b>72.71</b> <b>(22.33)</b>	66.13 (22.35)	< .00	.962	- 2.25 (285)	.025*
Co-worry	22.31 (8.23)	<b>25.16</b> <b>(9.10)</b>	2.20	.139	2.65 (295)	.008**
QRI-S	<b>21.10</b> <b>(3.16)</b>	20.06 (3.16)	2.91	.089	- 2.57 (298)	.011*
QRI-support	<b>10.82</b> <b>(1.63)</b>	10.41 (1.75)	3.47	.063	- 1.97 (298)	.050*
QRI-depth	<b>10.27</b> <b>(1.85)</b>	9.59 (1.92)	2.28	.132	- 2.89 (299)	.004**

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

Table 4.

Hierarchical Regression Analyses Examining the Effect of Gender and Co-rumination on Depression and Anxiety

	Depression			Anxiety		
	R <sup>2</sup> Δ	B	p	R <sup>2</sup> Δ	B	p
Step 1	.025*		.031	.077***		< .001
(Constant)			< .001			.147
Gender		1.801+	.094		4.350***	< .001
Co-rumination		.040+	.065		.058*	.016
Step 2	.001		.583	.008		.116
(Constant)			.001			.268
Gender		1.868+	.085		4.644***	< .001
Co-rumination		- .005	.949		- .087	.359
Gender X						
Co-rumination		.027	.583		.084	.116

Note. + $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 5.

Hierarchical Regression Analyses Examining the Moderating Effect of Gender on the Relationship of Co-worry on Depression and Anxiety

	Depression			Anxiety		
	R <sup>2</sup> Δ	B	<i>p</i>	R <sup>2</sup> Δ	B	<i>p</i>
Step 1	.093***		< .001	.113***		< .001
(Constant)			.002			.504
Gender		2.697**	.008		5.442***	< .001
Co-worry		.276***	< .001		.254***	< .001
Step 2	.015*		.029	.015*		.027
(Constant)			.001			.335
Gender		2.464*	.014		5.216***	< .001
Co-worry		- .132	.496		- .193	.360
Gender X						
Co-worry		.247*	.029		.275*	.027

Note. +*p* < .10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001

Table 6.

T-test Analysis of Gender Differences on Co-worry (CoWQ)

Scale Items

Item	Levene's Test of					
	Females		Males		Equality of	
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Variances	
			<i>F</i>	<i>p</i> -value	<i>t</i> -score (df)	<i>p</i> -value
CoWQ 1	2.40 (1.20)	2.55 (1.07)	2.42	.121	1.06 (299)	.292
CoWQ 2	1.63 (.94)	<b>1.95 (1.11)</b>	2.44	.119	2.49 (300)	.013*
CoWQ 3	1.73 (.98)	<b>2.01 (1.07)</b>	.29	.590	2.23 (298)	.026*
CoWQ 4	1.52 (.94)	<b>1.81 (1.12)</b>	7.97	.005**	2.22 (147.45)	.028*
CoWQ 5	1.68 (.92)	<b>2.20 (.96)</b>	.16	.692	4.47 (300)	< .001***
CoWQ 6	2.11 (1.16)	2.24 (1.09)	.37	.542	.93 (300)	.352
CoWQ 7	2.12 (1.08)	2.36 (1.13)	.78	.379	1.75 (300)	.081+
CoWQ 8	2.02 (1.10)	2.02 (1.20)	1.32	.252	-.01 (300)	.990
CoWQ 9	2.14 (1.16)	2.21 (1.30)	2.87	.091+	.44 (300)	.659
CoWQ 10	1.82 (1.03)	1.97 (1.12)	2.48	.117	1.14 (300)	.254
CoWQ 11	1.47 (.79)	<b>1.89 (.99)</b>	5.71	.017*	3.59 (140.98)	< .001***
CoWQ 12	1.74 (.87)	<b>2.04 (.99)</b>	< .00	.957	2.63 (300)	.009**

Note. + $p < .1$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 7.

## Co-worry Items with Higher Male Endorsement

Item Name	Item Content
Co-worry 2*	After I discuss my worries with my friend, I find that I am more worried than I was before
Co-worry 3*	When we discuss bad things that could happen, we talk as if the bad thing will definitely happen
Co-worry 4*	My friend reminds me of things that worry me if I don't bring them up
Co-worry 5***	When discussing a new experience I am about to have, my friend helps me anticipate things that might go wrong
Co-worry 11***	After I discuss my worries with my friend, I often feel that I will be embarrassed
Co-worry 12**	After I discuss my worries with my friend, my solution to the problem seems like it won't work

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

Table 8.

Correlations for Males

Variables	Depression (BDI-II)	Anxiety (BAI)	Worry (PSWQ)	Co-rum. (CRQ)	Co-worry (CoWQ)	Quality of Rel. (QRI-S)	QRI- support
Depression (BDI-II)							
Anxiety (BAI)	.60***						
Worry (PSWQ)	.43***	.49***					
Co-rum. (CRQ)	.06	-.01	.27*				
Co-worry (CoWQ)	.13	.12	.36**	.63***			
QRI-S	-.15	-.24*	-.14	.37***	.11		
QRI- support	-.13	-.22*	-.13	.39***	.16	.92***	
QRI- depth	-.13	-.19+	-.15	.22*	-.02	.93***	.70***

Note. + $p < .1$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

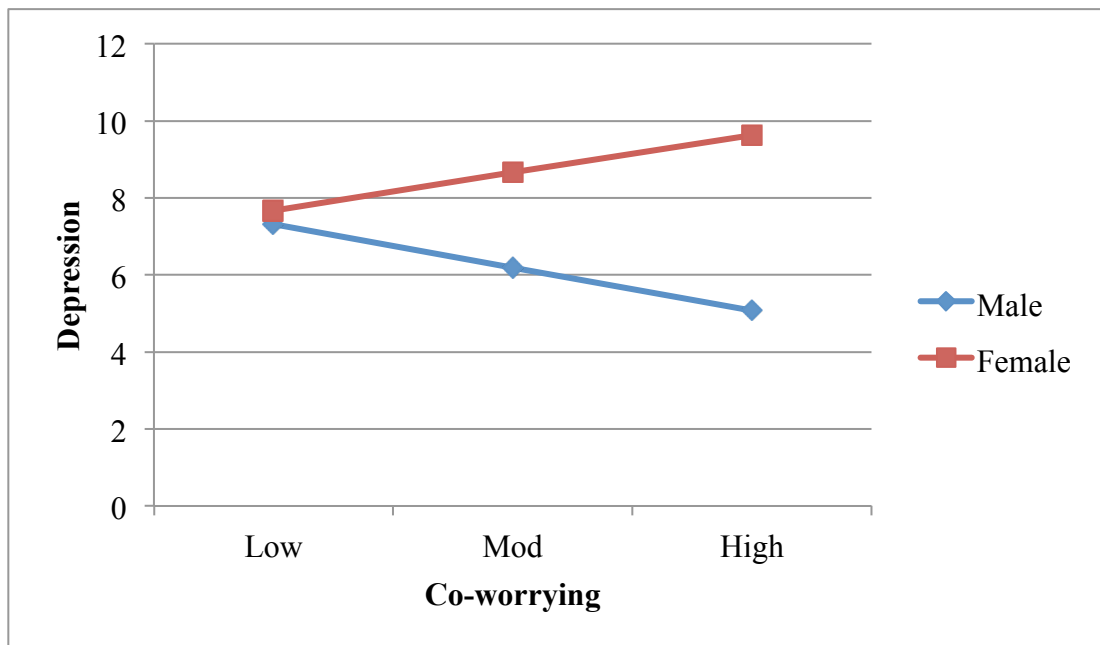
Table 9.

Correlations for Females

Variables	Quality						
	Depression (BDI-II)	Anxiety (BAI)	Worry (PSWQ)	Co-rum. (CRQ)	Co-worry (CoWQ)	of Rel. (QRI-S)	QRI- support
Depression (BDI-II)							
Anxiety (BAI)	.57***						
Worry (PSWQ)	.43***	.40***					
Co-rum. (CRQ)	.13+	.19**	.19**				
Co-worry (CoWQ)	.36***	.30***	.25***	.59***			
QRI-S	-.28***	-.23**	-.19**	.24**	-.09		
QRI- support	-.34***	-.25***	-.25***	.24**	-.13+	.90***	
QRI- depth	-.19**	-.17+	-.10	.20**	-.03	.92***	.65***

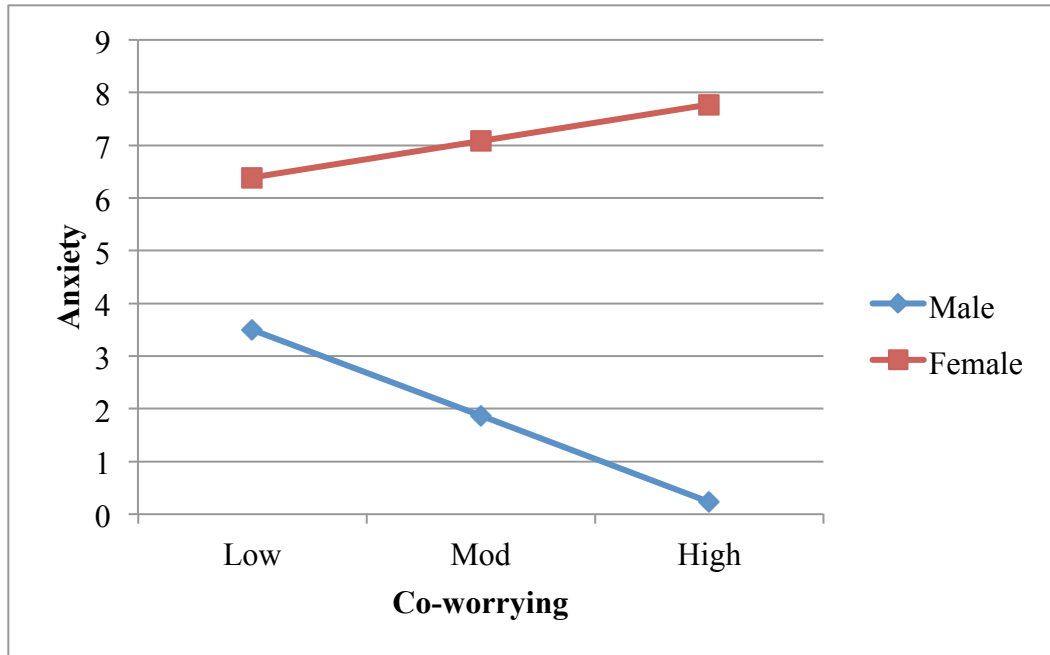
Note. + $p < .1$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$





Note. \*Interaction significant ( $p = .029$ )

Figure 1. Gender Moderates the Regression of Depression on Co-worry



Note. \*Interaction is significant ( $p = .027$ )

Figure 2. Gender Moderates the Regression of Anxiety on Co-worry