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Why does this always happen to us? an examination of co-rumination in the same sex friendships of emerging adults

Teresa Michelle Preddy

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Why does this always happen to us? An examination of co-rumination

in the same-sex friendships of emerging adults.

Teresa Michelle Preddy

Master of Arts in Psychology
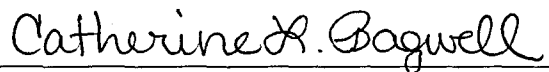
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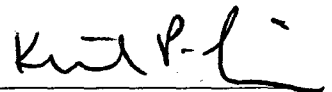Catherine Bagwell, Ph.D., Thesis Director

Abstract

Co-rumination, which has been defined as a passive, repetitive form of problem

discussion (Rose, 2002), has been linked to both benefits in terms of positive friendship

quality and maladaptive outcomes such as internalizing distress (Rose, 2002; Rose,

Carlson, & Waller, 2007; Calmes & Roberts, 2008). This study explored the trade-offs

associated with co-rumination in emerging adult same-sex friendships both concurrently

and longitudinally through the use of self-report questionnaires. Co-rumination was

associated with concurrent positive friendship quality. Additionally, co-rumination

partially mediated the link between gender and positive friendship quality, and was a

marginal predictor of increases in positive friendship quality over time. Although co-

rumination was associated with depression, co-rumination did not predict depressive

symptoms when rumination was controlled. Overall, this study demonstrated that co-

rumination is associated with positive adjustment in friendships; however, co-rumination

also is related to maladaptive outcomes due to its overlap with rumination.

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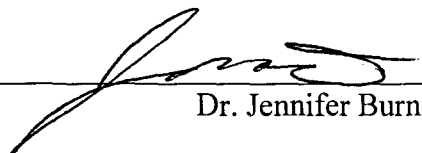
I certify that I have read this thesis and find that, in scope and quality, it satisfies the requirements for the degree of Master of Arts.

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Dr. Catherine Bagwell, Thesis Advisor

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Dr. Kristen Lindgren

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Dr. Jennifer Burnette

WHY DOES THIS ALWAYS HAPPEN TO US?

AN EXAMINATION OF CO-RUMINATION

IN THE SAME-SEX FRIENDSHIPS OF EMERGING ADULTS

By

TERESA MICHELLE PREDDY

B.S., College of William and Mary, 2007

A Thesis

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Why Does This Always Happen to Us? An Examination of Co-rumination

in the Same-Sex Friendships of Emerging Adults

It is often assumed that individuals with supportive friendships are not as

vulnerable to adjustment problems as those without friends or those with poor quality

friendships (Bagwell, Bender, Andreassi, Kinoshita, Montarello, & Muller, 2005; Rose,

Carlson, & Waller, 2007). After all, friendships often include many benefits such as

social support, intimacy, help and guidance, and companionship (Parker & Asher, 1993),

which can serve as protective factors against internalizing disorders such as depression

and anxiety. However, many people with friends, especially women, still experience

significant levels of anxiety and depression (Albano, Chorpita, & Barlow, 1996; Hammen

& Rudolph, 1996). Rose and her colleagues have sought to explain this contradiction,

and they have suggested that close friendships may have adjustment trade-offs due to the

social process of co-rumination (Rose et al., 2007). The current study was designed to

expand research on co-rumination by examining concurrent and longer-term correlates

and effects of co-rumination in emerging adults.

<u>What is co-rumination?</u>

Rose first described co-rumination (2002), and the term refers to the frequent and

excessive discussion of personal problems within a friendship dyad. Friends who engage

in co-rumination typically dwell on their negative affect, discuss the same problems

repeatedly, speculate about the problems, and encourage each other to discuss problems

(Rose, 2002). An example would be two friends constantly discussing and analyzing a

romantic relationship in which one of the friends was involved. In this case, the two

friends may overanalyze every ambiguous comment or action the significant other makes in an attempt to determine whether a perceived slight indicates that the significant other will initiate a break-up. The two friends may talk about the relationship in person and on the phone. Instead of focusing on other positive events or engaging in fun activities together, the friends may encourage each other to continue to talk about and dwell on the problem with the significant other. In the discussion, the pair may analyze what happened, speculate about what consequences may arise, and focus on their negative feelings about the situation.

Although co-rumination is related to self-disclosure, self-disclosure can be brief and may include the discussion of any personal topic or feelings (e.g., career goals, political views, school concerns; Rose et al., 2007). In contrast, co-rumination involves an excessive focus on problems and negative feelings (Rose et al., 2007). Co-rumination is classified as an extreme form of self-disclosure. As a result, even though the self-disclosure involved in co-rumination leads to high-quality friendships, the negative focus on problems is associated with anxiety and depression (Rose, 2002). Additionally, since the emotional support that is provided during co-rumination is not solution-focused, co-rumination is essentially a social rumination process (Rose, 2002). Therefore, co-rumination is assumed to have both adaptive and maladaptive implications (Rose, 2002).

Co-rumination and its Relation with Rumination

Co-rumination is described as being related to internalizing distress due to its relation with rumination (Rose, 2002). According to Nolen-Hoeksema (1991), rumination involves thoughts and behaviors that focus an individual's attention on

depressive symptoms as well as the causes and consequences of these symptoms. An individual engaging in rumination may analyze recent events and wish the events had a different outcome, focus on negative affect or a lack of motivation, or isolate him or herself in order to think about how the negative feelings interfere with work or concentration (Nolen-Hoeksema, & Morrow, 1991). Furthermore, those who ruminate passively focus on their emotions instead of taking active steps either to solve their problems or to distract themselves from their negative feelings (Nolen-Hoeksema, Morrow, & Fredrickson, 1993).

As with rumination, co-rumination involves a passive, negative focus that can interfere with active problem solving, distracting responses, or other activities (Rose, 2002). Furthermore, it is this overlap with rumination (i.e., a negative, repetitive focus on problems), which is believed to be responsible for co-rumination's association with internalizing distress.

However, while rumination is an intraindividual cognitive process in which a person focuses on his or her own negative affect, co-rumination is an interpersonal process that is focused more generally on problems or concerns (Rose, 2002). Moreover, in co-rumination, the conversation can be focused on one person's issues, shared problems, or both friends' individual concerns. Additionally, since co-rumination involves dyads, it includes aspects not included in rumination such as support giving and self-disclosure. Due to the benefits derived from social support and self-disclosure, co-rumination is also related to the development of close friendships and positive friendship quality, whereas rumination is not.

Trade-offs Associated with Co-rumination

Since the friendships of women exhibit protective qualities such as social support and self-disclosure (Parker & Asher, 1993; Carbery & Buhrmester, 1998), it is surprising that women still experience greater levels of depression and anxiety than men do (Kessler, McGonagle, Swartz, Blazer, et al., 1993). Women are approximately 1.7 times as likely as men to report a lifetime history of major depressive disorder (Kessler et al., 1993). Research has shown that the sex difference for depression begins early in adolescence and continues through middle adulthood (50-60 years; Kessler et al., 1993). Since women co-ruminate more than men, co-rumination has been proposed as a process that contributes to the gender differences in emotional adjustment and friendship quality (Rose, 2002). For example, Rose and colleagues (2007) determined that in children and adolescents, although co-rumination was associated with increases in friendship quality for both boys and girls over time, only high co-ruminating girls experienced increases in depression and anxiety over the same period. These findings suggest that co-rumination is much like a double-edged sword: although women who co-ruminate may benefit from increases in friendship quality, the same women may be vulnerable to the negative effects of co-rumination such as depression and anxiety (Rose, 2002). This finding is especially troubling since same-sex friendships are particularly important to adolescent girls and young adult women (Carbery & Buhrmester, 1998). Because of the benefits women receive from the high levels of social support that characterize these relationships (Carbery & Buhrmester, 1998), maladaptive social processes such as co-rumination may be overlooked, possibly allowing depression and anxiety to worsen.

Review of the Literature

<u>Co-rumination in the Same-Sex Friendships of Children and Adolescents</u>.

Rose's first study (2002) identifying the process of co-rumination focused on the same-

sex friendships of third, fifth, seventh, and ninth graders. In total, 608 participants

reported on levels of co-rumination, self-disclosure, friendship quality, and closeness in a

reciprocal same-sex friendship. Reciprocal friendship dyads were determined by a

friendship nomination measure. Children who did not have a reciprocal best friendship

were not included in the analyses. The questionnaire also contained inventories that

assessed rumination, anxiety, and depression.

Overall, girls reported that they engaged in co-rumination significantly more than

boys did, and this gender difference was even larger among the adolescents than the

children. Moreover, adolescent girls reported significantly higher levels of co-rumination

in their friendships than did female children. Similar patterns were found for self-

disclosure since girls reported self-disclosing in their friendships more than boys, and

female adolescents reported significantly higher levels of self-disclosure than female

children. Significant main effects were found for gender and grade on self-reported

rumination. Girls reported higher levels of rumination than boys, and children reported

more rumination than adolescents. Both self-reported and friend-reported levels of

positive friendship quality and closeness were higher for girls than boys. This gender

difference was stronger among adolescents than children. Levels of anxiety and

depression were combined into one construct, internalizing symptoms, and girls reported

higher internalizing symptom scores than boys. Additionally, children had significantly higher levels of internalizing symptoms than adolescents.

Correlational analyses showed that co-rumination was significantly and positively correlated with self-reported positive friendship quality and closeness (Rose, 2002). However, although girls reported higher levels of co-rumination, the link between co-rumination and self-reported closeness and friendship quality was stronger for boys than girls. A possible explanation for this finding is that since co-rumination is nonnormative for boys, co-rumination may have an especially salient impact on how boys evaluate their friendships (Rose, 2002). Co-rumination was also significantly and positively associated with internalizing symptoms, with girls reporting higher internalizing scores than boys. Starr and Davila (2009) have replicated the positive association between co-rumination and depression in a sample of young adolescent girls.

Regression analyses in the Rose (2002) study showed that co-rumination significantly predicted internalizing symptoms and positive friendship quality while controlling for gender. Since co-rumination and self-disclosure were significantly and positively correlated with friendship quality and closeness, both variables were entered into a regression analysis to determine which variable would be a stronger predictor of co-rumination. In the analysis, only the effect for self-disclosure was significant, suggesting that the relationship between co-rumination and friendship quality can be partially attributed to the self-disclosure that occurs during co-rumination. A similar analysis was conducted for internalizing symptoms since both self-disclosure and co-rumination were significantly and positively correlated with internalizing symptoms.

When both variables were entered in a regression analysis, only co-rumination was a predictor of internalizing symptoms, demonstrating that the relationship between self-disclosure and internalizing symptoms is due to self-disclosure's overlap with co-rumination.

Since co-rumination and rumination were both significantly and positively correlated with internalizing symptoms, both variables were entered into a regression equation. As expected, rumination was a significant positive predictor of internalizing distress. However, co-rumination was actually a significant negative predictor of internalizing symptoms. Therefore, the positive relationship between co-rumination and internalizing distress is due to the overlap between co-rumination and rumination. When rumination was controlled in the analysis, co-rumination was actually associated with lower internalizing distress. Rose (2002) suggested that a possible explanation for this finding is that the support-seeking aspects of co-rumination lead to fewer internalizing problems. When rumination and co-rumination, which were both positively associated with friendship quality, were entered in a regression to predict friendship quality, only co-rumination was a significant predictor. This suggests that the overlap between co-rumination and rumination is responsible for the positive relationship between rumination and positive friendship quality. Therefore, these findings suggest that the trade-offs associated with co-rumination may be due to the overlap of both self-disclosure and rumination with co-rumination.

Rose and her colleagues (2007) expanded the first study with a longitudinal design, which allowed them to examine whether co-rumination in children and

adolescents can predict increases in depression, anxiety, and friendship quality over time. Over the six-month period, co-rumination predicted increases in positive friendship quality, anxiety, and depression for girls. However, co-rumination only predicted increases in positive friendship quality for boys. Consequently, although both genders may benefit from increases in friendship quality in their relationships, girls who co-ruminate may be at an increased risk for developing emotional problems (Rose et al., 2007). However, Starr and Davila's (2009) study on young adolescent girls did not find support for Rose et al.'s finding that co-rumination predicts increases in depressive symptoms. In that study, co-rumination at Time 1 did not predict either increases or decreases in depressive symptoms over a one-year period. Thus, other factors may have contributed to co-rumination's effect on increases in internalizing symptoms, and additional longitudinal research is needed to establish co-rumination's link with depressive symptoms.

Additionally, Rose and colleagues (2007) found that initial adjustment could lead to changes in self-reported co-rumination levels. Specifically, depression and anxiety levels (Time 1) predicted increases in co-rumination over the six-month period (Time 2). Although co-rumination leads to internalizing symptoms, depressive and anxious tendencies may also increase the likelihood that a person will engage in co-rumination. As a result, negative internalizing symptoms may lead youth to co-ruminate with friends about problems, allowing depression and anxiety to worsen. Initial friendship quality also predicted increases in co-rumination at Time 2. Furthermore, participants who initially reported high levels of anxiety as well as high levels of friendship quality were at

the highest risk for increases in co-rumination. Therefore, anxious individuals who have high quality relationships where they feel free to self-disclose and share personal issues with friends may be more likely to begin using co-rumination as a way to cope with problems.

Peer-contagion effects may also contribute to internalizing symptoms for those who co-ruminate. Specifically, peer-contagion effects occur when exposure to a close friend who exhibits poor emotional adjustment reinforces or helps to maintain an adolescent's tendencies toward emotional distress (Stevens & Prinstein, 2005). Schwartz-Mette and Rose (2009) found evidence that co-rumination in adolescent friendships may account for an anxiety contagion effect between youth, suggesting that exposure to an anxious friend's frequent discussion and perseveration on problems can lead to an increase in an adolescent's own levels of anxiety. Therefore, a friend's initial adjustment may also influence the extent to which an adolescent develops internalizing symptoms as a result of the co-rumination process.

Finally, recent research on adolescents has begun to examine what other trade-offs may be associated with co-rumination. Funasaki and Mezulis (2010) found that high school students who reported co-ruminating about a specific event were more likely to remain upset about the event and also to continue ruminating about the event. Additionally, those who co-ruminated about stressful events were more likely to ruminate when new stressful events occurred. The effect of co-rumination on negative affect and rumination was also found to be stronger for girls than for boys. Despite these negative outcomes, Funasaki and Mezulis (2010) also determined that co-rumination had positive

effects on coping behavior as co-rumination at one week predicted an increase in

problem-solving coping mechanisms as well as an increase in seeking social support

during subsequent weeks.

Co-Rumination in the Same-Sex Friendships of Emerging Adults. Arnett (2000)

first used the term emerging adulthood to describe the developmental period that occurs

from the late teens to mid-twenties. Emerging adulthood only exists in cultures where

young adults experience a prolonged period of "independent role exploration" before

settling into adult responsibilities and roles (Arnett, 2000, p. 469). During emerging

adulthood, same-sex friendships are especially important, and friends, along with

romantic partners, are the people emerging adults rely on most for companionship or

when they are upset (Fraley & Davis, 1997; as cited in Collins & Dulmen, 2006).

Friends are consistently reported to be the most important providers of social support,

intimacy, and companionship (Carbery & Buhrmester, 1998). Reliance on friends

remains high until spouses become the primary source of emotional support in young

adulthood (Carbery & Buhrmester, 1998).

To date, few studies on co-rumination have focused on the same-sex friendships

of emerging adults. In the first study on emerging adults, co-rumination and relationship

quality were assessed for a best friend, and participants also responded to measures

assessing depression, anxiety, and rumination (Calmes & Roberts, 2008). As with

children and adolescents, women reported significantly higher levels of co-rumination

with their best friend compared to men. Co-rumination with one's friend was also

positively associated with depression and anxiety, as well as relationship satisfaction.

Friend-based co-rumination was a significant mediator of the relationship between gender and friendship satisfaction while controlling for depressive rumination. Moreover, co-rumination with a same-sex friend significantly mediated the relationship between gender and depression. Accordingly, women reported higher levels of co-rumination, which predicted higher levels of depression. However, when depressive rumination was controlled for, friend-based co-rumination no longer mediated the relationship between gender and depression. This suggests that it is the negative repetitive nature of co-rumination that contributes to depression, rather than the fact that friends are discussing problems (Calmes & Roberts, 2008). In contrast to research on children and adolescents, there was no association between co-rumination with friends and anxiety. However, as with younger age groups, higher levels of co-rumination in women predicted higher levels of friendship satisfaction and depressive symptoms. Thus, co-rumination in friendships may be important for understanding why women typically have higher levels of both relationship satisfaction and depression in comparison to men (Calmes & Roberts, 2008). Grover, Nangle, Fales, and Papadakis (2010) found further support for the trade-offs associated with co-rumination in their study on college friendships. In this study, co-rumination was associated with both higher levels of depressive symptoms as well as greater levels of social support within friendships.

In addition to the socioemotional trade-offs that are related to co-rumination, research has shown that the conversational process of co-rumination may have physical health implications for emerging adult women (Byrd-Craven, Geary, Rose, & Ponzi, 2007). In this study, emerging adult women participated in a discussion-based task with

a close friend. Dyads were randomized into either a condition where they participated in a cooperative problem-solving task or where they discussed personal problems. Cortisol levels for both groups were measured before and after the discussion. Co-rumination elicited biological responses associated with stress. Specifically, women who participated in the problem talk condition versus the cooperative problem-solving task exhibited significantly higher levels of cortisol fifteen minutes after the discussion task (Byrd-Craven, et al., 2007). Interestingly, observed co-rumination predicted post-task cortisol levels only in the problem talk discussion task. Moreover, dwelling on negative affect during the task predicted post-task cortisol levels in the problem discussion condition but not in the problem-solving task. Due to the negative effects of stress, this study demonstrates that physical health consequences could result for those who co-ruminate on a regular basis.

Personal Factors Contributing to Co-rumination.   Recently, Starr and Davila (2009) have expanded Rose's work on adolescents, and they have explored how relationship styles and experiences may be associated with co-rumination in adolescent girls. Specifically, girls who reported a more secure relationship style with friends also reported higher levels of co-rumination in same-sex friendships. Moreover, greater communication in these friendships was also associated with higher levels of co-rumination. Girls who reported higher levels of self-perceived competence in peer relationships also endorsed higher levels of co-rumination. Additionally, although number of female friends and number of total friends was not associated with co-rumination, having a greater number of male friends was related to greater co-rumination

in same-sex friendships. More experience with romantic relationships was also associated with higher levels of co-rumination for adolescent girls.

Star and Davilla (2009) also examined social anxiety and found that it was negatively associated with co-rumination. It is likely that socially anxious girls are less likely to disclose and have fewer opportunities to co-ruminate (Starr & Davila, 2009). Therefore, well-adjusted adolescent girls may actually be at an increased risk for co-rumination. Jose (2010) also examined social anxiety in an adolescent sample and found that although social anxiety does not directly influence co-rumination, social anxiety has an indirect impact on co-rumination through rumination. Specifically, initial levels of rumination lead to increases in social anxiety, and initial levels of social anxiety lead to increases in rumination. Through this bi-directional relationship, social anxiety and rumination lead to increases in co-rumination (Jose, 2010). Additionally, Jose's work demonstrated further evidence for the link between co-rumination and depression as co-rumination weakly predicted increases in depressive symptoms over a six-month period.

At present, no studies have examined how personal characteristics such as personality or self-esteem may influence co-rumination; however, it is likely that personal factors may play a role in the co-rumination process. Since emerging adults with low self-esteem are more likely to dampen positive affect and are more likely to report ruminating on negative affect (Feldman, Joormann, & Johnson, 2008), low self-esteem may predispose an individual to engage in co-rumination if the individual has a close friend with whom he or she can discuss problems. Furthermore, since rumination is associated with a heightened risk for depressive affect only when an individual also has

high levels of negative cognitions (Cielsa, 2009), negative cognitions such as those associated with low self-esteem may influence whether an individual is likely to develop emotional problems from engaging in co-rumination. Moreover, personality dimensions may contribute to whether a person is likely to engage in co-rumination. For example, individuals high on neuroticism are moody, anxious, and tend to be insecure in relationships (Holland & Roisman, 2008). Such traits may influence how an individual discusses and deals with problems.

The Pilot Study

The pilot study was conducted during the spring of 2009. This study extended existing research through two main aims: (1) We sought to replicate early work on co-rumination in children and adolescents with an emerging adult sample. Specifically, we examined whether co-rumination in emerging adult friendships is associated with negative emotional symptoms such as depression and anxiety as well as positive benefits such as high levels of friendship quality. (2) We extended methods used in previous research on co-rumination by designing a lab-based observational component. Primarily, we were interested in determining whether observations of co-rumination during a discussion-based task with a friend could be linked to self-reports of co-rumination within the friendship. Through examining the conversations, we also hoped to determine what types of conversational processes distinguish healthy problem discussions from problem discussions that exhibit high levels of co-rumination.

In the pilot study we examined three hypotheses: (1) Co-rumination is associated both with positive friendship quality and with depression and anxiety among emerging

adults. (2) Observations of co-rumination during friends' discussions of problems correlate with their self-reports of co-rumination. (3) Specific conversational processes are linked to co-rumination and to internalizing distress. In particular, we examined friend's responses to a speaker's problem statements and analyzed how these responses were associated with co-rumination, internalizing distress, and friendship quality.

Participants included 42 dyads of same-sex friends who had been friends for at least three months, and who identified one another as close or best friends. The 84 participants were 21 first year students, 23 sophomores, 18 juniors, and 22 seniors. The racial/ethnic composition of the sample was 70% Caucasian, 10% Black, 10% Asian, and 4% Hispanic. A total of 6% of participants either did not provide information on ethnicity or classified themselves as some other race.

Participants made an appointment to come to the lab with their close friend and completed the two-phase study—a questionnaire battery and a videotaped discussion task. To minimize any response effects that may have occurred due to the order in which the two phases were conducted, half of the dyads completed the questionnaire first, and half completed the problem talk session first.

The questionnaire battery included six different measures and a demographics section. The measures used include the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988), the Co-Rumination Questionnaire (Rose, 2002), the Network of Relationships Inventory (Furman & Buhrmester, 1985), the Ruminative Response Scale from the Response Style Questionnaire (Nolen-Hoeksema & Morrow, 1991), and the

Method of Co-Rumination Questionnaire. The questionnaire phase of the study took approximately thirty minutes. Participants completed the questionnaire individually in separate rooms.

For the problem talk portion of the study, the participants were seated in an observation room so that they were facing each other, and a video camera was located in the corner of the room. Each participant was then given a pen and a piece of paper and was asked to write down three current or ongoing personal problems or challenges that they were facing. A list of possible topic categories was available for participants if they had trouble coming up with personal issues to discuss. Example personal topics on the list included problems with a romantic partner, academic issues, and problems with friends or roommates.

The participants first completed a warm-up task where they were asked to imagine that they had won one thousand dollars and needed to decide how to spend it together. For the problem talk discussion, each participant had five minutes to discuss the problems he/she had written down. Participants were informed that they could discuss any or all of the problems in any order and were encouraged to talk about the problems as they normally do when they are together. At the end of five minutes, the researcher knocked on the door and told the participants that it was time for the second participant to discuss his/her problems.

After data collection was complete, the problem talk discussions were transcribed and coded according to coding schemes for co-rumination and conversational processes. These were modeled after coding schemes developed by Rose, Schwartz, and Carlson

(2005). Coding involved a four-step process. First, the transcripts were divided into thought units—utterances that comprise a single unit of thought. Two coders discussed and agreed on the final thought unit divisions. The second step involved coding each thought unit as an Own Problem Statement (OPS), a Friend Problem Statement (FPS), or Not Coded (NC). Own Problem Statements described thought units that were related to the participant's own problems. Friend Problem Statements included any thought units the friend made in response to the speaker's problems. Not Coded statements included thought units that did not involve discussion of problems or were off topic. Additionally, laughs were included in the Not Coded category. Disagreements in coding Own Problem Statements and Friend Problem Statements were resolved through discussion by the two coders.

Step three involved coding responses to Own Problem Statements. Therefore, only Friend Problem Statements that were in response to an Own Problem Statement were given individual codes. There were a total of 15 codes that could be used to categorize Friend Problem Statements. The purpose of this coding procedure was to identify specific conversational processes that occurred during a problem discussion. See Table 1 for a list and description of the codes used. Inter-rater agreement was assessed for 24% of the discussions in which two raters coded independently and was indicative of good agreement (Cohen's kappa = .72). Any coding disagreements were resolved through discussion.

The final step of the coding process was to evaluate levels of active problem solving and co-rumination in the problem discussions with a global coding scheme.

Since co-rumination is characterized by (a) a large amount of time spent talking about problems, (b) mutual encouragement of problem talk, (c) rehashing problems, (d) speculating about problems, and (e) dwelling on negative affect (Rose, 2002), we coded conversations for the four aspects of co-rumination that could be evaluated in a brief conversation. Therefore, levels of mutual encouragement of problem talk, rehashing problems, speculation, and dwelling on negative affect were rated using a 3-point scale with 0 = "none," 1 = "a little," and 2 = "a lot." Mutual encouragement of problem talk occurred when one or both members of the dyad kept the problem talk going instead of talking about other issues. Additionally, mutual encouragement took place when one or both of the participants tried to get the other to talk about the problem again after the topic had changed. Rehashing problems was coded when one or both members of the dyad talked about the problems or parts of the problems over and over again. Speculation occurred when one or both members of the dyad pondered aspects of the problem that were impossible for the dyad to figure out. For example, the dyad discussed the origins of the problem or parts of the problem, why people did what they did, or what may happen as a result. Dwelling on negative affect was coded when one or both members of the dyad focused on the experience of negative emotions, such as feeling worried, nervous, irritated, sad, anxious, angry, or depressed. A fifth dimension, active problem solving, was also assessed with this scale. Active problem solving represents a productive problem solving process and not an aspect of co-rumination. Since discussions could differ greatly on aspects of co-rumination and active problem solving depending on what problems were selected for discussion, dyads were scored twice for

these five conversation aspects. The first set of scores represented levels of co-rumination and active problem solving when the first speaker discussed his/her problems and the second set of scores referred to when the second speaker discussed his/her problems. A total co-rumination score was calculated as the sum of scores on the four dimensions assessed (scores ranged from 0 to 16).

The findings provided some preliminary support for our hypotheses. In regression analyses, rumination predicted depression and anxiety; however, co-rumination did not. As expected, high levels of co-rumination predicted positive friendship quality, but rumination did not. These findings are partially consistent with the first hypothesis but do not show the problematic associations between co-rumination and internalizing distress. Second, correlations showed that observations of co-rumination during brief conversations are marginally associated with friends' self-reports of this process in their relationships ($r = .29$) and significantly associated with their self-reports of friendship quality ($r = .37$). Third, specific dimensions of conversation were associated with co-rumination and also with friendship quality and emotional adjustment (see Table 2). In particular, statements of support/agreement (e.g., "That is so messed up!") were associated with co-rumination and positive friendship quality. In contrast, statements of discouragement (e.g., "Ok, moving on...") were linked to self-reports of depression. Additionally, statements of disagreement (e.g., "That's a bad idea.") were positively associated with self-reports of anxiety and negative friendship quality.

The Current Study

The current study was designed to build upon the pilot study and to address two major aims. Our first aim was to continue to examine whether co-rumination in emerging adult friendships is associated with the same trade-offs that have been found in younger age cohorts. Although the pilot study did not support the hypothesis that high levels of co-rumination are associated with negative emotional symptoms such as depression and anxiety, the dataset used for analyses (n = 42 dyads) was small in comparison to previous questionnaire-based studies on co-rumination. Therefore, we wanted to increase our sample size by administering the questionnaire part of our study, but not the observational component, to additional undergraduates. A larger sample size for the self-report portion of the study would make our study more consistent with other larger scale questionnaire-based studies of co-rumination.

The second aim was to determine whether self-reported levels of co-rumination are associated with changes in depression and anxiety over time. We addressed this aim by adding a longitudinal component to the study. Specifically, we contacted those who participated in the pilot study and asked them to complete an online follow-up survey. To date, only two longitudinal studies on co-rumination have been published and those studies only examined co-rumination in children and adolescents (Rose et al., 2007; Starr & Davila, 2009). In Rose's study, co-rumination predicted increases in positive friendship quality, anxiety, and depression for girls over a six-month period. Co-rumination in boys, however, only predicted increases in positive friendship quality. By adding a longitudinal component to the study, we were able to determine whether there

was evidence suggesting that these gender differences also occur among emerging adults. Longitudinal research on co-rumination is essential for determining whether emerging adult women who co-ruminate may be especially at risk for long-term negative consequences.

Hypotheses. First, we predicted that women would report significantly higher levels of both co-rumination and friendship quality than men. Second, with the larger sample size, we hypothesized that co-rumination would be associated with the trade-offs found in younger cohorts. Specifically, we expected that co-rumination would be related to higher levels of friendship quality as well as depression and anxiety. Third, we also predicted that co-rumination would mediate the association between gender and the adjustment outcomes of friendship quality, depression, and anxiety. Additionally, for the longitudinal component of the study, we expected that higher initial levels of co-rumination would predict increases in friendship quality for both men and women, but that co-rumination would predict increases in anxiety and depression for women only. Finally, we examined whether participants' self-reported ratings of self-esteem and the Big Five personality traits (openness, conscientiousness, extroversion, agreeableness, and neuroticism) were associated with co-rumination. Since no studies have examined the role of self-esteem or the Big Five personality dimensions in the co-rumination process, not enough research exists to make predictions regarding whether or how either of these constructs may be related to co-rumination. Therefore, this dimension of our study is exploratory and no specific hypotheses were made.

Significance. Since co-rumination demonstrates that even high-quality, supportive friendships can have trade-offs that impact emotional well-being (Rose et al., 2007), further research on co-rumination should be conducted to examine the possible negative consequences of co-rumination and determine who is most at risk for internalizing negative symptoms. The current study expands prior research in two major ways. First, whereas much previous research has focused on co-rumination in children and young adolescents, we will expand the research that has recently begun on the friendships of emerging adults. We hope to identify the trade-offs that are associated with co-rumination in this age group. Since reliance on friendships peaks during the time right before marriage (Carbery & Buhrmester, 1998), co-rumination may have especially important effects on this age cohort. Therefore, it is imperative to examine the role of co-rumination in college friendships.

Next, there has been no published study that has examined co-rumination over time in this age group. We hope to determine whether co-rumination in emerging adults is associated with the same longitudinal changes that were demonstrated by Rose et al. (2007) in children and adolescents. If similar results are found in emerging adults, this may suggest that co-rumination is especially problematic for women and that future research should focus on why co-rumination may lead to internalizing distress.

Method

Participants

Participants were emerging adults between the ages of 18 and 25. Two samples of participants were recruited for the current study. Sample 1 consisted of the 84 college

students (50% female) who took part in the pilot study (Time 1 assessment) during the spring of 2009. Although the Time 1 assessment required individuals to participate with a close friend, participants were recruited individually for the second assessment. Therefore, individuals were able to participate in the Time 2 assessment even if their friend chose not to participate.

Sample 1 participants were contacted by e-mail and phone from February to April of 2010. Of the 84 original participants, two were unreachable by e-mail and phone because the contact information provided during the pilot study was no longer valid. One participant had a valid phone number but did not return our messages. One participant who was reached through e-mail declined participation. For those with valid e-mail addresses, ten either did not participate or did not complete a sufficient portion of the survey. Our final sample for the Time 2 assessment was comprised of 70 original participants (50% female) for a response rate of 83%. To be included in the analyses, participants must have completed 90% or more of the survey. For those from Sample 1 who participated in the Time 2 assessment, 69% of participants identified as Caucasian, 7% identified as African American, 10% identified as Asian, 3% identified as Hispanic, and 11% identified as belonging to another ethnic group or did not specify an ethnicity. Attrition analyses were performed to determine whether those who participated in the Time 2 assessment differed from those who did not participate on Time 1 measures. A one-way ANOVA demonstrated that there were no significant differences in co-rumination, rumination, positive friendship quality, negative friendship quality, anxiety, depression, participant age, or friendship length for the two groups, $(p > .05.)$

Sample 2 consisted of 121 undergraduates (57% female). Participants for this sample were recruited from the Introduction to Psychological Science course, courses in the Leadership Studies School and the Business School, and from ads in the Spiderbytes newsletter. Participants were recruited during both semesters of the 2009-2010 academic year. For Sample 2, 74% identified as Caucasian, 12% identified as African American, 4% identified as Asian, 4% identified as Hispanic, and 6% identified as some other ethnicity or did not specify a particular ethnic group. This sample included members of each of the four academic classes (52% first years, 25% sophomores, 14% juniors, and 9% seniors).

These two samples resulted in different numbers of participants for our primary analyses. In analyses of concurrent associations among co-rumination and adjustment indicators, we had a possible sample of 205 (54% female) including the Sample 1 participants at Time 1 and the Sample 2 participants. For longitudinal analyses, the maximum sample size was 70.

Measures

The questionnaire packet included nine different measures and a demographics section. The measures used were the Co-Rumination Questionnaire (Rose, 2002), the Center for Epidemiological Studies Depression Scale (Radloff, 1977), the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988), the Network of Relationships Inventory (Furman & Buhrmester, 1985), the Big Five Inventory (Binet-Martinez & John, 1998), the Ruminative Response Scale and the Distracting Responses Scale from the Response Styles Questionnaire (Nolen-Hoeksema & Morrow, 1991), the Rosenberg

Self-Esteem Scale (Rosenberg, 1989), and the Method of Co-Rumination Questionnaire.

These questionnaires allowed for the examination of levels of co-rumination, depression,

anxiety, friendship quality, rumination, personality dimensions, and self-esteem. We also

investigated whether participants use communication technologies (e.g., cell phones,

instant messaging, text messaging) to co-ruminate with friends. As described below, the

questionnaire format differed slightly for the two samples.

Co-rumination. The 27-item Co-Rumination Questionnaire (Rose, 2002) was

used to assess self-reported levels of co-rumination. This questionnaire was developed to

assess the extent to which participants co-ruminate with friends. Items in the

questionnaire were developed to assess more extreme forms of problem discussion than

are typically seen in self-disclosure measures (Rose, 2002). In the questionnaire, three

items are used to assess each of nine different aspects of co-rumination (1) frequency of

discussing problems, (2) discussing problems instead of engaging in other activities, (3)

encouragement by the participant of the friend's discussing problems, (4) encouragement

by the friend of the participant's discussing of problems, (5) speculation about the causes

of problems, (6) speculation about the consequences of problems, (7) speculation about

the parts of the problems that are not understood, (8) discussing the same problem

repeatedly, and (9) focusing on negative feelings (Rose, 2002). Example 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 we talk about a problem that one of us has we

talk a lot about all of the different bad things that might happen because of the problem."

Participants rate how well each item describes their relationship with their friend on a 5-

point Likert scale ranging from 1 (not at all true) to 5 (really true). An individual's total co-rumination score is that person's mean for all of the items. The internal consistency of this scale was very good (alpha = .96).

Depression.   Self-reported measures of depression were measured with the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D was developed to assess levels of depression in the general population and was designed for use in epidemiological studies rather than as a diagnostic or evaluation tool. The inventory contains 20 items, and individuals rate the extent to which they have experienced each item over the past week. The items are rated on a 4-point Likert scale ranging from 0 (rarely or none of the time; less than 1 day) to 3 (most of or all of the time; 5-7 days). Sample items include "I felt like everything I did was an effort" and "I did not feel like eating; my appetite was poor." Scores on the CES-D are the sum of all responses to the items, and the range of possible scores is zero to 60. For this scale, α = .86.

Anxiety.   The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) was used to assess self-reported levels of anxiety for participants. The measure was developed for use in adolescents and adults and consists of 21 items in which participants rate the extent to which they have experienced each symptom of anxiety during the past week. Ratings are done on a 4-point Likert scale ranging from 0 (not at all) to 3 (severely: I could barely stand it). Sample symptoms include experiencing indigestion, feeling nervous or scared, and being unable to relax. All responses are

summed for a total score, which can range from 0 to 63. The internal consistency of this scale was .94.

    Friendship Quality.   Both positive and negative aspects of friendship quality were measured with the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985). The NRI consists of 30 questions (three items for each of 10 relationship dimensions). Eight aspects of positive friendship quality are measured and they include reliable alliance, affection, enhancement of worth, instrumental aid, companionship, intimacy, satisfaction with the relationship, and the importance of the relationship. The two aspects of negative friendship quality that are measured include conflict and antagonism. Participants are asked to report the extent to which each statement applies to their friendship using a 5-point Likert scale (1 = little or none to 5 = the most). The 10 subscales are used individually. In addition, a positive friendship quality score is calculated as the mean score for the 24 items related to positive friendship quality, and a negative friendship quality score is the average of the items pertaining to conflict and antagonism. The internal consistency of this scale was good for the negative friendship quality measure (alpha = .86) and very good for positive friendship quality (alpha = .90).

    At Time 2, the participants in Sample 1 responded to the NRI by describing their relationship with the friend who participated in the Time 1 assessment with them. To ensure that they were reporting on the same friend that participated at Time 1, we included the first name of the friend with the participant's ID number in the recruitment e-mail. Additionally, participants were required to fill in the friend's name in a blank on

the online follow-up questionnaire. This was used to verify that participants reported on the correct person. For Sample 2, participants wrote the first name of their best same-sex friend on the first page of the questionnaire. These participants were instructed to answer all of the questionnaires about their relationship with this friend.

Change in Friendship. At Time 2, Sample 1 participants also completed a measure assessing how the person's relationship with the friend who participated with them at Time 1 had changed since the first assessment. This measure consists of 14 questions and was developed by our lab. Specifically, participants were asked how closeness, strength of the relationship, and time spent together have changed since the spring. Participants were also instructed to explain any changes in friendship status so that we could determine whether any specific events that may affect friendship quality (e.g., graduation, a fight) have occurred since the Time 1 assessment. The questionnaire also includes questions measuring how often the participant communicates with their friend and through what methods (e.g., face to face, e-mail, phone). In addition, this measure assesses whether effort to maintain the relationship is divided evenly and whether this relationship is one of the participant's major sources of support.

Rumination. Rumination was measured with the Ruminative Response Scale and the Distracting Responses Scale from the Response Styles Questionnaire (Nolen-Hoeksema & Marrow, 1991). The Response Styles Questionnaire consists of a total of 35 items (22 rumination response items and 15 distracting response items) and participants are asked to use a 4-point Likert scale to indicate whether they "Almost never," "Sometimes," "Often," or "Almost always" engage in particular responses when

they feel sad or depressed. The Ruminative Response items measure the extent to which participants typically engage in actions that are self-focused, symptom focused, and focused on the possible consequences and causes of the depressed mood (Nolen-Hoeksema, Parker, & Larson, 1994). For example, participants are asked whether they typically think about how alone they feel when depressed or whether they usually analyze recent events in an attempt to understand why they feel upset. The Distracting Response items assess the degree to which participants take proactive steps to distract themselves from depressive feelings. Examples of distracting responses include helping someone else with something to avoid thinking about a problem and talking out a problem with a trusted friend or relative. For both scales, a participant's total score was the mean across items. The internal consistency for the ruminative response subscale was .91 and for the distracting response subscale it was .85.

Personality Traits. The Big Five Inventory (BFI; Benet-Martinez & John, 1998) is a 44-item measure that was used to assess personality dimensions among the participants. Specifically, the BFI measures levels of extraversion, agreeableness, conscientiousness, neuroticism, and openness. Eight items each are used to assess extraversion and neuroticism, while nine items each measure agreeableness and conscientiousness. A total of ten items assess openness. Each item is a different characteristic and participants are asked to use a 5-point Likert scale to indicate the degree to which each characteristic describes them (1 = disagree strongly to 5 = agree strongly). To determine a participant's personality dimensions, mean scores are computed for each of the five personality dimensions. Example items include "I see

myself as someone who is talkative" (extraversion) and "I see myself as someone who

has an active imagination" (openness). The internal consistency of this scale was

adequate, alpha = .73.

Self-Esteem. The Rosenberg Self-Esteem Scale (Rosenberg, 1989) is a 10-item

measure that is commonly used to assess self-reported levels of self-esteem in social

science research. Using a 4-point Likert scale, participants are instructed to indicate

whether they "Strongly agree," "Agree," "Disagree," or "Strongly disagree with a

particular statement. Half of the items are reverse scored. Sample items include "I feel I

do not have much to be proud of" and "I am able to do things as well as most other

people." The scale ranges from 0 to 30 and the total score is the sum of the 10 items.

The internal consistency of this scale was very good, alpha = .90.

Method of Co-Rumination. The Method of Co-Rumination Questionnaire is a

22-item inventory that was developed by our lab to assess the degree to which individuals

use communication technologies when discussing problems with friends. Specific

communication technologies examined in the questionnaire include text messaging (on

cell phones), instant messaging (on computers), e-mail, and phone. Participants are also

given space to list and describe other communication technologies that may not be

covered by the questionnaire. There are two types of items on the questionnaire. One

type involves describing the frequency with which an individual uses a particular

communication technology. These questions are rated on a 4-point Likert scale with

anchor points "1 = Almost never," "2 = Sometimes," "3 = Often," and "4 = Almost

always." An example of this type of question includes "How often do you use text

messaging to discuss problems with your friend during the school year?" The other type of question asks participants how they typically discuss or talk about problems and participants are to indicate the method of communication that they usually employ. For example, one item states "I find it most convenient to discuss problems with my friend…" and participants select an answer from the following: "1 = In person," "2 = On the phone," "3 = Through text messaging," "4 = Through instant messaging," "5 = Through e-mail," or "6 = Other method." If other is selected, the individual is asked to state what method they typically use.

Procedure

Sample 1. For the longitudinal component of the study, individuals in Sample 1 were contacted and asked to participate in a follow-up to the study that they participated in during the 2009 spring semester. We first attempted to contact former participants using the e-mail addresses they provided during the Time 1 assessment. In the e-mail, we explained that participation in the current study required only the completion of an online questionnaire, not a second observational session. Additionally, the name of the person's friend, the participant's ID number, and a link to an online version of the questionnaire was included in the e-mail. If a participant did not respond or complete the questionnaire after several e-mails, or if an e-mail address was no longer valid, we attempted to contact participants by calling the cell phone numbers that they provided last spring.

Since the questionnaire was available online for Sample 1, all participants completed the questionnaire from a personal computer. Every effort was made to contact participants and all possible accommodations were made to ensure that all interested

parties were able to participate in the study. Due to the online format, a consent form was displayed at the beginning of the questionnaire and continuing with the study was considered consent. At the end of the questionnaire, a debriefing on the purposes of the study was displayed. At this point, participants were instructed to e-mail the author with a current address so that a check could be mailed to the participants. These participants received $10.00 as compensation.

Sample 2. For Sample 2, we recruited participants from the Introduction to Psychological Science course, the Business School, the Leadership School, and from ads in the Spiderbytes newsletter. Students who were interested in participating in the study made an appointment to come to the lab to complete the questionnaire. When participants arrived for their session, the study's purpose was explained to the participants and all of the participants' questions were answered. Informed consent forms were handed out and each participant was asked to write his or her full name, e-mail address, and phone number on a separate piece of paper. At this time, the participants were assigned a personal identification number and this number was used to label the completed questionnaire and the participant's personal information. After the questionnaire was completed, the participants were given a debriefing form with numbers to call if there were any concerns. Finally, the participants were either paid $5.00 or were given course credit.

Results

Gender Differences

The first step of analysis involved examining gender differences on each variable for the full sample (Sample 1 at Time 1 and Sample 2). To avoid issues with interdependency, one participant from each dyad in Sample 1 was randomly selected to be included in the analyses. If only one person from the dyad participated in the Time 2 assessment (n = 11 dyads), then that person was selected for analyses. For each of the six primary variables, a one-way ANOVA was conducted to examine gender differences (see Table 3). As predicted, women endorsed significantly higher levels of positive friendship quality in their relationships than men, $F(1, 160) = 17.54$, $p < .01$. Men reported significantly higher levels of negative friendship quality in their relationships than did women, $F(1, 160) = 4.16$, $p < .05$. Also as expected, women endorsed higher levels of co-rumination within their friendships and higher levels of both depression and anxiety symptoms than did men, $F(1, 160) = 19.29, 5.51, 10.87$, $ps < .05$, respectively. There were no significant gender differences for rumination, $F(1, 160) = 0.91$, $p > .05$.

One-way ANOVAs were also performed on the Time 2 data for Sample 1 to assess gender differences. Consistent with Time 1, no gender differences were found for depression, anxiety, negative friendship quality, or rumination. In contrast to Time 1, there were also no significant gender differences for either co-rumination or positive friendship quality at Time 2.

Concurrent Associations Between Co-rumination and Adjustment

Correlations were examined to determine whether co-rumination and rumination were related to any of the adjustment indicators. Co-rumination was positively associated with positive friendship quality ($r = .49$, $p < .01$). Co-rumination was also positively associated with depression ($r = .18$, $p < .01$), but not with anxiety ($r = .09$, $p > .05$). There was also a positive association between co-rumination and rumination ($r = .31$, $p < .01$). In contrast, rumination was associated with both types of internalizing distress—depression ($r = .55$, $p < .01$) and anxiety ($r = .33$, $p < .01$). However, rumination was not significantly correlated with positive friendship quality ($r = -.05$, $p > .05$).

Four regression analyses were performed to determine whether co-rumination predicted friendship quality (positive and negative) and internalizing distress (depression and anxiety). In these analyses, gender and co-rumination were entered in the first step, and the interaction between gender and co-rumination was entered in the second step. These analyses are presented in Table 4. The regression analysis was significant for the prediction of positive friendship quality. As shown in Table 4, both co-rumination and gender were significant predictors of positive friendship quality. In addition, the co-rumination by gender interaction was significant. This interaction is shown in Figure 1. We examined the correlation between co-rumination and positive friendship quality separately for men and women. These indicated that there was a significant and positive association between co-rumination and positive friendship quality for men and women and that the link was stronger for men ($r = .55$, $p < .01$) than for women ($r = .33$, $p < .01$).

In terms of internalizing distress, the regression analysis indicated that only gender was a significant predictor of anxiety, and women reported higher levels of anxiety than men. For the prediction of depression, Step 1 of the regression was significant, indicating that together, co-rumination and gender predicted depression symptoms. However, examination of the beta coefficients indicated that neither co-rumination nor gender explained a unique portion of variance in depression. There was not a significant interaction between co-rumination and gender in predicting depression.

Controlling for the Variance Associated with Rumination

We next considered the link between co-rumination and rumination in predicting adjustment (friendship quality and internalizing distress). As described above, co-rumination and rumination were both positively correlated with depression. To the extent that co-rumination leads to depression because of its ruminative nature, we expected depression to have a stronger association with rumination than with co-rumination. A second set of regression analyses was computed to test this hypothesis. In these analyses, gender and rumination were entered in the first step, co-rumination was entered in the second step, and the interaction between gender and co-rumination was entered in the third step. These analyses are shown in Table 5.

In the model predicting depression, rumination and gender were significant predictors. Higher levels of rumination were associated with higher levels of depression, and women reported greater depression than men. When controlling for rumination and gender, co-rumination did not make a significant contribution to the model, indicating

that co-rumination is associated with depression through its overlap (i.e., shared variance) with rumination.

For the regression model predicting anxiety, rumination and gender were significant predictors. Women reported greater levels of anxiety than did men, and higher levels of rumination were associated with greater anxiety. As with depression, when rumination and gender were controlled, co-rumination did not make a significant contribution to the model.

In the model predicting positive friendship quality, gender was a significant predictor in the first step, and women reported higher levels of positive friendship quality than did men. Rumination was not a significant predictor; however, co-rumination did significantly predict positive friendship quality, and higher levels of co-rumination were associated with higher levels of positive friendship quality. The regression model predicting negative friendship quality from gender, rumination, and co-rumination was not significant.

Co-rumination as a Mediator of Gender Differences in Adjustment

Additionally, we performed analyses to examine whether co-rumination mediated the associations between gender and adjustment (i.e., positive friendship quality, depression, and anxiety). To test for mediation, we used the methods developed by Baron and Kenny (1986). According to this procedure, three associations were required to be significant to meet the criteria to test for mediation. First, gender had to predict the adjustment indicator. Second, gender had to predict co-rumination, and third, co-

rumination had to predict the adjustment indicator while gender was controlled. If these three criteria were met, we followed up with the Sobel test.

The first mediation analysis involved determining whether co-rumination mediated the gender differences in positive friendship quality (see Figure 2). The three criteria for conducting mediation analyses were met. First, gender was a significant predictor of positive friendship quality, $F(1, 160) = 17.54$, $(p < .01)$, $R^2 = .10$, $\beta = -.31$ $(p < .01)$. Second, gender was a significant predictor of co-rumination $F(1, 160) = 19.29$ $(p < .01)$, $R^2 = .11$, $\beta = -.33$ $(p < .01)$. Third, co-rumination significantly predicted positive friendship quality when gender was controlled, $F(1, 160) = 29.11$ $(p < .01)$, $R^2 = .27$, $\beta = -.44$ $(p < .01)$. When controlling for co-rumination, gender remained a significant predictor of positive friendship quality, $F(1, 160) = 29.11$ $(p < .01)$, $R^2 = .27$, $\beta = -.17$ $(p < .01)$; however, the coefficient was reduced compared to when co-rumination was not controlled (β was reduced from $-.31$ to $-.17$). The significant Sobel test (-3.55, $p < .001$) indicated that the gender differences in positive friendship quality scores were partially mediated by co-rumination.

Mediation analyses were also attempted to determine whether co-rumination mediated the link between gender and depression (see Figure 3). First, gender was a significant predictor of depression, $F(1, 160) = 5.51$ $(p < .05)$, $R^2 = .03$, $\beta = -.18$ $(p < .05)$. Second, gender was a significant predictor of co-rumination $F(1, 160) = 19.29$ $(p < .01)$, $R^2 = .11$, $\beta = -.33$ $(p < .01)$. Third, co-rumination was a marginally significant predictor of depression when gender was controlled, $F(1, 160) = 5.51$ $(p < .01)$, $R^2 = .05$, $\beta = .14$ $(p = .09)$. Since this third prediction approached significant, we decided to

examine the mediation analysis. When controlling for co-rumination, gender was no longer a significant predictor of depression, $F(1, 160) = 4.24$ ($p < .01$), $R^2 = .05$, $\beta = -.14$ ($p = .10$), and the relationship was reduced when compared to the regression in which co-rumination was not controlled (β was reduced from -.18 to -.14).

A mediation analysis examining gender differences in anxiety could not be conducted because anxiety was not significantly associated with co-rumination.

Longitudinal Associations Between Co-rumination and Adjustment

To examine our hypotheses involving longitudinal associations between co-rumination and adjustment, the data from those in Sample 1 who had participated in both the Time 1 and Time 2 assessments were analyzed ($n = 70$). To eliminate problems with interdependency among the data, only one person was selected for the analyses. If only one participant from a dyad took part in the Time 2 assessment, then his or her data was selected for the analyses.

Does Co-rumination Predict Adjustment at Time 2? Four regression analyses were conducted to determine whether co-rumination at Time 1 predicted adjustment scores at Time 2. A significant effect of co-rumination would thus indicate that co-rumination is associated with changes in adjustment over the course of the year (see Table 6). In all four analyses, we controlled for gender and the Time 1 score of the variable being examined in Step 1. The Time 1 co-rumination score was entered in Step 2. We first considered the prediction of friendship quality over time. As shown in Table 6, positive friendship quality was generally stable from Time 1 to Time 2. Even so, co-rumination was a marginal predictor of positive friendship quality at Time 2, controlling

for Time 1 positive friendship quality, β = .31, t = 1.82, p = .07. In the regression, co-rumination accounted for an additional 6.9% of the total variance in positive friendship quality at Time 2. Higher levels of initial co-rumination were marginally associated with increases in positive friendship quality over time. Negative friendship quality was also stable from Time 1 to Time 2, and co-rumination was not a significant predictor of changes in negative friendship quality over time.

We then considered prediction of changes in internalizing distress over the course of the year. The regression models predicting depression and anxiety were not significant.

Does Initial Adjustment Predict Later Co-rumination? We conducted four regression analyses to determine whether Time 1 depression, anxiety, or positive and negative friendship quality scores predicted co-rumination at Time 2. In all analyses, gender and Time 1 co-rumination scores were entered in Step 1, and the Time 1 adjustment indicator was entered in Step 2. Co-rumination was highly stable from Time 1 to Time 2, β = .77, t = 6.94, p < .001. Neither depression, anxiety, nor positive friendship quality added significantly to the prediction of Time 2 co-rumination above and beyond the stability of co-rumination. In the regression analysis including negative friendship quality as a predictor of co-rumination at Time 2, negative friendship quality was a marginally significant predictor of changes in co-rumination, β = .19, t = 1.82, p = .077. Higher levels of negative friendship quality were marginally associated with increases in co-rumination over time.

Associations Between Co-rumination, Self-Esteem, and Personality Dimensions

Correlational analyses were performed to assess whether self-esteem or personality dimensions were associated with levels of co-rumination. Participants in Sample 1 provided self-esteem and personality dimension information only at Time 2; thus, we used their Time 2 co-rumination scores to determine whether co-rumination was associated concurrently with either self-esteem or personality dimensions. Self-reported levels of self-esteem were negatively associated with reports of co-rumination with one's friend, $r = -.15$, $p < .05$. Therefore, higher levels of co-rumination were weakly associated with lower levels of self-esteem. Since the association between concurrent co-rumination and self-esteem was significant, a regression analysis was conducted to determine whether co-rumination could predict self-esteem while controlling for gender and concurrent rumination. Neither co-rumination nor gender was a significant predictor of self-esteem. However, concurrent rumination was a significant predictor of self-esteem $F(2, 186) = 23.08$ ($p < .01$), $R^2 = .20$, $\beta = -.43$ ($p < .01$).

When correlations were computed for co-rumination and each of the Big Five personality dimensions, only neuroticism was significantly correlated with concurrent co-rumination ($r = .21$, $p < .01$). As shown in Table 7, associations with concurrent rumination were also calculated for each of the personality dimensions, and self-reported rumination was negatively associated with extraversion ($r = -.19$, $p < .05$), agreeableness ($r = -.29$, $p < .01$), and conscientiousness ($r = -.20$, $p < .01$). Neuroticism was the only personality dimension with a positive association with rumination, ($r = .49$ $p < .01$). The dimension openness was not associated with either co-rumination or rumination. Since

neuroticism was positively associated with co-rumination, a regression was computed to determine whether co-rumination could predict neuroticism while controlling for gender and rumination; however, only rumination was a significant predictor of neuroticism.

Communication Technologies and Co-Rumination

Another exploratory part of this study was to determine whether emerging adults use communication technologies such as phones, text messaging, instant messaging, or e-mail to discuss problems with their friends and potentially to co-ruminate with friends. We examined descriptive statistics to determine the extent to which these forms of communication are used in problem discussions. Participants were asked how they usually communicate with their closest friend about their problems, and 70% reported that they discuss problems in person, 19% reported typically discuss problems on the phone, 6% use text messaging, 4% use instant messaging, and 1% use email. Participants were also asked which method was the most convenient for discussing problems with their friends, and over three-quarters selected in person discussions (78%). Phone calls were the next frequent method (11%), and fewer than 10% selected other means of communication (4% text messaging, 6% instant messaging, and 1% e-mail).

Participants were then asked how often they used each of the five types of communication to discuss problems with their friends (i.e., almost always, often, sometimes, almost never). When discussing problems, 61% of participants reported that this almost always or often takes place with their friends in person. Rates of phone use were lower and 45% of participants almost always or often use the phone to discuss problems. Texting was used almost as frequently as phone calls to discuss problems and

44% of participants reported almost always or often using texting for problem discussion. Instant messaging and e-mail were the least used methods for problem discussion and 23% reported almost always or often using instant messaging and 5% reported almost always or often using e-mail to discuss problems.

Finally, participants were also asked to report how they discuss problems with their friends when it is not currently possible to meet in person. When face-to-face discussion is not possible, 19% reported that they typically wait until they can meet before they discuss the problem. Other individuals reported utilizing communication technologies in this situation and 45% use the phone, 17% text their friend, 13% use instant messaging, and 3% use email. Another 3% reported that they typically used another form of communication, such as Skype, when meeting with their friend was not possible.

Discussion

The purpose of the present study was to extend the limited research available on the trade-offs that are associated with co-rumination in emerging adult same-sex friendships. Our findings provide support for the conclusion that co-rumination is a social process associated with adjustment trade-offs, primarily positive friendship quality as well as depression. This study adds to the research literature on co-rumination not only by exploring the positive and negative correlates and consequences of co-rumination in emerging adults, but also by investigating how these trade-offs may change over the course of a year.

Co-rumination and Associations with Gender and Positive Friendship Quality

Consistent with previous research on emerging adults (Calmes & Roberts, 2008) and research on children and adolescents (Rose, 2002; Rose et all, 2007), our study provided further evidence that women co-ruminate more in their same-sex friendships than do men. Additionally, this study as well as our pilot study provided additional support for the link between co-rumination and positive friendship quality that has been described in previous studies. Results from the pilot and the present study demonstrated that high levels of co-rumination were associated with high levels of positive friendship quality. The present study also demonstrated that co-rumination partially mediates the link between gender and positive friendship quality. Thus, co-rumination in women's close friendships helps account for their higher levels of positive friendship quality in comparison to men. This mediation effect for co-rumination was previously found as an explanation for the higher levels of friendship quality and closeness reported in female children's and adolescents' friendships (Rose, 2002) as well as for the higher levels of relationship satisfaction reported in emerging adult women's friendships (Calmes & Roberts, 2008).

Furthermore, although friendship quality is relatively stable, this study demonstrated that co-rumination is a marginal predictor of friendship quality in emerging adult friendships over the course of a year. Therefore, not only is co-rumination associated with current levels of friendship quality, but those who co-ruminate with their friend are likely to experience increases in positive friendship quality within the relationship. This is probably due to the self-disclosure that is inherent in co-rumination.

As friends self-disclose about personal issues, they experience increases in intimacy and closeness. Additionally, when a friend is willing to co-ruminate about problems, this contributes to feelings of support, which also is associated with positive friendship quality. This finding supports Rose et al.'s (2007) study demonstrating that co-rumination predicts increases in positive friendship quality for children and adolescents over a course of six months.

Finally, the pilot study demonstrated that observations of co-rumination during brief discussions were also significantly correlated with self-reports of positive friendship quality within the relationship. This is particularly important because the link between observed co-rumination and friendship quality shows that the association is not due to shared method variance due to relying on only self-reports. In this way, co-rumination appears to be a beneficial social process in that it is associated with higher quality friendships and it leads to higher quality friendships over time. It is one explanation for the often-reported gender difference in friendship quality.

Interestingly, although co-rumination helps explain why women experience higher levels of friendship quality in their same-sex friendships, co-rumination appears to have a salient impact on the friendships of men since we found that the association between co-rumination and positive friendship quality was stronger for men. Rose (2002) also found this relationship between positive friendship quality and co-rumination in the friendships of male children and adolescents. Research examining closeness in male and female emerging adult same-sex friendships has provided evidence that verbal behaviors are more important to the development of closeness in women's friendships

than men's friendships (Floyd & Parks, 1995), and that women are more likely than men to manifest closeness though discussing fears and personal problems as well as through talking on a deep and highly personal level (Floyd, 1995). Although such interactions may appear to be related to greater levels of intimacy in female friendships, men are more likely to express closeness in their friendships in masculine ways such as through drinking together, talking about sexual issues, and shaking hands. When considering men's instrumental manifestations of closeness, men and women do not differ on relationship satisfaction, closeness, or commitment (Floyd, 1995). Since men tend to express closeness and intimacy in these "gender-validating" ways (Floyd, 1995, p .199), problem discussion and co-rumination among men is non-normative. Furthermore, since men tend to spend time with their friends in groups centered around an activity, whereas women are more likely to spend time in dyads and talk, men may have fewer opportunities in which they are able to co-ruminate with friends. As a result, men who have a close same-sex friend with whom they can discuss problems may evaluate these relationships as more intimate and possibly of higher quality than their other same-sex friendships. Therefore, co-rumination may be an especially important social process for the development of positive friendship quality among men.

Although previous research has demonstrated that co-rumination is associated with problems such as anxiety and depression (and our findings support this link for depression), this study illustrates that the benefits of co-rumination should not be disregarded. Engaging in co-rumination is associated with high levels of friendship quality as well as increases in friendship quality over time. Furthermore, co-rumination

may be an important process that leads men to develop more intimate friendships. Work by Funasaki and Mezulis (2010) has demonstrated that the process of co-rumination has other benefits and that adolescents who co-ruminate are more likely to use problem-solving and seek out social support to cope with problems during subsequent weeks. Additional research is needed to determine other positive outcomes that may result from co-rumination in same-sex friendships. Furthermore, it will be important to determine what aspects of co-rumination contribute to positive friendship quality and what aspects are associated with internalizing distress. If the positive aspects of co-rumination can be identified, then this information could be used to instruct individuals in how to discuss problems in ways that lead to fewer maladaptive outcomes.

Co-rumination and its Link with Rumination and Internalizing Distress

Much research on co-rumination has focused on the negative consequences of co-rumination, specifically depressive and anxious symptoms. We found that co-rumination in our sample was significantly associated with depression. This association between co-rumination and depression supports what has been found previously in emerging adults (Calmes & Roberts, 2008) and in Rose's (2002) study examining internalizing symptoms in children and adolescents. In addition, our study provided further evidence that co-rumination appears to mediate the relationship between gender and depression. Although our mediation model was only marginally significant, this trend supports Rose's (2002) finding that co-rumination mediates gender differences in internalizing distress, as well as Calmes and Roberts's conclusion that co-rumination mediates the gender depression link in emerging adults' friendships. Accordingly, one explanation for the often-reported

finding that women have higher levels of depression than men is that women tend to co-ruminate with their friends more than men do.

Though this study provides support for the link between co-rumination and depression, more research is needed. According to Rose (2010), research thus far has demonstrated that co-rumination has a "fickle" link with depression, and the strength of the association between co-rumination and depression has varied across studies even when the same measure was used. Although this may be partially due to differences in sampling and the populations examined, the link between co-rumination and depression appears most stable when the measures emphasize affective symptoms (Rose, 2010). Future studies should be designed to clarify whether it is the affective symptoms of depression that are related to co-rumination, rather than other symptoms of depression such as somatic, social, or behavioral symptoms.

Together, gender and co-rumination were predictors of depression; however, neither variable provided a unique contribution to the model. Additionally, when rumination was controlled for, co-rumination did not make a significant contribution to the prediction of depression. Therefore, co-rumination's association with depressive symptoms appears to be due to its overlap with rumination, which is highly correlated with depression. The lack of a significant relationship between co-rumination and depression when rumination is controlled has also been demonstrated by previous work (Rose, 2002; Calmes & Roberts, 2008). However, the rumination component of co-rumination may serve as an explanation for why co-rumination is related to maladaptive outcomes (Rose, 2010). For those who co-ruminate, not only do they engage in the social

form of rumination, but it is likely that they are also ruminating about troubling events on their own. Furthermore, those who co-ruminate about a problem are not only more likely to ruminate about the current problem, but they also are more likely to ruminate about new problems (Funasaki & Mezulis, 2010). Therefore, engaging in co-rumination may serve to increase instances of using rumination as a coping mechanism. Through this mutually reinforcing relationship between rumination and co-rumination, co-rumination is thought to be a correlate of rumination (Rose, 2010), as well as an outcome of rumination (Jose, 2010). As rumination and co-rumination reinforce the use of the other as a coping mechanism, issues with internalizing distress may result. Additional research should examine whether there are particular aspects of co-rumination that are especially ruminative (e.g., rehashing) and whether these aspects contribute to depression more than other aspects that may be considered less ruminative in nature (e.g., speculation).

In contrast to Calmes and Roberts's study on emerging adults, we did not find that co-rumination was associated with anxiety symptoms. Since our study used the same anxiety measure (BAI), this discrepancy could not be due to a difference in emphases between the measures (i.e. a focus on physiological symptoms versus behavioral symptoms). Despite the association between anxiety and co-rumination, previous research has not demonstrated that anxiety symptoms alone are predicted by co-rumination or that co-rumination mediates gender differences in anxiety. Additional research is necessary to probe the link between co-rumination and anxiety in emerging adults.

This study also revealed a surprising link between friendship quality and co-rumination— Time 1 reports of negative friendship quality (antagonism and conflict) served as a marginal predictor of co-rumination at Time 2. Although this finding was unexpected, one possible explanation is that conversations that are high in conflict and antagonism may be more ruminative than neutral conversations. As individuals interact in a relationship high in negative friendship quality, they may develop a more ruminative discussion style even when they are discussing personal problems, rather than issues in the relationship. It will be important to determine if people who co-ruminate in relationships that are high in conflict and antagonism are at a greater risk for developing problems with internalizing distress or whether these individuals are less likely to benefit from the positive outcomes of co-rumination, such as positive friendship quality.

Personality Dimensions and Self-Esteem

Another contribution of the present study to our understanding of co-rumination involved the examination of co-rumination's association with the Big Five personality dimensions and self-esteem. Of the five personality dimensions examined, only neuroticism was significantly associated with co-rumination. Despite co-rumination's positive link with neuroticism, only rumination was a significant predictor of neuroticism. Therefore, it is likely that neuroticism is associated with co-rumination due to the ruminative component of co-rumination, rather than the fact that individuals high on neuroticism are discussing problems with their friends. The positive association that was found between neuroticism and rumination in our study demonstrated additional support for this link. Furthermore, Segerstorm, Tsao, Alden & Craske (2000; as cited in

Roelofs, Huibers, Peeters, Arntz, & Os, 2008) have suggested that a ruminative response style may be a cognitive manifestation of neuroticism. Consequently, individuals high in neuroticism may be more likely to employ passive coping mechanisms such as rumination and co-rumination. These coping strategies may be especially ineffective because rumination has been shown to mediate the relationship between neuroticism and both depression and anxiety (Roelofs et al., 2008). Although the Big Five are frequently used as basic dimensions of personality, future research examining links between co-rumination and personality should consider other operationalizations of personality, as well as lower-order traits that would be included within the Big Five dimensions (e.g., sociability and sensation-seeking would be different low-order traits included in the dimension of extraversion).

Another new finding was that co-rumination was negatively related to self-esteem. Therefore, individuals with lower levels of self-esteem reported higher levels of co-rumination with their close friend. This outcome is interesting since individuals with low self-esteem tend to avoid self-revelations (Cameron, Holmes, & Vorauer, 2009). However, the key to this finding may be that all of the individuals in our study reported that they had a close same-sex friend. It is likely that the link between co-rumination and self-esteem may differ for individuals with low self-esteem depending on whether they have a same-sex friend who they consider close. For example, if an individual with low self-esteem does not have any friends who are considered close, he or she may be less likely to co-ruminate with friends.

Although co-rumination was negatively associated with self-esteem, only rumination was a predictor of self-esteem. This is in accordance with research by Feldman et al. (2008) demonstrating that emerging adults with low self-esteem are more likely to report ruminating on negative affect and to dampen positive affect. Thus, self-esteem may be associated with co-rumination due to co-rumination's overlap with rumination. Since low self-esteem is associated with rumination, low self-esteem may also lead an individual to engage in co-rumination as a coping mechanism if the individual has a close friend with whom he or she can discuss problems. Likewise, through dwelling on problems and negative affect during conversations high in co-rumination, co-rumination could also affect an individual's self-esteem. Additional research should be conducted to determine whether other personal factors or traits are related to co-rumination since such traits may influence how an individual discusses and deals with problems. Further research is essential for identifying who is likely to co-ruminate and who is likely to suffer from internalizing distress as a result of this social process.

Use of Communication Technologies

We also sought to determine whether problem discussions take place in formats other than face-to-face communications. Primarily, we examined the extent to which emerging adults use phone calls, text messaging, instant messaging, and e-mail to discuss problems with their friends. Although the majority of participants reported that they typically talk in person and find it most convenient to talk in person about their problems, all forms of communication examined were used as ways to discuss problems with

friends. Moreover, when participants have a problem and are not currently able to meet with their friend, they are more likely to utilize communication technologies to discuss problems and less than 20% wait until they meet to discuss the problem.

In the future, it will be increasingly important to consider the role of communication technologies in the co-rumination process. Further research should consider whether co-rumination through methods other than face-to-face conversations leads to the same developmental outcomes. It is possible that conversations via text or instant messaging may lack some of the warmth and support that is conveyed through tone and facial expressions when discussing a problem in person. If this is the case, co-rumination using communication technologies may be more detrimental than co-rumination that occurs in person. Additionally, as more children, adolescents, and young adults begin to use cell phones and computers as ways of keeping in contact with friends, co-rumination through communication technologies may increase with frequency. Thus, research examining the developmental significance of co-rumination using these forms of communication will be essential.

Limitations and Future Research

One main limitation of this study is that although it was designed to examine co-rumination in emerging adults, our sample only included emerging adults who were in the process of obtaining a college education. However, this is a common problem in the research literature and studies on emerging adults who do not attend college are so rare that these individuals are often called the "forgotten half" (Arnett, 2000, p.469). Although this problem has been recognized since the late 1980s, studies on non-college

bound youth remain uncommon because they are not readily accessible and are both costly and time consuming to recruit. When such samples are recruited, they are often nonrepresentative of non-college bound emerging adults as a whole (Arnett, 2000).

Research on co-rumination in emerging adults who do not attend college is especially important because such individuals may have social networks that differ from individuals at a residential university. Since friends are the most important providers of intimate disclosure and companionship during the time before marriage (Carbery & Buhrmester, 1998) and since college students often live in close proximity to their friends, college students may be particularly reliant on these friendships. In contrast, non-college bound individuals may still live with their parents, marry earlier, or have relationships with work colleagues that differ from friendships in a college setting. Therefore, non-college bound emerging adults may rely on individuals other than friends and they may have different co-rumination patterns than those who attend college. Furthermore, non-college bound emerging adults may face different challenges than college students (e.g., finding a job, being financially independent) and may also employ different coping mechanisms than college students. Future research should compare co-rumination in college students and non-college bound youth and investigate whom both groups co-ruminate with, the types of problems that are frequently discussed, and whether the trade-offs differ between the two groups.

An additional limitation of this study is that the longitudinal sample was relatively small. After eliminating interdependency among the data, the longitudinal sample available for analysis consisted of only 39 individuals. Therefore, in our analyses, the

power was low and our ability to detect significant longitudinal relationships may have been limited. Further research examining how co-rumination predicts adjustment indicators and how initial adjustment predicts later co-rumination is needed using a larger emerging adult sample. Moreover, future studies should consider studying co-rumination in dyads over periods longer than one year since individual scores on co-rumination remain relatively stable during the course of a year.

A final limitation of this study is that we only utilized self-reports of co-rumination and friendship quality. Additional studies should examine how friends' perceptions of co-rumination and friendship quality differ and whether such differences or similarities are related to any of the trade-offs that we examined. Future research should also include observational measures of co-rumination. Observational studies provide a rich context for studying aspects of co-rumination that are difficult to capture through self-report measures (e.g., how friends react to problem statements, what is spontaneously discussed, whether active problem solving is also incorporated). Moreover, using observational assessments in addition to self-report measures can provide evidence that the links between co-rumination and adjustment are not due to shared method variance. Therefore, using multiple methods is important and further research should incorporate observational methods. Furthermore, through combining observations with longitudinal methods, we may be able to identify whether particular aspects of co-rumination (e.g., dwelling on negative affect as opposed to speculating) are better predictors of developing internalizing distress later on. Research involving multiple methods is essential for determining who is likely to experience trade-offs from

engaging in co-rumination and also what aspects of co-rumination are most beneficial and most problematic.

Conclusions

A major contribution of this study is that it further established the link between co-rumination and positive friendship quality. Through discussing problems, individuals who co-ruminate benefit from social support and increases in positive friendship quality. Although this study demonstrated that co-rumination results in clear benefits, we also showed that co-rumination is associated with trade-offs such as depression, although this relationship may be due to co-rumination's overlap with rumination.

Despite the negative outcomes that may result from co-rumination, the social benefits should not be overlooked. Discussing problems with a trusted friend leads to benefits for the relationship such as increases in intimacy and closeness. If co-ruminators can maintain the supportive, adaptive aspects of co-rumination while decreasing the ruminative, maladaptive aspects of co-rumination, they may be able to develop more effective ways of discussing and coping with their problems. Additional research should be focused on determining which aspects of co-rumination are most problematic and how these aspects can be minimized in problem discussions. If such aspects can be identified, then interventions can be developed to help people eliminate ruminative ways of problem discussion in their interactions with others. Moreover, since co-rumination demonstrates that friendships can have both positive and negative influences on adjustment and well-being, it is important that future studies also consider and seek to identify other social processes that may have additional adjustment trade-offs.

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Table 1

List of Codes for Responses to Own Problem Statements

Code	Definition	Examples
1. Mutual Encouragement Question (MEQ)	Question intended to get speaker more focused on the negative aspects of a problem	"Did he REALLY say that?" "Are you kidding me?"
2. Question- Information (QI)	Request for more information or clarification	"Is that today?" "Do you like your job?"
3. Support/Agree (SA)	Nonneutral comment that supports what the speaker is saying	"I think you're right." "That is so messed up!" "That's awesome."
4. Mutual Encouragement- Self (MES)	Continuation of the problem discussion but with an emphasis on one's own experience	"My mom does the same thing!" "It's like my teacher told us..."
5. Speculation about Problems (Spec)	When the speaker wonders about a part of the problem that cannot be figured out	"I just think she acts that way because she's spoiled and thinks she's better than everyone else."

6. Active Problem Solving (APS)	Suggestions and advice that specifically relate to the problem	"You could try studying at the library instead." "I think you should call her."
7. Hope for Change in Circumstances (H4C)	A hope for a change in the circumstances surrounding a problem in which both people have no control over the situation	"Wouldn't it be great if they allowed co-ed roommates?" "They should hire more students to work at Tyler's Grill."
8. Discouragement (Disc)	Not adding to a person's discussion of a problem; Not encouraging a continuation of the discussion	"I thought we already talked about that..." "You just have to suffer through, it's almost over."
9. Nonsupport/Disagree (ND)	Verbalization that is explicitly non-supportive or where the listener explicitly does not agree with the speaker	"I don't know. Try to think about it from his perspective." "You're stupid to have done that."

10. Adding Information (AI)	Verbalization that provides additional *factual* information related to the general problem topic	"She's leaving Tuesday." "No, he wasn't there last night."
11. Acknowledge (Ack)	Used to categorize placeholders or to simply acknowledge that the speaker has been heard	"Yeah." "Uh-huh." "Yeah, I think so."
12. Talk Related to Study (ST)	Verbalizations related to the study context	"My microphone fell off." "Do I go now?"
13. Problem Related Comments (PRC)	Verbalizations related to the general problem that do not fit into another category; Includes neutral opinions and the speaker's thoughts about his own comments about the problem	"I think you should tell her no..." (APS) "....well, no that's a bad idea." (PRC)

| 14. Other (O) | Off topic discussion or filler statements; Unfinished thoughts or statements with no meaning due to being cut off by the other person | "Ummm..." "I keep biting my nails." "Sorry, I had something in my throat." |
| 15. Laugh (L) | Laughs are indicated on transcripts | |

Table 2

Correlations Among Selected Conversational Processes and Measures of Emotional Adjustment and Friendship Quality

Dimensions of Conversation	Observed Co-rumination	Depression	Anxiety	Positive Friendship Quality	Negative Friendship Quality
Support/Agree	.51***	-.05	-.08	.30**	-.14
Speculation	.32**	-.07	-.07	.24*	.16
Active Problem Solving	-.07	-.13	-.10	.06	.20
Discouragement	-.12	.31**	.13	-.26	.04
Nonsupport/Disagree	-.13	.34**	.39***	.04	.42***

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

Table 3

Mean Scores on Adjustment Variables, Co-rumination, and Rumination for Women and Men

	Women Mean (SD)	Men Mean (SD)
Pos. Friendship Quality	3.84 (.55)	3.46 (.61)
Neg. Friendship Quality	1.41 (.49)	1.60 (.67)
Co-rumination	2.91 (.83)	2.35 (.79)
Rumination	2.02 (.58)	1.94 (.54)
Depression	15.26 (10.82)	11.64 (8.26)
Anxiety	14.04 (12.18)	8.47 (8.61)

Table 4

Regression Equations Predicting Friendship Quality and Internalizing Distress from

Co-rumination, Gender, and the Interaction of Co-rumination and Gender

	Step 1			Step 2		
	R^2	$\beta_{\text{co-rumination}}$	β_{gender}	ΔR^2	R^2	$\beta_{\text{co-rum x gender}}$
Pos Friend Quality	.27***	.44***	- .17*	.02*	.29***	.43*
Neg Friend Quality	.03	- .09	.13	.00	.03	.08
Depression	.05*	.14	- .14	.00	.05*	- .08
Anxiety	.07**	.06	- .23**	.01	.08**	.34

*$p < .05$, **$p < .01$ ***$p < .001$. Gender was coded as women $= 0$ and men $= 1$.

Table 5

Regression Equations Predicting Friendship Quality and Internalizing Distress from Gender, Rumination, Co-rumination and the Interaction of Co-rumination and Gender

	Step 1			Step 2			Step 3		
	R^2	β_{gender}	β_{rum}	ΔR^2	R^2	$\beta_{co\text{-}rum}$	ΔR^2	R^2	$\beta_{co\text{-}rum\ x\ gender}$
Pos Friend Quality	.10***	-.32***	-.07	.21***	.31***	.50***	.02	.33***	.40
Neg Friend Quality	.03	.16*	-.02	.01	.03	-.10	.00	.03	.76
Depression	.32***	-.14*	.54***	.00	.32***	-.03	.00	.32***	.00
Anxiety	.16*	-.23**	.31***	.00	.16***	-.05	.01	.17	.38

*p < .05, **p < .01 ***p < .001. Gender was coded as women = 0 and men = 1.

Table 6

Regression Equations Predicting Friendship Quality and Internalizing Distress at Time 2 from

Time 1 Co-rumination

	Step 1			Step 2		
	R^2	$\beta_{AdjTime1}$	β_{gender}	ΔR^2	R^2	$\beta_{co\text{-}rumTime1}$
Pos FQ Time 2	.19*	.44**	.08	.07	.25*	.31
Neg FQ Time 2	.11	.31*	- .06	.01	.11	.07
Depression Time 2	.08	.28	.02	.06	.14	.25
Anxiety Time 2	.09	.29	.02	.06	.14	.25

*$p < .05$, **$p < .01$ ***$p < .001$. Gender was coded as women $= 0$ and men $= 1$.

Table 7

Correlations Between Big Five Personality Dimensions and Co-rumination and Rumination

	Co-rumination	Rumination
Extraversion	.06	- .19*
Agreeableness	- .06	- .29***
Conscientiousness	- .01	- .20**
Neuroticism	.21**	.49***
Openness	.00	.09

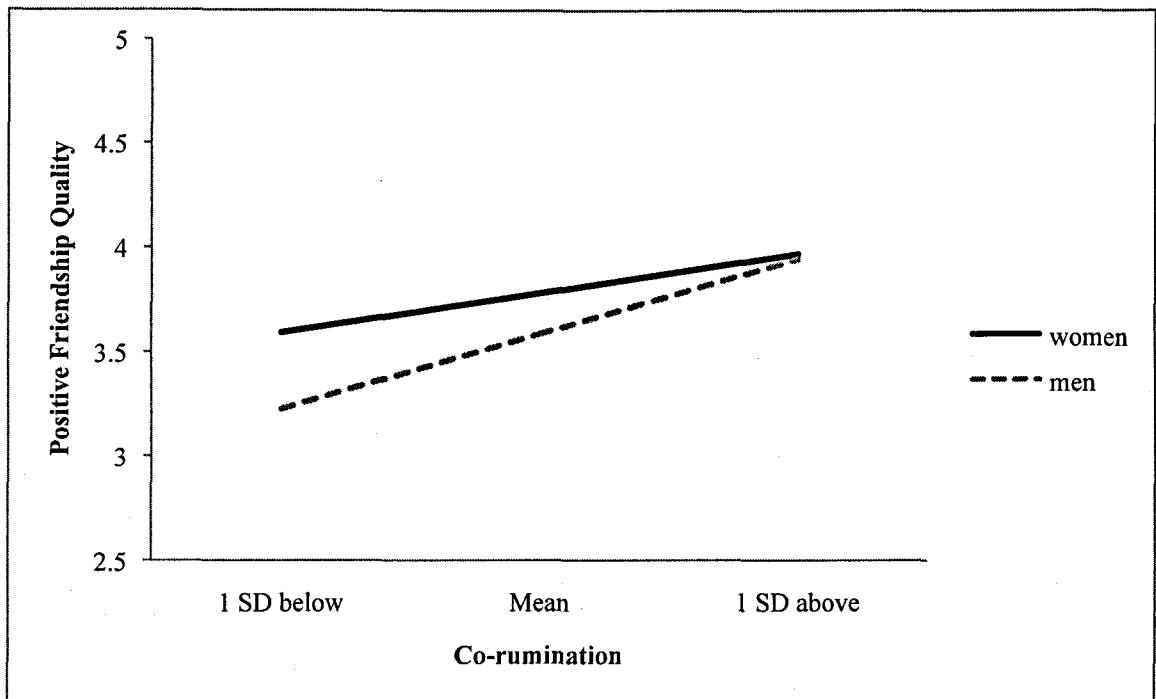*p < .05, **p < .01 ***p < .001. Gender was coded as women = 0 and men = 1.

Figure 1. Interaction between gender and co-rumination for positive friendship quality.
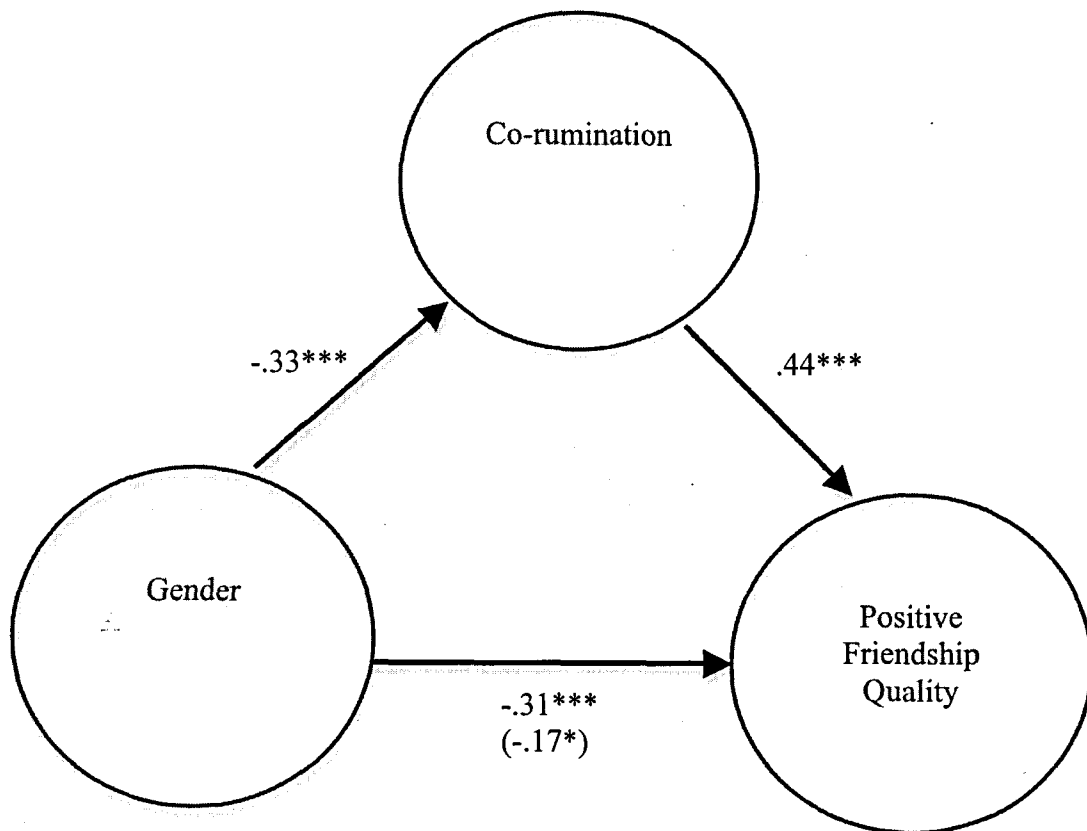
Figure 2. Co-rumination as a mediator of the gender differences in positive friendship quality. The numbers in this model indicate the standardized ß coefficients that were calculated in the regression analyses. For the ß representing the link between co-rumination and positive friendship quality, this value was calculated while controlling for gender. The ß coefficient in parentheses represents the value determined by the regression in which co-rumination was controlled and gender predicted positive friendship quality. Women were coded as 0 and men were coded as 1. $* p < .05, ** p < .01, *** p < .001$.
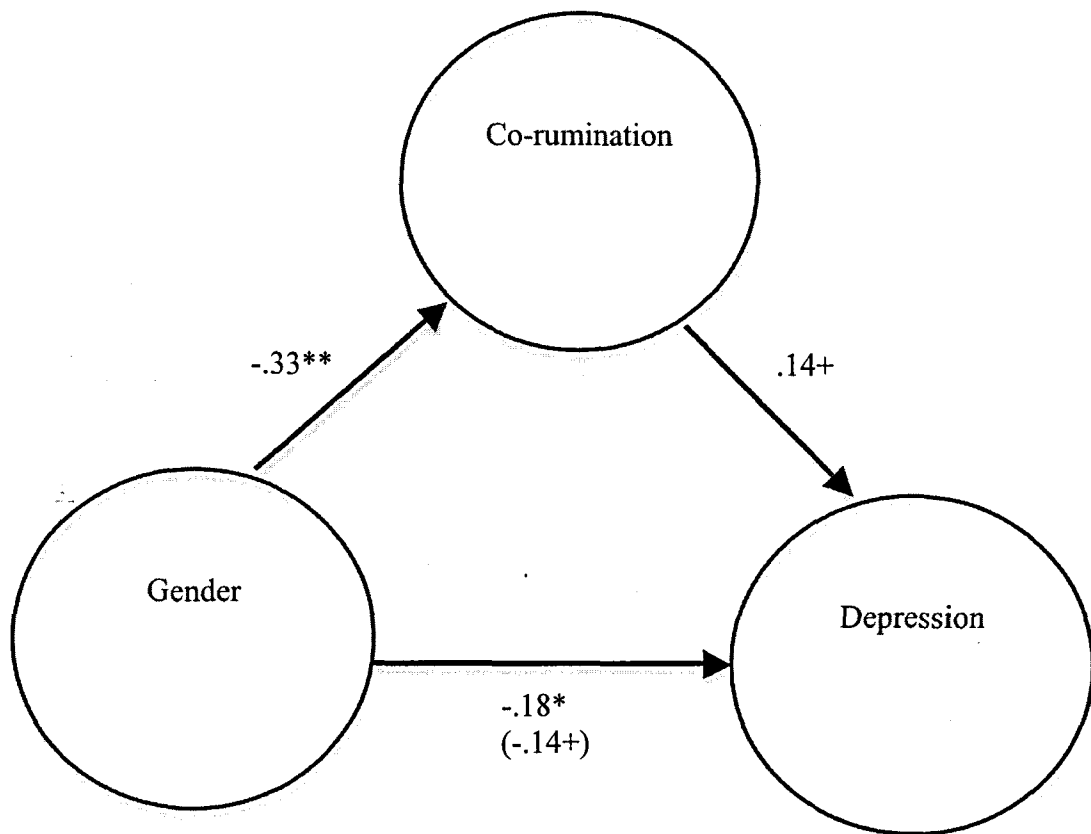
Figure 3. Co-rumination as a mediator of the gender differences in depression. The numbers in this model indicate the standardized ß coefficients that were calculated in the regression analyses. For the ß representing the link between co-rumination and depression, this value was calculated while controlling for gender. The ß coefficient in parentheses represents the value determined by the regression in which co-rumination was controlled and gender predicted depression. Women were coded as 0 and men were coded as 1. $+p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$.

Curriculum Vitae
Teresa Michelle Preddy
Teri.Preddy@gmail.com
Permanent Address: 9617 Dove Hollow Lane, Glen Allen, Virginia 23060

University of Richmond, VA 08/2008 – 08/2010
M.A. Psychology, GPA 4.00
Graduated August 2010

The College of William and Mary, VA 01/2004 - 05/2007
B.S. Psychology and Economics Minor, GPA: 3.64, Major GPA: 3.81
Graduated Cum Laude in May 2007

Boston University: The School for Field Studies, Puerto San Carlos, Mexico 06/2006 - 07/2006
Summer Course: Preserving Coastal Diversity: Sea Turtles and Bay Resources

Randolph-Macon Woman's College, VA 08/2003 - 12/2003
GPA: 3.93

MANUSCRIPTS IN PREPARATION
Preddy, T. M., Bagwell, C. L., & Watkins, M. A. (in preparation). Co-rumination in Emerging Adult Friendships: Observations and Conversational Processes.

Barnet, R. C., Preddy, T. M., & Grossman, L. M. (in preparation). Temporal Generalization Analog of Contextual Fear Learning in the Rat.

GRANTS AND FUNDING
University of Richmond Graduate Research Grant, Fall 2009
   • $1500 research grant to support my thesis on co-rumination in emerging adults
University of Richmond Graduate Travel Grant, Fall 2009
   • $1500 Awarded for Travel to the Society for Research on Adolescence
     Conference in March 2010
University of Richmond Graduate Travel Grant, Fall 2009
   • $200 Awarded for Travel to the William & Mary Graduate Symposium in March
     2010
UR Bonner Center for Civic Engagement Collaborative Research Fellowship, Summer 2009
   • $4000 research fellowship to support my study: Can Social Support be a Risk
     Factor for Depression and Anxiety? An Examination of Co-Rumination
University of Richmond Graduate Research Grant, Spring 2009
   • $950 research grant to support my study involving an observational assessment of
     co-rumination

INTERNATIONAL CONFERENCE PRESENTATIONS
Preddy, T. M., Watkins, M. A., & Bagwell, C. L. (2010, March). Observations of co-rumination between friends in emerging adulthood. Poster presented at the 2010 Biennial Meeting of the Society for Research on Adolescence, Philadelphia, PA.

Bagwell, C. L., Jenchura, E., Preddy, T. M., & Watkins, M. A. (2010, March). Cross-Cultural Differences in Social Support Networks in Emerging Adulthood. Poster presented at the 2010 Biennial Meeting of the Society for Research on Adolescence, Philadelphia, PA.

OTHER PRESENTATIONS
Preddy, T. M. (2010, April). Trade-offs Associated with Co-rumination in Emerging Adult Friendships. Oral presentation at the Arts and Sciences Research Symposium at the University of Richmond, Richmond, Virginia.

Clark, K., Files-Aime, L., Greenspan, E., Kelly, B., Larsen, K., Llano, M., Palmer, B., Preddy, T. M. Rhaney, K., & Watkins, M. A. (2010, April). Co-rumination in Three Close Relationships. Poster presented at the Arts and Sciences Research Symposium at the University of Richmond, Richmond, Virginia.

Preddy, T. M. (2010, April). Co-rumination in Emerging Adult Friendships: Trade-offs to Close Friendships. Oral presentation at the University of Richmond Women in the Know Conference, Richmond, VA.

Preddy, T. M. (2010). An Examination of Co-rumination in the Close Friendships of Emerging Adults. Poster presented at the 9th Annual William & Mary Graduate Research Symposium, Williamsburg, VA.

Preddy, T. M. & Bagwell, C. L. (2010, January). Can Social Support be a Risk Factor for Depression and Anxiety? An Examination of Co-Rumination. Paper session presented at the Center for Civic Engagement UR Downtown Public Symposium, Richmond, VA.

Preddy, T. M. (2009, April). An Observational Assessment of Co-rumination in the Same-Sex Friendships of Emerging Adults. Poster session presented at the Arts and Sciences Research Symposium at the University of Richmond, Richmond, Virginia.

Preddy, T. M., Moody, D. A., & Sulkowski, Z. L. (2007, April). Rats Tell Time Without a Signal: Temporal Generalization of Context Learning. Poster session presented at the Undergraduate Science Research Symposium at The College of William and Mary, Williamsburg, Virginia.

HONORS AND AWARDS
Recipient of the Austin E. Grigg & Helen W. Grigg Award for Excellence in Psychology
- UR award given annually to recognize the outstanding graduating senior or Masters Degree recipient who combines academic excellence, leadership, and outstanding promise in the field of psychology

Graduate School of Arts & Sciences Flag Carrier at Graduation
- Honor bestowed upon the person with the highest GPA in the graduating class

Inducted into the Golden Key International Honour Society (Fall 2009)
Dean's List (3.6 GPA and above) four out of seven semesters at W&M (Spring 2004-2007)
Inducted into Psi Chi Honor Society (Fall 2005)
- Vice President, 2006- 2007, UR Graduate Affiliate 2009-2010

Inducted into Alpha Lambda Delta Honor Society (Spring 2005)
Inducted into Phi Eta Sigma Honor Society (Spring 2005)
Recipient of the Presidential Scholarship at R-MWC (Fall 2003)
Recognized for Excellence in Writing by two professors (Fall 2003)
Dean's List (Fall 2003)

RESEARCH EXPERIENCE
Master's Thesis (Fall 2009 – Present)
- Working title: "Why does this always happen to us? An Examination of Co-rumination in the Same-sex Friendships of Emerging Adults"
- Proposal accepted October 22, 2009
- Developed a longitudinal component to examine changes in the trade-offs associated with co-rumination over time
- Selected and developed questionnaires for use in the study
- Mentor: Dr. Catherine Bagwell, Ph.D., University of Richmond, VA

Graduate First Year Project (Fall 2008 – Summer 2009)
- Designed and conducted the study: An Observational Assessment of Co-rumination in the Same-Sex Friendships of Emerging Adults
- Designed an observational "Problem Talk" session meant to elicit co-rumination in friendship dyads
- Developed and adapted a coding scheme for analyzing discussions for aspects of co-rumination
- Selected and designed questionnaires for use in the study
- Trained other lab members to run participants, code discussions, and achieve interrater reliability
- Conducted statistical analyses using SPSS
- Mentor: Dr. Catherine Bagwell, Ph.D., University of Richmond, VA

Graduate Research Assistant (Fall 2008 – Summer 2009)
- Assisted with a cross-cultural comparison study of the supportive relationships of college students in Spain, Trinidad and Tobago, and the United States

- Helped develop a coding scheme for free response answers
- Assisted with data collection and coding
- Conducted statistical analyses using SPSS
- Supervised undergraduate research assistants throughout the project
- Mentor: Dr. Catherine Bagwell, Ph.D., University of Richmond, VA

Senior Seminar Research Project (Spring 2007)
- Designed and conducted a questionnaire based study examining the impact of Alzheimer's Disease on the self-reported marital satisfaction of older adults who were in a caregiving role for a spouse with Alzheimer's
- Mentor: Dr. Christine Jensen, Ph.D., College of William and Mary, VA

Laboratory Manager (Fall 2006- Spring 2007)
- Responsible for setting up schedules for running experiments and handling
- Monitored supplies and progress, set up for new experiments, and conducted pre- and post-experimental procedures
- Trained student runners and a second manager
- Served as a liaison between students and Dr. Barnet
- Mentor: Dr. Robert Barnet, Ph.D., College of William and Mary, VA

Psychology Undergraduate Research Assistant (Fall 2005 – Spring 2007)
- Conducted research in animal cognition and learning
- Responsible for pre-experimental handling, running lab sessions, data entry, and lab maintenance
- Mentor: Dr. Robert Barnet, Ph.D., College of William and Mary, VA

TEACHING EXPERIENCE
- Teaching Assistant, Introduction to Psychology, Spring 2010
- Teaching Assistant, Child Development, Spring 2010
- Teaching Assistant, Introduction to Psychology, Fall 2009
- Teaching Assistant, Social Psychology, Fall 2009
- Teaching Assistant, Social Psychology, Spring 2009
- Teaching Assistant, Child Development, Fall 2008

EDITORIAL CONSULTATION
- Served as a co-reviewer with Dr. Lindgren for Psychology of Women Quarterly
- Wrote independent peer reviews for Psychology of Women Quarterly
- Served as a co-reviewer with Dr. Bagwell for Child Development

CLINICAL EXPERIENCE
Motivational Interviewing (September 2009)
- Attended a training program on the use and practice of motivational interviewing for use in a university setting

Research Assistant and Interviewer (Spring 2009 – Present)
- Clark-Hill Institute for Positive Youth Development, Virginia Commonwealth University, VA
- Conducted Articulated Thoughts and Simulated Situations Interviews
- Project was designed to assess how at-risk middle school students react to and cope with difficult peer situations
- Conducted Problem Solving Interviews
- Project involves a semi-structured interview that assesses middle school students' reactions to difficult imagined peer situations, as well as the students' perceived goals and consequences in peer situations

Volunteer (Fall 2008 – Spring 2009)
- St. Joseph's Villa Sarah Dooley School for Autism, Richmond, VA
- Volunteered weekly and assisted with classroom activities, music therapy, PECS training, and physical education

OTHER EXPERIENCE
Volunteer (Spring 2009)
- Overby-Sheppard Elementary, Richmond City Public Schools, VA
- Assisted with third grade math tutoring and kindergarten classes

Volunteer (Summer 2006)
- Science Museum of Virginia, Richmond, Virginia
- Classroom Assistant for the Summer Enrichment Science Classes and Guest Assistant

PROFESSIONAL MEMBERSHIPS
Society for Research in Child Development, Graduate Affiliate (Spring 2009 – Present)
Society for Research on Adolescence (Fall 2009-Present)