MAKING A BAD SITUATION WORSE: CO-RUMINATION AND PEER VICTIMIZATION IN TWO ADOLESCENT SAMPLES

by

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Abstract

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Co-rumination, the constant focus upon and rehashing of negative issues within a dyad, is a maladaptive coping mechanism associated with both positive and negative outcomes, including increased friendship quality and depression. There may also be linkages between co-rumination and poor health over time; furthermore, these consequences may be exacerbated by the presence of a stressor, particularly one of an interpersonal nature. One such stressor is peer victimization, which peaks in adolescence and has been associated with a host of negative consequences, especially when it is of a social nature. The current dissertation consists of two separate studies, one cross-sectional and one longitudinal. The first examined the direct effects of co-rumination, as well as the moderating role of peer victimization, on health, behavioral, and interpersonal outcomes in 139 adolescents (M_{age} 13.37). After controlling for possible related factors, it was found that co-rumination was directly related to lower rates of loneliness and higher rates of PTSD symptoms; there also a link to support from the best friend. Additionally, adolescents who co-ruminated and were victimized reported more frequent and severe somatic complaints, while victimized girls who co-ruminated engaged in aggressive acts; results were only found for overall and social, but not physical, victimization. The second study looked at the effects of co-rumination over a two- to three-year period, in a different sample of 95 adolescents (Time 1 M_{age} = 12.88, Time 2 M_{age} = 15.64). Findings indicated co-rumination at Time 1 was linked to increases in anxiety, depression, and loneliness at Time 2. Moreover, there was a bidirectional relationship between co-

rumination and neuroticism, as well as frequent and severe physical health problems. This study is the first of its kind to not only examine how peer victimization specifically moderates the effects of co-rumination, but to also find a reciprocal link between co-rumination, personality, and health over time.

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Chapter 1

Introduction

A key feature of adolescent development is that of peer relations; more specifically, this is a time when emotional intimacy via self-disclosure—especially between best friends— increases, behavior that is both normative and beneficial (Baumringer, Finzi-Dotton, Chason, & Har-Even, 2008; Berndt, 1995). However, recent research indicates that such support is at times associated with unexpected outcomes, including depression and anxiety, suggesting that there may be maladaptive forces at play (Rose, 2002). One suggestion for such paradoxical findings is that the self-disclosure taking place involves the constant discussion of problems and negative affect, a phenomenon identified as co-rumination (Rose, 2002). This behavior may be especially frequent during adolescence, a time of significant change fraught with new stressors. One particularly stressful experience about which adolescents may co-ruminate is that of peer victimization, which has been shown to have a negative impact upon both physical and psychological health (e.g., Hawker & Boulton, 2000; Iyer-Eimerbrink, Scielzo, & Jensen-Campbell, 2015). Furthermore, co-rumination has been found to predict future episodes of depression (Stone, Hankin, Gibb, & Abela, 2011), as well as to be present in those who have experienced depressive episodes in the past (Stone, Uhrlass, & Gibb, 2010). The purpose of the current dissertation is to examine the health outcomes and behaviors associated with co-rumination in adolescence, as well as how peer victimization may affect this relationship. Additionally, a second study was conducted to examine the effects of co-rumination over time in a different adolescent sample.

Co-rumination

As defined by Rose (2002), co-rumination is “excessively discussing personal problems within a dyadic relationship and…discussing the same problem repeatedly, mutual encouragement of discussing problems, speculating about problems, and focusing on negative feelings” (p. 1830). For example, two adolescent girls may fixate upon a nasty text that was received from a peer, and exhaustively discuss what the text meant, what the sender’s motivations were, etc., at the expense of all other activities. Co-rumination is characterized by a singular focus upon negative affect as well as a lack of active problem solving; that is, the “purpose” of co-ruminative discussion is not to come to a solution, but rather to simply

perseverate upon the problem, as well as its causes and consequences. Indeed, Rose, Schwartz-Mette, Glick, Smith, and Luebbe (2014) identified co-ruminative discussions as consisting of five features: extent of problem talk, rehashing problems, speculating about problems, mutual encouragement of problem talk, and dwelling on negative affect. Co-ruminative dyads, by virtue of the "requirement" of self-disclosure, tend to be emotionally close to one another and some individuals report co-ruminating with a significant other, parents, an opposite-sex friend, or a roommate (e.g., White & Shih, 2012; Barstead, Bouchard, & Shih, 2013). However, most co-ruminative relationships—especially those occurring during adolescence—are between same-sex best friends (e.g., Rose, 2002). According to Sullivan (1953) the cultivation of emotional intimacy is one of the key developmental tasks of this period; he believed that a close, same-sex friendship (a "chumship") provided the adolescent with validation and security during a time when he or she is attempting to break away from the parents and form a more egalitarian relationship with friends. As such, this dissertation will only focus on co-rumination between same-sex friend pairs.

Self-disclosure and Rumination

Co-rumination consists of both self-disclosure and rumination, which explains the conflicting outcomes that are often associated with it. In her initial study, Rose (2002) found that self-disclosure was indeed the driving factor behind the relationship between co-rumination and positive friendship adjustment; Calmes and Roberts (2008) noted similar results. The mechanism by which this occurs is thought to be via the formation of emotional intimacy, which has been found to be directly to related to self-disclosure (Baumringer et al., 2008; Sullivan, 1953) and friendship quality (Berndt, 2002), and provides individuals with a sense of belonging and worth (Baumeister & Leary, 1995; Erikson, 1963). This may partially explain why co-rumination is oftentimes found in adolescent samples, as this is a time when friends gain in importance and support-seeking behaviors begin to shift from parents to friends (e.g., Berndt & Ladd, 1989; Bukowski, Newcomb, & Hartup, 1998; Bagwell & Schmidt, 2011). For instance, in a study examining such behaviors across the late childhood and adolescent years, Furman and Buhrmester (1992) found that fourth graders utilized their parents most frequently for social support. Seventh-graders indicated they used parents and a same-sex best friend in equal measure, while the tenth-graders in the

sample turned to a same-sex best friend for support more than anyone else. Indeed, support for the co-rumination-friendship quality link in adolescence has been found by numerous researchers (Starr & Davila, 2009; Haggard, Robert, & Rose, 2011; Rudiger & Winstead, 2013). As the benefits of self-disclosure are multitudinous (e.g. Pennebaker, 1997), such findings regarding the "good half" of co-rumination make sense: talking about one's problems with close others facilitates social bonds, leading to stronger, more satisfying relationships (Sloane, 2010).

Rumination, on the other hand, is associated with internalizing problems, including depression (Abela & Hankin, 2011; Hong, 2007) and anxiety (Nolen-Hoeksema, 2000), which have been found in both adolescent and child samples (Schwartz & Koening, 1996; Abela, Brozina, & Haigh, 2002). As co-rumination is essentially a social manifestation of this maladaptive thought process, it is thus not surprising that they share similar negative outcomes. Several studies have found co-rumination to predict current levels of both depression and anxiety (e.g., Rose, 2002; White & Shih, 2012; Barstead et al., 2013), as well as past and future depressive episodes. For example, Stone et al. (2010) found that adolescents who engaged in high levels of co-rumination were more likely to have a past diagnosis of major depressive disorder (MDD) than those who co-ruminated at low levels. This relationship held even after controlling for current depressed mood. Bastin, Bijttebier, Raes, & Vasey (2014) noted an increase in depression over the course of a three-month period in those adolescents that co-ruminated. Similarly, Stone and colleagues (2011) found that co-rumination predicted depression and anxiety in adolescent females over a six-month period. Perhaps most worrisome, co-rumination has been found to foreshadow the *first* onset of clinically significant depressive episodes over two years; this suggests it may very well be a stand-alone risk factor for internalizing problems (Stone et al., 2011). Additionally, high levels of co-rumination were linked with both the length and severity of these prospective depressive episodes.

The relationship between co-rumination and externalizing problems is not as well established as that with internalizing problems; this may be because the ruminative aspect is usually seen as sad rather than angry, only the latter of which is related to feelings of relational and physical aggression (Peled & Moretti, 2010). However, Tompkins, Hockett, Abraibesh, and Witt (2011) found co-rumination to be correlated with self-reports of externalizing behaviors in the form of aggression; the authors suggest this

is due to the ruminative aspect of co-rumination worsening one's current mood and thus exacerbating the anger response. Somewhat similarly, recent work by Criss and colleagues (2016) has noted an indirect relationship between co-rumination and rates of antisocial behavior via emotional self-regulation in adolescents. Such a gap in the literature on co-rumination and behavioral outcomes warrants a closer look.

Other Correlates of Co-rumination

In addition to self-disclosure and rumination, there are other factors that may contribute to the health outcomes associated with co-ruminative behavior, such as certain personality traits. For example, neuroticism has been found to predict depression via rumination in both clinical and non-clinical samples (Roelofs, Huibers, Peeters, Arntz, & van Os, 2008; Muris, Roelofs, Rassin, Franken, & Mayer, 2005; Muris, Fokke, & Kwik, 2009; Barnhofer & Chittka, 2010). Similar studies have found an indirect relationship between neuroticism and anxiety, with rumination acting as a mediator (Merino, Ferreiro, & Senra, 2014; Roelofs et al., 2008; Muris et al., 2005); a logical extension of this, then, would be to assume that neurotic individuals may also co-ruminate. As such, it is important to look at the influence of neuroticism when looking at the direct effects of co-rumination on psychological adjustment and physical health.

Gender has also been found to be associated with rates of co-rumination; more specifically, females tend to co-ruminate more than males (Rose, 2002; Rose, Carlson, & Waller, 2007; Smith & Rose, 2011; Schwartz-Mette & Rose, 2012). This is thought to be because girls usually have more emotionally intimate relationships than boys do, and thus disclose more (Rose, 2002; McNelles & Connolly, 1999). For this reason, I expected girls in my sample to co-ruminate more than boys and to report higher rates of poor physical and psychological problems, as well as positive social support. Conversely, although Tompkins et al. (2011) did not find gender differences regarding the relationship between co-rumination and externalizing problems, I anticipated that boys who co-ruminate would report higher rates of rule breaking and aggression than girls, due to the former's greater propensity to display these types of antisocial behaviors (Estévez, Povedano, Jiménez, & Musitu, 2014).

In summary, the first goal of this dissertation was to examine the health, behavioral, and interpersonal outcomes of co-rumination. To ensure that it was uniquely predicting the outcome measures, the interrelationships between co-rumination and rumination, self-disclosure, and neuroticism were examined and their effects controlled for, if deemed necessary. In addition to the previously mentioned internalizing problems of depression and anxiety, this study examined if co-rumination was related to other types of internalizing problems, specifically loneliness and symptoms of post-traumatic stress disorder (PTSD). Additionally, this study attempted to expand upon the findings of Guarneri-White, Knack, and Jensen-Campbell (2015) to determine if co-rumination was directly related to frequent and severe physical health complaints. Finally, gender was examined as a possible moderator of co-rumination to these outcomes. For exploratory purposes, the influence of co-rumination on rule breaking and aggression, as well as positive support from the best friend, was included.

Psychosocial Stressors as Moderators

The presence of a stressor, especially one of an interpersonal nature, can exacerbate the negative outcomes associated with co-rumination (Hruska, Zelic, Dickson, & Ciesla, 2015; Bastin, Mezulis, Ahles, Raes, & Bijttebier, 2015). Nicolai, Laney, and Mezulis (2013) found that adolescents who co-ruminated about “their weekly worst event” that fell under the rubric of a dependent (one that is caused by the participant him/herself) or a social stressor (one that involves others in addition to the participant) reported depressive symptoms over the course of an eight-week period. Co-rumination was not associated with independent (i.e., something not caused by the participant) and non-social stressors, suggesting that topics/events that involve others or are caused by the participant him/herself may be more detrimental to mental health. Indeed, Hankin, Stone, and Wright (2010) noted that interpersonal dependent events were partially responsible for the relationship between co-rumination and internalizing problems. Starr and Davila (2009) found in their young adult sample that females who co-ruminated and were highly experienced in romantic relationships reported higher rates of depression than did those with little experience. Similarly, research by Whitton and Kuryluk (2012) found that low levels of relationship satisfaction were associated with increases in depression in co-ruminating young adults. Although participants were not asked if they were indeed co-ruminating about relationships, the results suggest that

this may be the case; individuals who face interpersonal stressors may excessively discuss them, thus adding to the already poor outcomes associated with co-rumination.

Peer Victimization

One such social stressor during adolescence that may provide fodder for co-rumination is that of peer victimization. Research estimates that between 10 and 33% of students report being bullied by their peers (Hymel & Swearer, 2015). Peer victimization is defined as being the target of aggressive behavior with malicious intent that occurs repeatedly over time when a power imbalance exists (Olweus & Limber, 2010); as such, it not the same as arguing or good-natured teasing amongst friends. Rosen, Beron, and Underwood (2013) have identified two main types of victimization: physical and social. The former is characterized by punching, kicking, hitting, or otherwise physically harming others (Crick & Nelson, 2002). Social victimization (also referred to as relational or social aggression), on the other hand, involves causing harm to one's interpersonal relationships by way of spreading rumors, gossiping, or exclusion (Crick & Grotpeter, 1995). Verbal victimization, including threats and name-calling, can be considered both physical and social in nature (Rosen et al., 2013).

Peer victimization and health

Being the habitual target of peers' aggression is associated with numerous psychological health problems, including anxiety (Storch, Brassard, & Masia-Warner, 2003), depression (Wang, Nansel, & Iannotti, 2011), and loneliness (Storch et al., 2003; Storch & Warner, 2004). Recent research has also found a link between peer victimization and symptoms of PTSD, which can be caused by experiencing or witnessing any traumatic event (e.g., Idsoe, Dyregrov, & Idsoe, 2012; Houbre, Tarquinio, Thuillier, & Hergott, 2006). Symptoms of PTSD are divided into three clusters: re-experiencing the trauma (having flashbacks) hyperarousal (being easily startled), and avoidance of things that remind one of the event (National Institute of Mental Health [NIMH], 2013). Furthermore, children who are peer victimized evidence a flattened cortisol awakening response (CAR), which has been previously associated with symptoms of PTSD (Knack, Gomez, & Jensen-Campbell, 2011; Knack, Jensen-Campbell, & Baum, 2011). Peer victimization is also linked to poor physical health outcomes, such increased abdominal pain, headaches, and sleep difficulties (Knack, Jensen-Campbell, et al., 2011; Biebl, DiLalla, Davis, Lynch, &

Shinn, 2011). There is also research indicating that being victimized by one's peers is related to rates of externalizing problems, as well (Reijntjes et al., 2011; Perren, Ettekal, & Ladd, 2013)

The Impact of Social versus Physical Victimization

Social victimization may be more detrimental to both physical and mental health than physical forms of peer abuse, as it thwarts the need to belong and the desire to form close, lasting relationships (Knack, Gomez, et al., 2011). Indeed, research suggests that it is related to poor health outcomes more frequently than its physical counterpart is (Siegel, La Greca, & Harrison, 2009; Nixon, Linkie, Coleman, & Fitch, 2011; Cole et al., 2014; Arana, Guarneri-White, Boyd, Dougall, & Jensen-Campbell, in press), indicating that the disruption of social bonds may have the greatest impact. The emotional pain caused by the breaking or dissolution of social bonds—called social pain—has been linked to poor health (MacDonald & Jensen-Campbell, 2011), and the experience of peer victimization has been implicated as a type of social pain. Social victimization tends to be more prevalent during adolescence and beyond than physical, as the latter is easier to detect and associated with greater consequences (Werner & Hill, 2010; Cairns, Cairns, Neckerman, Ferguson, & Gariepy, 1989). The covert nature of social victimization also makes it more difficult to avoid and address; stressors that are deemed uncontrollable tend to be more deleterious to health than those that the individual feels he/she can control (Juth, Dickerson, Zoccola, & Lam, 2015). Additionally, the increasing importance of friendships and emotional intimacy during adolescence may make social victimization especially harmful during this period, and can provide aggressors with ample "ammunition" (Crick & Rose, 2000).

Peer Victimization and Co-rumination

Although several studies have found that adolescents who ruminate about being victimized are at higher risk for depression and other internalizing problems (Mathieson, Klimes-Dougan, & Crick, 2014; McLaughlin, Hatzenbuehler, & Hilt, 2009), there is only one study to date that examines co-rumination and peer victimization. Guarneri-White et al. (2015) found that adolescents who co-ruminate and are bullied by their peers experience depressive and anxious-depressive symptoms, as well as symptoms of PTSD. Furthermore, physical health problems were indirectly related to victimization and co-rumination via depression; such a relationship is explained by the fact that depression often acts as a precursor to

physical health problems (e.g., Nemeroff & Goldschmidt-Clermont, 2012). Other studies, though not concerned with co-rumination specifically, hint at a similar trend. For instance, Holt and Espalage (2007) found that bullied children with high levels of social support reported more anxiety and depression compared to their peers with lower levels; similar results were found by Knack (2009), who noted that victimized adolescents who engaged in higher rates of disclosure experienced more health problems. As social support generally acts as a buffer against the negative effects of victimization (e.g., Hodges, Boivin, Vitaro, & Bukowski, 1999), it is possible that these findings are at least partially due to co-rumination within the friendships.

While there is no research examining the link between co-rumination and loneliness per se, several studies have looked at how this coping mechanism is related to number of friends. In their longitudinal study, Starr and Davila (2009) found that co-rumination predicted having fewer friends over the course of a year. Similarly, Tompkins et al. (2011) noted that co-rumination was negatively related to teacher-rated social competence and number of friends. Results of these two studies suggest that co-rumination may alienate some individuals and lead to fewer friendships over time, perhaps due to decreases in social competence. Additionally, loneliness has consistently been shown to be linked to poor health. Individuals who are lonely tend to report feeling more depressed and show impaired cognitive performance (Hawkley & Cacioppo, 2010), as well as lower cardiac output and higher blood pressure than those who are not (Cacioppo et al., 2002). In young adults, feelings of loneliness were associated with the number of reported cardiovascular health risks, including BMI, cholesterol levels, and systolic blood pressure (Caspi, Harrington, Moffitt, Milne, & Poulton, 2006). As such, loneliness is expected to be related to both peer victimization and co-rumination.

In summary, I hypothesized that the effects of co-rumination on internalizing and externalizing problems, as well as physical health, would be exacerbated if the adolescent is also experiencing peer abuse, especially that of a social nature. I also tested this relationship on positive support from the best friend for completions' sake. As with my first aim, I anticipated all effects (save those of externalizing problems) be stronger for girls than boys, due to the former placing more importance on relationships than the latter (e.g. Rose, Smith, Glick, & Schwartz-Mette, 2016).

Results

of longitudinal work on co-rumination suggest that the outcomes are similar to those that have been found in cross-sectional work. In addition to those mentioned previously, Hankin and colleagues (2010) noted that over a five-month period co-rumination predicted anxiety and depression, which in turn predicted more co-rumination. Rose et al. (2007) investigated the effects of co-rumination on emotional and friendship adjustment during the school year in an adolescent sample. Interestingly, depression and friendship quality had an additive effect on future rates of co-rumination, while those with both high-quality friendships and levels of anxiety during the fall had the highest co-rumination scores the following spring. Moreover, a transactional relationship was discovered; that is, co-rumination at the first time point predicted increases in anxiety, depression, and friendship quality. This suggests that the relationship between co-rumination and its associated outcomes may be bidirectional in nature; such an implication, however, requires more research. Also missing from the literature is longitudinal work on co-rumination that covers more than a two-year period; in an attempt to address this need, this dissertation examined the associations between co-rumination, depression, anxiety, loneliness, physical health, rule breaking, aggression, and neuroticism over a two- to three-year timespan.

The Current Studies

The purpose of this dissertation was to examine whether co-rumination is associated with poor physical, psychological, and behavioral outcomes, as well as higher rates of positive support; using two different samples, this focal hypothesis was tested from a concurrent and a longitudinal perspective.

Aim 1

In Study 1, I sought to determine the contemporaneous outcomes associated with co-rumination. In addition to the previously studied effects of depression and anxiety, this dissertation examined the direct contribution of co-rumination on reports of loneliness and PTSD symptoms as well as frequent and severe physical health complaints. This dissertation also examined whether co-rumination influenced externalizing behaviors, specifically those of aggression and rule breaking. Finally, I examined if co-

rumination is related to perceived positive support from the best friend. It was anticipated that co-rumination would be associated with high rates of all outcomes.

As part of Aim 1, this dissertation also examined whether the sex of the adolescent moderated the influence of co-rumination on these outcomes (see Figure 1). First, girls should co-ruminate more than do boys, which is in line with previous research (e.g., Rose, 2002). It was also anticipated that the influence of co-rumination on health and support would be stronger for girls because they put more emphasis on relationships. Conversely, boys were expected to report being higher on externalizing problems if they co-ruminated, as they tend to "act out" more than do girls (Estévez et al., 2014).

Aim 2a

Aim 2 examined the possible moderating influence of peer victimization on the co-rumination-health associations. This aim also attempted to extend the findings of Guarneri-White and colleagues (2015); peer victimization was expected to exacerbate the effects of co-rumination (especially for those who were frequently bullied) by positively influencing rates of internalizing and externalizing problems, as well as physical health complaints. The sex of the adolescent was again examined as a possible moderating influence, and the same differences as in Aim 1 were anticipated (see Figure 2a).

Aim 2b

Based upon previous research indicating that social victimization tends to be more damaging than physical (e.g., Siegel et al., 2009), this dissertation examined the possible differential influence of each on the aforementioned outcomes (see Figure 2b). Identical outcomes to Aim 2a were expected, but only for those who were socially victimized.

Aim 3

Study 2 involved a longitudinal project with two waves of data collection, spaced two to three years apart. As a contribution to the literature on the long-term implications of co-rumination, this study used a cross-lagged approach to assess whether co-rumination predicted changes in neuroticism, internalizing problems (depression, anxiety, loneliness), externalizing problems (rule breaking and aggression), and frequent and severe physical health complaints. Conversely, this study examined

whether neuroticism and these health/behavioral outcomes predicted increases in co-rumination (see Figure 3).

Chapter 2

Methods—Study 1

Participants

For my first study, a total of 13 predictors were identified, including the interaction terms. For regression analyses with these predictors and an effect size of $R^2 = .15$, $\alpha = .05$, two-tailed, and power = .80, I needed a minimum of 131 participants; my final sample included data for 138 individuals. Participants were part of a larger study that examined the influence of interpersonal relationships on health, and were recruited in the Dallas/Fort Worth Metroplex via advertisements sent through the mail and hung in public places, such as coffee shops and churches. Word of mouth and social media were also employed as recruiting methods. The sample ranged in age from 11 to 18 ($M = 13.37$, $SD = 1.97$), with over half of participants trending toward the lower end of the spectrum (i.e., 11-13 years old; young adolescents). The ethnic composition of the sample was commensurate with that of the DFW area, and is as follows: White/Caucasian American: 46.8%, Hispanic: 23.7%, Black/African American: 13.7%, Asian: 3.6%, Other: 7.9%, Hawaiian/Pacific Islander: .7%, and American Indian/Alaskan Native: 2.9% (one individual declined to answer). There were 56 males (40.3%) and 83 females (59.7%).

Materials

Assessment of Co-rumination and Relationships

Co-rumination Questionnaire (CRQ)

The CRQ (Rose, 2002) was developed to measure the extent to which one co-ruminates. The 27-item scale measures nine features of co-ruminative discussion with a same-sex best friend: frequency of discussing problems, discussing problems instead of engaging in other activities, encouragement by the focal individual of the friend's discussing problems, encouragement by the friend of focal individual's discussing problems, discussing the same problem repeatedly, speculation about causes of problems, speculations about consequences of problems, speculation about parts of the problem that are not understood, and focusing on negative feelings. Participants were asked to answer how strongly they agree with statements such as "We spend most of our time together talking about problems that my friend or I have" and "When I have a problem, my friend always tries to get me to tell every detail about what

happened". Answers were rated on a 5-point Likert-type scale with 1 being "Not at all true" and 5 being "Really true". The overall co-rumination score was computed by averaging all items; a higher score indicated higher rates of co-rumination (See Appendix A for all scales). This scale had high reliability, α = .96.

Reflection-Rumination Questionnaire—Rumination subscale (RRQ)

This 24-item scale (Trapnell & Campbell, 1999) measured the frequency and intensity of both rumination and reflection via a 5-point Likert scale. Items such as "My attention is often focused on aspects of myself I wish I'd stop thinking about" were averaged to create individual scores of each construct. For the purposes of this dissertation, data were only collected for the 12-item rumination subscale (see Appendix A for all scales), which showed high reliability, α = .90.

Friendship Quality Questionnaire—Intimate Exchange subscale (FQQ)

The FQQ (Parker & Asher, 1993) is a 40-item scale that measured the quality of the relationship with the best friend via six sub-scales: Validation and Caring, Conflict Resolution, Conflict and Betrayal, Help and Guidance, Companionship and Recreation, and Intimate Exchange. Data were only collected for the Intimate Exchange subscale, which assessed rates of self-disclosure in friendship dyads. Participants were asked to select how strongly they agree with statements such as "My best friend and I always tell each other our problems"; items were rated on a 5-point Likert scale and averaged to create a score. This subscale had good reliability, α = .90.

Network of Relationships Inventory—Positive Support subscale (NRI-D)

This 30-item scale (Furman & Buhrmester, 1985) measured aspects of positive and negative support from the mother, father, and two best friends. For the purposes of this dissertation, only the positive support items from the best friend were used because the focus of co-rumination in this study is on best friendship. Items such as "How happy are you with your relationship with this partner?" and "How often do you turn to this person for support with personal problems?" measured five types of positive support: Companionship, Intimate Disclosure, Satisfaction, Support, and Approval. Answers were scored on a 5-point Likert type scale and averaged to create an overall measure of positive support. This scale had good reliability, α = .85.

Assessment of Personality

Big Five Inventory—Neuroticism subscale (BFI)

The BFI is a 44-item scale (Costa & McCrae, 1992) used to measure the five factors of personality—openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism—via a 5-point Likert scale. For the purposes of this dissertation, only the eight items that measure neuroticism (example item: “I see myself as someone who is tense”) were used. Scores were computed via averaging. The Neuroticism sub-scale had a reliability factor of α = .77.

Assessment of Victimization

Direct and Indirect Aggression Scale—Victim Version (DIAS-VS)

This 24-item scale (Björkqvist, Lagerspetz, & Österman, 1992) measured the frequency of three types of peer victimization: indirect (“How often do classmates tell bad or false stories about you?”), physical (“How often are you hit by other classmates?”), and verbal (“How often are you called names by other classmates?”) via a 5-point Likert scale. Scores were summed. The overall scale had high reliability, α = .89, while those for the subscales of indirect, physical, and verbal were also high, *a*s = .81, .69, and .78, respectively.

Children’s Social Experience Questionnaire—Self-report (CSEQ-SR)

The CSEQ-SR (Crick & Grotpeter, 1995) assesses peer victimization through questions about relational (“How often does a classmate tell lies about you to make other kids not like you anymore?”), and overt aggression (“How often does another kid yell at you and call you mean names?”), as well as being the target of prosocial behavior (not used in this study). Scores were computed by addition. This 15-item inventory used a 5-point Likert-type scale, and had a reliability of α = .68. The subscales of relational and overt victimization were also found to have a high reliability, *a*s = .82 and .72, respectively.

Assessment of Internalizing and Externalizing Problems

PTSD Checklist—Civilian Version (PCL-C)

The PCL-C (National Center for PTSD, 2003) is a checklist designed to assess the 17 DSM-IV symptoms associated with post-traumatic stress disorder, which fall under three main clusters: Re-experiencing the Event, Avoidance, and Hyperarousal. Participants were asked to rate on a 5-point Likert scale how often in the past month they experienced symptoms of PTSD, such as having "repeated, disturbing memories, thoughts, or images of a stressful experience from the past" or being "'super alert' or watchful on guard". A total PTSD symptom score was computed via summation, and this scale showed high reliability, $\alpha = .90$.

Asher Loneliness Scale (L-Scale)

This scale (Asher & Wheeler, 1985) assessed perceptions of loneliness and social adequacy with 16 questions such as "I feel alone at school" and "I can find a friend at school when I need one"; the scale also included eight filler items (e.g., "I like playing games a lot at school"). Only items measuring loneliness were used, and these were rated on a 5-point Likert scale indicating how much the true each one is for the participant; total loneliness scores were computed by adding the items together. Reliability was low, $\alpha = .50$.

Youth Self-Report (YSR)

This scale (Achenbach, 1991) measured a number of internalizing and externalizing problems. For the purposes of this study four of the subscales were used: those that measured depression, anxiety, rule breaking behavior, and aggressive behavior. Participants were asked the extent to which they feel each item describes them, such as "lacks energy", "fears mistakes", "sets fires", and "gets in fights". Items were measured on a 3-point Likert scale, with 0 being "Not at all" and 2 being "Very true or often true". Scores were summed, with a higher number indicating greater problems.

Assessment of Physical Health

Health Outcomes (HO)

This scale (Knack, 2009) was used to assess the frequency and severity of 14 health symptoms and outcomes, such as headaches, fatigue, and vomiting. Participants were instructed to indicate how

frequently they experienced each symptom, as well as to rate the severity of such on a 4-point scale (from not at all/does not hurt at all to all the time/unbearable pain), and scores were created via summation. The overall scale had good reliability (α = .94), as did the frequency and severity subscales (αs = .91 and .86, respectively).

Procedure

As part of a larger ongoing study, data were collected across two phases. In the first phase, a parent (usually the mother) and the adolescent arrived at the Personality and Social Behavior Laboratory, where consent and assent were obtained, respectively. Once this was complete, the adolescent completed a battery of questionnaires online through Qualtrics, including the CRQ, DIAS-VS, CSEQ-SR, PCL-C, L-Scale, and HO, as well as several others that were not part of this study (parent data was also collected, although it was not used here). After the adolescent completed the assessments, health measures (such as height, weight, and blood pressure) and a DNA sample were gathered. The adolescent was then instructed in cortisol collection (no biological and health measurements were part of this study) and the second phase of study was scheduled. The child was then paid $20 and parent $10 for their time.

Phase II of the study occurred between one and two weeks after the first phase. The parent and adolescent returned to the lab for further survey assessments, including the RRQ, BFI, FQQ, YSR, and the NRI-D. The adolescent then provided a blood sample (not for this dissertation), before both he/she and the parent were debriefed and paid $40 and $30, respectively.

Data Analysis

Data analysis for Study 1 began with an examination of missing values, due to the participant failing to answer. Little's missing completely at random (MCAR) test was run to determine the nature of the former; data from Phase I were not significant, $\chi^2(1156) = 1801.04$, $p = 1.00$. However, that from Phase II was, $\chi^2(308) = 369.13$, $p = .010$. A closer examination of this data revealed three (2.3%) participants did not answer a single question in the NRI-D, so all analyses that used this scale were run with and without those three participants. As no differences in results were found, reported results include all participants. Missing data were then imputed and the finalized dataset was used for all analyses.

Several outliers were found for distance, leverage, and influence; however, when analyses were rerun with these removed there was no significant differences in the outcome and as such, all cases were retained. There was no homoscedasticity. Descriptive statistics can be found in Tables 1 to 5.

Co-Rumination Dimensions

I first examined whether co-rumination was indeed comprised of five factors: mutual encouragement of problem talk, extent of problem talk, re-hashing problems, speculation about the causes and consequences of problems, and dwelling on negative affect. Because the inter-correlations among them were large (mean r = .73, ps <.001; range .69 - .79) (see Table 6), I did an exploratory factor analysis to determine whether the dimensions fell onto one versus multiple factors. Principal components analyses with OBLIMIN rotation suggested there was only one factor, which accounted for 78.38% of the variance. As such, only results based on the composite score of co-rumination were reported in this dissertation. Furthermore, individual co-rumination facets could not be run in the same model due to issues of multicollinearity. One suggested method to deal with multicollinearity is to collapse across predictors to make one composite. Conversely, each dimension could be run on a separate model, but this would have added 45 additional models and create a serious problem with family-wise error rates. As such, these separate analyses were not reported in the text; they were, however, conducted for completeness, and results for each dimension were virtually identical to what was found in the model that included the composite of co-rumination. Therefore, only the results for the composite measure of co-rumination were used in the focal analyses. Moreover, due to the large number of outcomes, rather than using the traditional parameter of $p < .05$ to assess significance, I used .006 (i.e., .05/9 outcomes) to control for family-wise error rates in Aims 1 and 2. Thus, only those results with p-values below .006 were reported (all results can be found in Tables 13 to 20, and 22 to 29).

Gender Differences

Independent t-tests were run to examine gender differences in the predictor and outcome variables; girls reported significantly higher rates of co-rumination, neuroticism, self-disclosure, positive support, anxiety, frequent and severe physical health complaints, and social victimization than did boys, ps < .042. Conversely, boys reported more instances of physical victimization than girls did, p = .004 (see

Table 12). There were no gender differences in reports of rumination, overall victimization, depression, PTSD symptoms, rule breaking, and aggression, *p*s >.074.

Chapter 3

Results—Study 1

Aim 1: Does sex of participant interact with co-rumination to affect health, behavioral, and interpersonal outcomes?

First, I examined the relationship between co-rumination and the nine outcome measures: depression, anxiety, loneliness, PTSD symptoms, the frequency and severity of health complaints, rule breaking, aggression, and overall positive support from the best friend (see Tables 7 to 10). I also looked at correlations between co-rumination and the possible control variables: rumination, self-disclosure, and neuroticism. Co-rumination was positively related to PTSD symptoms (r = .44, p < .001), aggressive behavior (r = .18, p = .035), both frequent and severe health problems (rs = .21, .25, ps = .013 and .004, respectively), and perceived best friend support (r = .45, p < .001). There were no significant relationships between co-rumination and depression, loneliness, anxiety, or rule-breaking behavior (rs < .15, ps > .076). As anticipated, co-rumination was also related to both neuroticism (r = .29, p = .001) and self-disclosure (r = .56, p < .001). Unexpectedly, however, there was no association with rumination (r = -.15, p = .215).

To assess the impact of co-rumination and sex of participant on my outcome measures, a series of three-step hierarchical regression models were run in SPSS. My continuous predictor and control variables were centered and an unweighted effects code was created for gender. Because self-disclosure was only related to one of my dependent variables and rumination was not associated with any of them (nor was it linked with co-rumination), they were removed as control measures (see Figure 4 for revised model). As a result, I only controlled for neuroticism in this aim[1]. Step 1 of the model contained neuroticism as a control variable, Step 2 the main effects of co-rumination and gender, and Step 3 the interaction term. A total of nine regression models were run for this aim (one for each outcome measure).

[1] By removing both rumination and self-disclosure as control variables, I could utilize my entire sample for this aim, as those measures were added halfway through data collection and thus not completed by all participants.

It was found that co-rumination predicted loneliness, b = -3.52, SE = .99, $t(127)$ = -3.56, p = .001, sr^2 = .09, and PTSD symptoms, b = 4.81, SE = 1.09, $t(127)$ = 4.42, p <.001, sr^2 = .13, after controlling for neuroticism (ΔR^2 =.01 and .0003 for loneliness and PTSD symptoms, respectively). Co-rumination was also positively associated with positive support from the best friend, b = 5.87, SE = 1.20, $t(127)$ = 4.88, p <.001, sr^2 = .16, ΔR^2 =.01. Although co-rumination was correlated with several other outcomes (e.g., aggression, frequency and severity of health problems), after accounting for the effects of neuroticism no other significant results were found for its direct effect based on the established parameters (ps > .049). There was no moderating relationship of participant sex on co-rumination (ps > .203) (see Tables 13 to 16).

Aim 2a: Do peer victimization and sex of participant interact with co-rumination to affect these outcomes?

Correlations between co-rumination and types of peer victimization were examined (see Table 11), revealing a positive relationship to both relational and indirect victimization (rs = .21 and .22, ps = .013 and .011, respectively). It was also correlated with overall victimization scores, (r = .17, p = .05). To examine the moderating effects of peer victimization and gender on co-rumination, I utilized Model 3 in PROCESS, with 95% confidence intervals, which tests the conditional effects of the independent variable on the dependent variable at values of two different moderators (Hayes, 2015). Outcome measures were the same as those that were tested in Aim 1, and neuroticism was controlled for. I also controlled for neuroticism in this aim, as it was highly related to most of the outcomes. Peer victimization was centered and two- and three-way interactions terms were then created with my centered and unweighted variables.

There was a direct effect of co-rumination on loneliness, b = -3.67, SE = .99, t(123) = -3.70, p < .001, 95% CI -5.63 to -1.70, and PTSD symptoms, b = 4.41, SE = 1.01, t(123) = 4.35, p < .001, 95% CI 2.40 to 6.41. Co-rumination also directly impacted reports of positive support from the best friend, b = 6.00, SE = 1.24, t(123) = 4.83, p < .001, 95% CI 3.54 to 8.46 (see Tables 17 to 20 for all results).

An interaction between co-rumination and victimization on the frequency of health problems was found to be borderline significant (based on the parameters of this study), b = .97, SE = .36, t(123) = 2.72, p = .0075, 95% CI .26 to 1.68. A simple effects analysis revealed that adolescents who co-ruminated and reported high rates of peer victimization experienced the most physical health problems, b = 4.23, SE =

.1.42, t(127) = 1.74, p = .003, 95% CI 1.42 to 7.05 (see Figure 5). There was also an interaction between co-rumination and victimization that affected the severity of health problems, b = .66, SE = .25, t(123) = 2.63, p = .010, 95% CI .16 to 1.16. Further analyses indicated that, as with frequency of health problems, those adolescents who co-ruminated and were highly victimized by their peers experienced the most severe health problems, b = 3.39, SE = 1.01, t(127) = 3.37, p = .001, 95% CI 1.40 to 5.38 (see Figure 6).

Finally, rates of aggression were affected by an interaction between co-rumination, victimization, and sex of participant, b = .42, SE = .15, t(130) = 2.75, p = .0068, sr^2 = .06. Probing of the simple effects revealed that females who co-ruminated and were victimized at high levels reported the highest rate of aggression, b = 2.15, SE = .80, t(130) = 2.68, p = .008, 95% CI: .57 to 3.74 (see Figure 7). That is, as rates of co-rumination and peer victimization increased, so did rates of aggression, but only for females. Contrary to expectations, there was no effect on aggression for boys at any level of victimization, ps > .152. However, the slopes for females and males reporting low rates of victimization were significantly different from one another, p = .037, as were those for females reporting high and low victimization, p = .005 (Dawson, 2014).

Aim 2b: Do social/physical victimization and sex of participant interact to effect these outcomes?

For this aim, I began by running a principal components analysis with OBLIMIN rotation and two types of victimization emerged, accounting for 82.03% of the variance: Social and Physical. Results indicated that relational and indirect victimization loaded on one factor, and physical and overt loaded on the second (see Table 21). Because verbal victimization can be both physical and social in nature, it loaded on both factors; however, it did so more highly on that of Social Victimization. Aim 2a was then retested with social and physical victimization replacing the overall victimization measure as a moderator. When the effects of social victimization were tested, physical victimization was controlled for, and vice versa.

Several direct effects were observed in this model (see Tables 22 to 25 for all results). Rates of PTSD symptoms were once again affected by co-rumination, b = 5.07, SE = 1.05, t(129) = 4.82, p < .001, 95% CI: 2.99 to 7.15. Additionally, adolescents who co-ruminated also reported receiving positive support from the best friend, b = 5.90, SE = 1.21, t(123) = 4.89, p < .001, 95% CI: 3.51 to 8.29 (see Tables 23 to

26). There was an interaction between co-rumination and social victimization to affect frequency of health problems, *b* = 3.74, *SE* = 1.13, *t*(129) = 3.31, *p* = .001, 95% CI: .1.51 to 5.98. Those adolescents who co-ruminated and experienced high levels of social victimization also had the most physical health problems, *b* = 5.78, *SE* = 1.47, *t*(134) = 3.69, *p* < .001, 95% CI: .2.67 to 10.16 (see Figure 8). Similarly, the severity of health problems was affected by an interaction between co-rumination and social victimization, *b* = 2.17, *SE* = .75, *t*(1129) = 2.91, *p* = .004, 95% CI: .70 to 3.65, but again, only for those who experienced high rates of the latter, *b* = 3.92, *SE* = .98, *t*(134) = 3.62, *p* < .001, 95% CI: 2.50 to 7.43 (see Figure 9). Finally, rates of aggression were found to be impacted by the three-way interaction of co-rumination, social victimization, and gender, *b* = 1.28, *SE* = .47, *t*(124) = 2.75, *p* = .006807, 95% CI: .36 to 2.20. As before, this was only true for females who experienced high rates of social victimization, *b* = 1.95, *SE* = .77, *t*(124) = 2.54, *p* = .012, 95% CI: .43 to 3.47 (see Figure 10). None of the slopes in this three-way interaction were significantly different from one another.

When the model was reversed and the effects of physical victimization were tested controlling for those of social, no significant direct or interactive effects were found (*p*s > .055, see Tables 26 to 29). In summary, the moderating influence of peer victimization on the co-rumination-health link only held for social victimization, as predicted.

Chapter 4

Methods—Study 2

Due to its cross-sectional nature, it is impossible to say if the outcomes from Study 1 predate the propensity to co-ruminate, or if it is the other way around. That is, while co-rumination has been shown to predict poor health, it has also been found be to be predicted by the same (Rose et al., 2007). The purpose of Study 2, then, was to employ a cross-lagged design to further study correlates of co-rumination over time, and to assess if these same correlates in turn predict co-rumination.

Participants

A power analysis was performed for Study 2; for a path analysis with four paths (per model) and an effect size of R^2 = .15, α = .05, two-tailed, and power = .80, I needed a minimum of 85 participants. My final sample consisted of 95 adolescents, who participated in a longitudinal study examining the role of peer relationships in health; there were 44 (46.3%) boys and 51 (53.7%) girls. Data were collected at two times, set two to three years apart; at Time 1 the mean age was 12.88 (*SD* = 1.51, range 11-16) and at Time 2 it was 15.84 (*SD* = 1.64, range 13-19). Most of the participants were originally recruited from summer camps and local school mailing lists, from which they were randomly selected and their parents contacted. Additionally, members of the research lab visited area schools and explained to classes the purpose of the study; those children who expressed interest were sent home with further information to give to their parent(s). These participants then were contacted via phone two to three years later to see if they were interested in coming back for another wave of data collection. The ethnic composition of the sample was as follows: 42.1% White/Caucasian, 28.4% Hispanic/Latino, 13.6% Black/African American, 8.5% Asian, 4.2% Hawaiian/Pacific Islander, 2.1% American Indian/Alaskan Native, and 1.1% other[2].

Materials and Procedure

The materials and methods for this study were almost identical those in the previous study. The Co-rumination Questionnaire (CRQ) was again used, while anxiety, depression, rule breaking, and

[2] There were no differences between those who agreed to participate and those who did not come back for Phase 2.

aggression were measured with the Youth Self Report (YSR). The Loneliness Scale (L-Scale) and the Big Five Inventory (BFI) were used to measure loneliness and neuroticism, respectively, and frequent and severe physical health problems were again assessed with the Health Outcomes survey (HO) (alphas can be found in Tables 29 to 31). Data collection was conducted utilizing the same methods in Study 1, save for the fact that participants returned to the lab an average of 2.5 years after their first visit.

Data Analysis

Missing data were examined once again with Little's test, which was not significant at either time point. A single leverage outlier was found so analyses were run with and without; no changes were detected in results, so the case was retained and used in all analyses (see Tables 30 to 32 for Study 2 descriptive statistics). A series of independent *t*-tests were run to examine sex differences at each time point. As can be seen in Tables 36 and 37, girls scored significantly higher than boys on anxiety and depression at Time 1 (ps < .024), and co-rumination, neuroticism, anxiety, depression, aggression, and both frequency and severity of health problems at Time 2 (ps < .039). Interestingly, boys reported significantly higher rates of loneliness than girls at Time 1 (p = .024), but there were no gender differences at Time 2 (p = .767).

Chapter 5

Results—Study 2

Aim 3: What are the effects of co-rumination over time?

I first examined the bivariate correlations between co-rumination and loneliness, depression, anxiety, neuroticism, frequent and severe health problems, aggression, and rule breaking across two time points. Results can be found in Tables 33 to 35[3]. A *p*-value of < .05 was used for these analyses, and only significant results are reported fully in the text.

Because this aim was concerned with both the predictors and outcomes of co-rumination—that is, bidirectional effects—a cross-lagged panel using path analysis in MPlus was run to test this model. This allowed me to control for the effects of Time 1 variables on their Time 2 counterparts. Co-rumination at Time 1 predicted increases in depression at Time 2, $b = .30$, $SE = .08$, $t(82) = 3.67$, $p < .001$. Increased rates of anxiety, $b = .23$, $SE = .10$, $t(82) = 2.46$, $p = .014$, and aggression, $b = .17$, $SE = .09$, $t(80) = 2.02$, $p = .043$, were also predicted by Time 1 co-rumination. There was no relationship between Time 1 co-rumination and rates of loneliness ($p = .756$) and rule breaking ($p = .355$) at Time 2 (see Figures 11 to 15 for full results).

Three separate bidirectional effects were observed (i.e., co-rumination both predicted and was predicted by the other measure in the model). Firstly, co-rumination at Time 1 predicted higher rates of neurotic behavior at Time 2, $b = .20$, $SE = .09$, $t(83) = 2.24$, $p = .025$, while neuroticism at Time 1 also predicted more co-rumination two to three years later, $b = .19$, $SE = .10$, $t(83) = 1.97$, $p = .049$. Similarly, frequent health complaints were predicted by co-rumination at Time 1, $b = .26$, $SE = .09$, $t(82) = 3.67$, $p = .003$, and also led to increases in co-rumination at Time 2, $b = .29$, $SE = .09$, $t(82) = 3.16$, p = .002. Finally, the severity of health complaints was both predicted by, $b = .21$, $SE = .09$, $t(82) = 2.42$, p = .015, and predictive of, $b = .20$, $SE = .08$, $t(82) = 2.05$, p = .040, co-rumination (see Figures 16 to 18). Co-rumination at Time 2 was not predicted by any other Time 1 variables (*p*s > .303).

[3] Analyses were run both with and without controlling for the time between assessments; as there was no difference in outcomes the latter were used, which retained a degree of freedom.

Chapter 6

Discussion

Co-rumination, which is the excessive discussion of problems within a dyadic relationship, consists of rumination and self-disclosure and often leads to an adjustment trade-off: better friendship quality at the cost of depression and anxiety (e.g., Rose, 2002). The purpose of this dissertation was to examine how co-rumination affects internalizing and externalizing problems, physical health, and interpersonal relationships in an adolescent sample from a cross-sectional and longitudinal perspective, as well as how peer victimization may exacerbate those concurrent outcomes.

Direct Effects of Co-rumination

For my first aim, I studied the direct effects of co-rumination on internalizing, externalizing, and health problems. Additionally, I examined whether co-rumination was also positively associated with friend support. Adolescents who reported high rates of co-rumination also tended to experience greater instances of PTSD symptoms, depression, frequent and severe health problems, and aggression. Furthermore, those adolescents who co-ruminated were also more likely to be neurotic, a relationship that was expected given the research on personality traits and rumination (Roelofs et al., 2008; Merino et al., 2014). A positive relationship was found between co-rumination and support from the best friend, thus replicating the adjustment trade-off that has been found in previous studies (e.g., Rose, 2002; Rose et al., 2007, Smith & Rose, 2011). The lack of a relationship between co-rumination and rumination was rather curious, especially considering that previous research has found a strong link between the two (e.g., Rose, 2002). This certainly raises more questions than it answers, as rumination is part of what “makes” co-rumination; although the scale that was used evidenced high reliability within the sample, the instructions did not specifically ask participants to think about how they react to a problem when answering the questions. Rather, they were simply given a list of statements with which to agree or disagree. Perhaps a scale with more specific instructions would yield different results.

After controlling for the contributing effects of neuroticism, it was then found that co-rumination predicted lower rates of loneliness, suggesting that those adolescents who are engaging in co-rumination tend to feel less lonely. While a positive relationship between co-rumination and loneliness was anticipated, it is perhaps not surprising that a negative association was found instead. Because self-disclosure in friendships is linked with feelings of emotional intimacy, which itself is linked with lower rates of loneliness (e.g., Sullivan, 1953; Bukowski et al., 1998), it makes sense that this "good part" of co-rumination manifested itself in such a way. It should also be noted that those studies that found a decrease in the number of friends and social adequacy related to co-rumination did not examine the construct of loneliness specifically, nor were the data collected concurrently (Starr & Davila, 2009; Tompkins et al., 2011). As such, co-rumination may protect adolescents against feelings of loneliness, at least in the short term.

Still controlling for the effects of neuroticism, co-rumination was found to uniquely predict rates of PTSD symptoms, hinting at an alarming conclusion: that this form of support is linked with re-experiencing a traumatic event, hypervigilance, and avoidance of reminders of the event. While this may seem rather paradoxical at first, given the relationship between talk therapy and lower rates of PTSD in combat veterans (e.g., van der Kolk, McFarlane, & Weisaeth, 2007), such outcomes may depend upon both the emotional valence of the topic, as well as the conversation partner. For example, disclosure of negative emotions among veterans and service members to those with shared experience reported higher rates of PTSD than disclosure to friends and family with no military history (Hoyt & Renshaw, 2010; Hoyt et al., 2010). Furthermore, research on rumination indicates that perseverating on the causes, consequences, and meaning of traumatic experiences is linked with more severe symptoms of PTSD (Roley et al., 2015; Ehring, Frank, & Ehlers, 2008; Michael, Halligan, Clark, & Ehlers, 2007). Because co-rumination is essentially dyadic rumination, those adolescents that are engaging in it may be triggering memories of traumatic events; however, it should be noted that in this sample co-rumination was not related to anxiety or depression, both of which tend to be co-morbid with PTSD (e.g., Spinhoven, Pennix. Van Hemert, de Rooij, & Elzinga, 2014). It would be beneficial to parse out the effects of each, as well as examine how the three clusters of PTSD symptoms individually contribute to rates of co-rumination.

The Moderating Effect of Peer Victimization

Although many researchers have found a host of effects directly related to co-rumination (Barstead et al., 2013; Rose et al., 2014), other work has found the latter to have a greater effect when there is another stressor at play, especially when it is of a social nature (Starr & Davila, 2009; White & Shih, 2012; Moreira, Miernicki, & Telzer, 2016). This suggests that in certain samples the impact of co-rumination may not be strong enough on its own, and requires a stressor to "bring out" the effects. Peer victimization certainly qualifies as a social stressor, and for my second aim, I was interested in how it may affect the previously tested outcomes of co-rumination. Earlier research (Guarneri-White et al., 2015) has found that the presence of co-rumination exacerbated the effects of victimization on depression, anxiety, and PTSD symptoms; physical health problems via depression were also indirectly associated with rates of co-rumination. I wanted to extend these results and examine if peer victimization moderates the effects of co-rumination, rather than the other way around. Furthermore, as research has indicated social victimization to be more damaging than physical, I wanted to examine how these may differentially interact with co-rumination. It was found that the frequency and severity of physical health problems were worse for adolescents who co-ruminated and reported being peer victimized at high levels; this was true for those who experienced overall and social, but not physical, victimization. As both rumination and peer victimization have been linked with poor physical health (Thomsen et al., 2004; Knack, Iyer, & Jensen-Campbell, 2012), when taken together these results are not too surprising.

A particularly noteworthy finding was a three-way interaction between co-rumination, victimization (overall and social), and gender: co-ruminating *girls* who were highly victimized also engaged in high rates of aggressive behavior. Although the number of studies examining co-rumination and externalizing problems pales in comparison to that involving internalizing problems, what does exist is suggestive. For example, recent research by Criss and colleagues (2016) noted that high rates of co-rumination were associated with low antisocial behaviors by way of emotional regulation in an adolescent sample. This suggests that those co-ruminating adolescents who can regulate their emotions engage in fewer antisocial activities than those who are less adept at keeping their emotions "in check". While the mechanism by which co-rumination affects this was not probed, the authors suggest that co-rumination

amongst friends provides a safe context in which adolescents can vent their frustrations and problems, thus increasing their ability to regulate their emotions. As applied to the current study, perhaps those girls who co-ruminate and experience peer victimization are lacking in emotional regulation skills, so the process by which co-rumination "curbs" this acting out is not at play, which is influencing their aggressive behaviors. Indeed, adolescent girls who were low on victimization and high on co-rumination reported the lowest levels of aggression. Boys, regardless of their level of victimization, showed a positive trend between co-rumination and aggression. Indeed, the literature on rumination suggests that it is linked with the anger response; for example, individuals who ruminate about a lab-induced provocation displayed increased rates of aggression over those who were in the control conditions (Bushman, 2002; Bushman, Bonacci, Pedersen, Vasquez, & Miller, 2005; Vasquez et al., 2013). Based on these findings, perhaps the girls in this sample were co-ruminating—with an emphasis on the ruminative aspect—over being victimized by their peers, which led to feelings of anger and then physical aggression. Additionally, although it was not significant, there was a similar trend influencing rates of aggression in boys.

Research further suggests that adolescents who experience peer victimization also exhibit increases in emotional dysregulation over a four-month period, which in turn was associated with higher rates of aggression (Herts, McLaughlin, & Hatzenbuehler, 2012); a similar phenomenon could be at work here. Alternatively, it has been found that when adolescents display negative emotions that are met by non-supportive strategies from their friends, they are more likely to report high rates of internalizing and externalizing problems (Klimes-Dougan et al., 2014). From this perspective, then, co-ruminative relationships that are not marked by support and validation do not have that "protection" afforded by those relationships that *do* contain those characteristics. As such, those individuals may act out or exhibit signs of depression and anxiety.

Another possible explanation for this three-way interaction is that these girls may be bully-victims, meaning they both experience and dole out peer victimization. Research has indicated that those that fall under this rubric tend to report the worst outcomes associated with being a "pure" bully and a "pure victim, such as increased rates of aggression and internalizing problems (Lereya, Copeland, Zammit, and Wolke, 2015). Although it is impossible to say if the girls in this sample aggress because of the

victimization or vice versa, research supports the former supposition; individuals who are victimized by their peers are more likely to then become bullies themselves, rather than the other way around (Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008; Haltigan & Vaillancourt, 2014). A fascinating possibility to draw from this, then, is that co-ruminating girls who experience both overall and social victimization lash out with acts of *physical* aggression and may be at greater risk for becoming a bully-victim over time. Indeed, Dukes, Stein, and Zane (2009) found that adolescent relational bully-victims were also likely to engage in acts of physical victimization against others. One explanation for such behavior is found in the literature on social rejection: numerous studies have found a link between being rejected by others and subsequent violence or aggression, both in and out of the laboratory (Dewall & Twenge, 2013; Twenge, Baumeister, Tice, & Stucke, 2001; Williams, Cheung, & Choi, 2000; Leary, Kowalski, Smith, & Phillips, 2003). Because the need to belong is so fundamental to human beings, individuals who find that need thwarted may lash out with anger and violence; indeed, most perpetrators of school shootings experienced social rejection that was directly related to the ensuing violence (Sommer, Leuschner, & Scheithauer, 2014).

Overall, these results indicate that co-rumination is indeed linked with internalizing and externalizing problems, poor health outcomes, and better quality friendships, but only under certain conditions. Although there was a correlation between co-rumination and PTSD symptoms, positive support, frequent and severe health problems, and aggression, only the first two remained as significant direct effects when neuroticism was added. This is explained by the amount of variance that neuroticism accounted for in the regression models, thus leaving “no room” for co-rumination to affect the outcome variables; however, it was only after neuroticism was controlled for that loneliness emerged as an effect of co-rumination. It was interesting to note that PTSD symptoms and loneliness were both predicted by co-rumination, while physical health problems were found in adolescents who co-ruminated and reported high rates of either overall or social victimization. This suggests that perhaps for some internalizing problems, the effects of co-rumination alone are enough to make them salient. On the other hand, frequent and severe somatic complaints were only found when victimization was placed alongside co-

rumination, supporting previous literature that has only found effects of co-rumination when there is also a stressor present (e.g., Starr & Davila, 2009).

The absence of the moderating effects of gender are noteworthy, especially considering that rates of co-rumination and social victimization were higher in females, and physical victimization was more prevalent in males. However, the difference between genders on rates of co-rumination—while significant—was rather small, which may be why no interactive effects were found. Moreover, the mean age of my sample—13—may be too young for such differences to emerge in the expected way; indeed, there are mixed results in the literature regarding gender and co-rumination outcomes (Rose, 2002; Barstead et al., 2013; White & Shih, 2012; Schwartz-Mette & Rose, 2012). Future research should probe these contradictory findings, as well as identify the mechanisms by which they occur.

Co-rumination over Time

Finally, a longitudinal study was conducted with a different sample to not only assess the effects of co-rumination over a two- to three-year period, but to see how those factors may themselves predict co-rumination in turn. Previous longitudinal work has identified a bidirectional relationship between co-rumination and negative outcomes (Bastin et al., 2015; Hankin et al., 2010; Rose et al., 2007), and similar results were expected here. Time 1 co-rumination predicted increases in depression, anxiety, neuroticism, frequent and severe health problems, and aggression at Time 2. Conversely, health problems and neuroticism at Time 1 predicted increased co-rumination at Time 2. These results indicate that co-rumination is linked with increasing rates of poor psychological and physical health, as well as behavioral problems. Furthermore, adolescents who are neurotic and in poor health engaged in higher rates of co-rumination over time than those that did not experience these problems.

What is most notable in these longitudinal findings is the bidirectional relationship between co-rumination, neuroticism, and frequent and severe health problems. While reciprocal relationships between co-rumination and outcomes have been examined in the past (Rose et al., 2007), this is the first study to find such a link concerning personality and physical health problems. It should also be noted that previous longitudinal studies (Bastin et al., 2014; Bastin et al., 2015; White & Shih, 2012; Jose, Wilkins, & Spendelow, 2012) have found co-rumination to only be associated with negative outcomes (save for

Rose et al. [2014], who also found increases in friendship quality). Cross-sectional work, on the other hand, tends to find both positive and negative effects (e.g., Rose, 2002; Rose et al., 2014; Haggard et al., 2011). This suggests that perhaps, while there are benefits to co-rumination in the short term, over time they may be overridden or reduced and give way to poor health outcomes and behaviors; indeed, although there was no link between co-rumination and loneliness over time, they were—as in Study 1—negatively related to one another concurrently. Another unique aspect of this study is the time lapse between data collection points; the current longitudinal literature on co-rumination ranges from one week to two years, while this study covered an average of 2.5 years. This may provide a more accurate picture of long-term changes, especially concerning neuroticism, rates of which have been found to increase over time due to negative life events (Jeronimus, Ormel, Almen, Pennix, & Riese, 2013; Boals, Southard-Dobbs, & Blumenthal, 2015).

Although the association between rumination and neuroticism has been well established in the literature (e.g., Roelofs et al., 2008; Muris et al., 2005), this is the first study to look at how this personality trait is affected by co-rumination, and vice versa. Results suggest that individuals who co-ruminate show prospective increases in neurotic behaviors and thoughts, and being neurotic leads to higher rates of co-rumination. As such, it may be that co-ruminative behavior stems from a neurotic disposition, and engaging in constant problem talk makes one more neurotic over time; additionally, contemporaneous results from the first study also indicate a relationship between neuroticism and co-rumination. Although these data are preliminary and exploratory in nature, this is still a rather tantalizing finding and one that merits future attention. Other personality factors should also be examined alongside co-rumination to ascertain additional predictors and outcomes.

Future Directions

As with any study, this dissertation has several limitations. Firstly, the data are correlational and thus causality cannot be determined. Although the second study was longitudinal in nature, it would still be premature to make causal relationships as assessments were only made in two waves; having more collection points would provide a clearer picture of the effects of co-rumination throughout adolescence. Studying co-rumination in the lab would also be beneficial in examining causality. For example, Rose and

colleagues (2014) observed same-sex dyads engaging in problem talk, finding that such behavior led to acute feelings of depression and anxiety. Other studies have found that co-rumination is linked with an increased stress response in the lab (Byrd-Craven, Granger, & Auer, 2010; Byrd-Craven, Geary, Rose, & Ponzi, 2008). More observational and experimental studies on co-rumination should thus be conducted, as they can shine light on the mechanisms by which it occurs and is reinforced, as well as how it influences acute physiological responses.

A second weakness of this study was the inability to look at unique contributions of the individual components of co-rumination (extent of problem talk, rehashing problems, speculating about problems, mutual encouragement of problem talk, and dwelling on negative affect) due to multicollinearity problems and family-wise error rates. While understanding the effects of co-rumination is certainly important, doing so is only part of puzzle. By breaking the construct down and examining it from a microsocial perspective, we would be better able to say with certainty exactly which facets are related to which outcomes. However, as only one factor emerged from the factor analysis, perhaps—from a statistical perspective, at least—co-rumination does not consist of five separate components. Indeed, the sole study that has utilized such a model (Rose et al., 2014) did not do so based on the results of a statistical analysis; rather, conversations between dyads were observed and coded for characteristics of co-ruminative discussion. While Davidson and colleagues (2014) found a three-factor structure in an examination of the psychometric properties of the Co-rumination Questionnaire, sample size was over a thousand; perhaps having a larger number of participants would yield similar results in the future. Furthermore, their participants were an average of twenty years old; it could be that these nuances of co-rumination become more pronounced and identifiable as individuals grow older.

As mentioned previously, the current body of literature suggests that co-rumination may be most deleterious when the individual is also experiencing a stressor, especially one of an interpersonal nature (e.g., Starr & Davila, 2009). While this dissertation did not examine co-ruminative topics, it is a safe assumption that at least some of the sample was co-ruminating about experiencing peer victimization. Prospective work should examine the differential impact of types of interpersonal stressors, including hostility or criticism within a relationship; strains such as this may exacerbate the outcomes of co-

rumination (Slacter & Selcuk, 2017). Knowing with certainty what is being discussed so extensively would be helpful regarding intervention responses, as adolescents could be provided with healthier ways to talk about specific problems.

Finally, the effects of co-rumination may differ depending upon who the partner is. While the amount of self-disclosure "required" by co-rumination makes it more likely to occur between same-sex best friends, it has been found—albeit at lower rates—in roommates, parents, romantic partners, and opposite-sex best friends (White & Shih, 2012; Barstead et al., 2013). For instance, Calmes and Roberts (2008), in their study on co-rumination in college students, found that co-ruminating with one's closest parent (of whom 84% of the sample reported being the mother) was associated with anxiety; there was no link between internalizing problems and co-ruminating with a romantic partner or roommate. Similarly, Waller and Rose (2010) examined adolescent co-rumination with the mother and found that when co-ruminating about the mother's problems, the adolescent experienced higher rates of internalizing symptoms, even after controlling for self-disclosure; a follow-up study conducted by the same authors replicated these results (Waller & Rose, 2013). These findings suggest that discussing the mother's problems at such lengths may be particularly damaging to the adolescent because of developmental inappropriateness (Waller & Rose, 2010, 2013), thus making friend co-rumination the lesser of two evils, so to speak. As self-disclosure about stressful events from mother to adolescent is linked with internalizing difficulties due to a blurring of parental boundaries (Lehman & Koerner, 2002; Koerner, Wallace, Lehman, Lee, & Escalante, 2004; Kerig, 2005), it makes sense that co-rumination between mother and adolescent has similar effects. However, Waller and Rose (2013) also found that the relationship between mother co-rumination and anxious depression was fully mediated by friend co-rumination, and thus became non-existent once the latter was controlled for. These mixed findings call for further research examining the differential impact of co-ruminating with the mother versus the best friend, as well as how gender may affect this relationship.

Closing Remarks

This dissertation makes a valuable contribution to the growing body of co-rumination research in several ways. By expanding the number of possible outcomes of co-rumination, the study found that such

talk is associated with loneliness, PTSD symptoms, frequent and severe physical health complaints, and aggression. Furthermore, these findings point to a differential impact of co-rumination that is contingent upon the presence of moderating factors, specifically peer victimization. The longitudinal study is a step in further discovering the long-term implications of co-rumination, as well an identification of what factors may cause its occurrence, something which is essential in its prevention. A unique aspect of this work is the conclusion that peer victimization exacerbates some of the negative (but not positive) effects of co-rumination in adolescents, compounding the tumultuous nature characteristic of this developmental period. Furthermore, a long-term, bidirectional relationship between co-rumination, physical health, and neuroticism was established, something which has not previously been done. As this dissertation has shown, the outcomes of co-rumination are far-reaching, affecting both physical and psychological health, as well as aggressive behaviors and personality. Research such as this lends verity to the hypothesis that co-rumination does more harm than good, both over time or when the individual is experiencing an interpersonal stressor, thus making a bad situation even worse.

Appendix A

Scales

Co-rumination Questionnaire (CRQ)
Rose, 2002

Instructions: Think about the way you usually are with your best or closest friends who are girls if you are a girl or who are boys if you are a boy and bubble in the best answer for each of the following statements that best describes you.

Scale: Not at all true A little true Somewhat true Mostly true Really true

1. We spend most of our time together talking about problems that my friend or I have.
2. If one of us has a problem, we will talk about the problem rather than talking about something else or doing something else.
3. After my friend tells me about a problem, I always try to get my friend to talk more about it later.
4. When I have a problem, my friend always tries really hard to keep me talking about it.
5. When one of has a problem, we talk about it for a long time.
6. When we see each other, if one of us has a problem, we will talk about the problem even if we had planned to do something else.
7. When my friend has a problem, I always try to get my friend to tell me every detail about what happened.
8. After I've told my friend about a problem, my friend always tries to get me to talk more about it later.
9. We talk about problems that my friend or I are having almost every time we see each other.
10. If one of us has a problem, we will spend our time together talking about it, no matter what else we could do instead.
11. When my friend has a problem, I always try really hard to keep my friend talking about it.
12. When I have a problem, my friend always tries to get me to tell every detail about what happened.
13. We will keep talking even after we both know all of the details about what happened.
14. We talk for a long time trying to figure out all the different reasons why the problem might have happened.
15. We try to figure out every one of the bad things that might happen because of the problem.
16. We spend a lot of time trying to figure out parts of the problem we can't understand.
17. We talk a lot about how bad the person with the problem feels.
18. We'll talk about every part of the problem over and over.
19. We talk a lot about the problem in order to understand why it happened.
20. We talk a lot about all of the different bad things that might happen because of the problem.
21. We talk a lot about parts of the problem that don't make sense to us.
22. We talk for a long time about how upset it has made one of us with the problem.
23. We usually talk about that problem every day even if nothing new has happened.
24. We talk about all of the reasons why the problem might have happened.
25. We spend a lot of time talking about what bad things are going to happen because of the problem.
26. We try to figure out everything about the problem, even if there are parts we may never understand.
27. We spend a long time talking about how sad or mad the person with the problem feels.

Reflection-Rumination Questionnaire (RRQ)
(Trapnell & Campbell, 1999)

Instructions: For each of the following statements, please indicate your level of agreement or disagreement.

Scale:

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

1. My attention is often focused on aspects of myself I wish I'd stop thinking about.
2. I always seem to be "rehashing" in my mind recent things I've said or done.
3. Sometimes it is hard for me to shut off thoughts about myself.
4. Long after an argument or disagreement is over with, my thoughts keep going back to what happened.
5. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward.
6. I don't waste time thinking about things that are over and done with.
7. Often I'm playing back over in my mind how I acted in a past situation.
8. I often find myself re-evaluating something I've done.
9. I never ruminate or dwell on myself for very long.
10. It is easy for me to put unwanted thoughts out of my mind.
11. I don't reflect on episodes in my life that I should no longer concern myself with.
12. I spend a great deal of time thinking back over my embarrassing or disappointing moments.

Friendship Quality Questionnaire: Self-Disclosure Sub-scale (FQQ)
Parker & Asher, 1993

Instructions: Please select the answer that best completes the following sentence: “My best friend and I…”

Scale: Not at all true

A little true

Somew hat true

Pretty true

Really true

1. …always tell each other our problems.
2. …talk about the things that make us sad.
3. …talk to him/her when I’m mad about something that happened to me
4. …tell each other secrets.
5. …tell each other private things.
6. …talk about how to make ourselves feel better if we are mad at each other.

Network of Relationships Inventory: Positive Support Subscale (NRI-D)
Furman & Buhrmester, 1985

Instructions: The questions below ask about your relationships with several types of people listed on the left (i.e., your mother, your father, your best friend, and your second best friend). For each question, bubble in the circle that fits you best. Rate the “father figure” or “mother figure” who lives in your home if you live with someone who is not your natural parent.

Scale: Never or hardly at all
Seldom or not too much
Sometimes or somewhat
Often or very much
Always or extremely

Companionship
1. How often do you spend fun time with this person?
2. How often do you and this person go places and do things together?
3. How often do you play around and have fun with this person?

Intimate disclosure
1. How often do you tell this person things that you don’t want others to know?
2. How often do you tell this person everything that you are going through?
3. How often do you share secrets and private feelings with this person?

Satisfaction
1. How happy are you with your relationship with this person?
2. How much do you like the way things are between you and this person?
3. How satisfied are you with your relationship with this person?

Support
1. How often to you turn to this person for support with personal problems?
2. How often do you depend on this person for help, advice, or sympathy?
3. When you are feeling down or upset, how often do you depend on this person to cheer things up?

Approval
1. How often does this person praise you for the kind of person you are?
2. How often does this person seem really proud of you?
3. How much does this person like or approve of the things you do?

The Big Five Inventory: Neuroticism Sub-scale (BFI)
Costa & McCrae, 1992

Instructions: Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please choose the best answer for each statement to indicate the extent to which you agree or disagree with that statement.

"I see myself as someone who…"

Scale:

Disagre

e strongly

Disagre

e a little

Neither

agree nor disagree

Agree a

little

Agree

strongly

1. …is depressed, blue.
2. …is relaxed, handles stress well.
3. …can be tense.
4. …worries a lot.
5. …is emotionally stable, not easily upset.
6. …can be moody.
7. …remains calm in tense situations.
8. …gets nervous easily.

Direct and Indirect Aggression—Victim Survey (DIAS-VS)
Björkqvist, Lagerspetz, & Österman, 1992

Instructions: Answer each question by bubbling in the answer which seems to most closely tell you about how your classmates behave toward you.

Scale:

Never
Seldom
Sometimes
Quite often
Very often

1. How often are you hit by other classmates?
2. How often are you shut out of the group by other classmates?
3. How often do other classmates yell at you or argue with you?
4. How often do classmates become friends with another classmate as a kind of revenge?
5. How often are you kicked by other classmates?
6. How often are you ignored by other classmates?
7. How often are you insulted by other classmates?
8. How often do classmates who are angry with you gossip about you?
9. How often are you tripped by other classmates?
10. How often do classmates tell bad or false stories about you?
11. How often do classmates say they are going to hurt you?
12. How often do classmates plan to secretly bother you?
13. How often are you shoved by other classmates?
14. How often do classmates say bad things about you behind your back?
15. How often are you called names by other classmates?
16. How often do classmates tell others “Let’s not be friends with him/her!”?
17. How often do other classmates take things from you?
18. How often do classmates tell your secrets to a third person?
19. How often are you teased by other classmates?
20. How often do classmates write small notes where you are criticized?
21. How often are you pushed down to the ground by other classmates?
22. How often do other classmates criticize your hair or clothing?
23. How often do other classmates pull at you?
24. How often do classmates who are angry with you try to get others to dislike you?

Children's Self Experiences Questionnaire—Self-Report (CSEQ-SR)
Crick & Grotpeter, 1995

Instructions: Here is a list of things that sometimes happen to kids your age at school. How often did they happen to you at school? Bubble

Scale: Never Almost never Sometimes Almost all the time All the time

1. How often does another kid give you help when you need it?
2. How often do you get hit by another kid at school?
3. How often do other kids leave you out on purpose when it is time to play or do an activity?
4. How often does another kid yell at you and call you mean names?
5. How often does another kid try to cheer you up when you feel sad or upset?
6. How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?
7. How often do you get pushed or shoved by another kid at school?
8. How often does another kid do something that makes you feel happy?
9. How often does a classmate tell lies about you to make other kids not like you anymore?
10. How often does another kid kick you or pull your hair?
11. How often does another kid say they won't like you unless you do what they want you to do?
12. How often does another kid say something nice to you?
13. How often does a kid try to keep others from liking you by saying mean things about you?
14. How often does another kid say they will beat you up if you don't do what they want you to do?
15. How often do other kids let you know that they care about you?

PTSD Checklist—Civilian Version (PCL-C)
National Center for PTSD, 2003

Instructions: Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully and choose the answer that indicates how much you have been bothered by that problem in the PAST MONTH.

Scale: Not at all
A little bit
Modera tely
Quite a bit
Extrem ely

1. Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?
2. Repeated, disturbing dreams of a stressful experience from the past?
3. Suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it)?
4. Feeling very upset when something reminded you of a stressful experience from the past?
5. Having physical reactions (e.g., heart pounding, trouble breathing, or sweating) when something reminded you of a stressful experience from the past?
6. Avoid thinking about or talking about a stressful experience from the past or avoid having feelings related to it?
7. Avoid activities or situations because they remind you of a stressful experience from the past?
8. Trouble remembering important parts of a stressful experience from the past?
9. Loss of interest in things that you used to enjoy?
10. Feeling distant or cut off from other people?
11. Feeling emotionally numb or being unable to have loving feelings for those close to you?
12. Feeling as if your future will somehow be cut short?
13. Trouble falling or staying asleep?
14. Feeling irritable or having angry outbursts?
15. Having difficulty concentrating?
16. Being "super alert" or watchful on guard?
17. Feeling jumpy or easily startled?

Asher Loneliness Scale (L-Scale)
Asher & Wheeler, 1985

Instructions: Please bubble in a circle for each statement to indicate how true you think the statement is.

Scale: Not at all true

A little true

Somew hat true

Quite often true

Always true

1. It is easy for me to make new friends.
2. I like to read.
3. I have nobody to talk to at school.
4. I am good at working with other children at school.
5. I like to write letters.
6. It is hard for me to make friends at school.
7. I like school.
8. I have lots of friends at school.
9. I feel alone at school.
10. I can find a friend at school when I need one.
11. I play sports at school.
12. It is hard to get other kids at school to like me.
13. I like nature.
14. I do not have anyone to “hang out” with at school.
15. I like to sing.
16. I get along with other kids at school.
17. I feel left out of things at school.
18. There is nobody I could go to at school when I need help.
19. I like to paint and draw.
20. I do not get along with other children at school.
21. I am lonely at school.
22. I am well-liked by the kids in my class.
23. I like playing games a lot at school.
24. I do not have any friends at school.

Youth Self-Report/Child Behavior Checklist
Achenbach, 1991

Please print. Be sure to answer all items.

Below is a list of items that describe kids. For each item that describes you ***now or within the past 6 months***, please circle the **2** if the item is ***very true or often true*** of you. Circle the ***1*** if the item is ***somewhat or sometimes true*** of you. If the item is ***not true*** of you, circle the ***0***.

0 = Not True **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 1. I act too young for my age
0 1 2 2. I drink alcohol without my parents' approval (describe): _____
0 1 2 3. I argue a lot
0 1 2 4. I fail to finish things that I start
0 1 2 5. There is very little that I enjoy
0 1 2 6. I like animals
0 1 2 7. I brag
0 1 2 8. I have trouble concentrating or paying attention
0 1 2 9. I can't get my mind off certain thoughts; (describe): _____
0 1 2 10. I have trouble sitting still
0 1 2 11. I'm too dependent on adults
0 1 2 12. I feel lonely
0 1 2 13. I feel confused or in a fog
0 1 2 14. I cry a lot
0 1 2 15. I am pretty honest
0 1 2 16. I am mean to others
0 1 2 17. I daydream a lot
0 1 2 18. I deliberately try to hurt or kill myself
0 1 2 19. I try to get a lot of attention
0 1 2 20. I destroy my own things
0 1 2 21. I destroy things belonging to others
0 1 2 22. I disobey my parents
0 1 2 23. I disobey at school
0 1 2 24. I don't eat as well as I should
0 1 2 25. I don't get along with other kids
0 1 2 26. I don't feel guilty after doing something I shouldn't
0 1 2 27. I am jealous of others
0 1 2 28. I break rules at home, school, or elsewhere
0 1 2 29. I am afraid of certain animals, situations, or places, other than school (describe): _____
0 1 2 30. I am afraid of going to school
0 1 2 31. I am afraid I might think or do something bad
0 1 2 32. I feel that I have to be perfect
0 1 2 33. I feel that no one loves me
0 1 2 34. I feel that others are out to get me
0 1 2 35. I feel worthless or inferior
0 1 2 36. I accidentally get hurt a lot
0 1 2 37. I get in many fights
0 1 2 38. I get teased a lot
0 1 2 39. I hang around with kids who get in trouble
0 1 2 40. I hear sounds or voices that other people think aren't there (describe): _____
0 1 2 41. I act without stopping to think
0 1 2 42. I would rather be alone than with others
0 1 2 43. I lie or cheat
0 1 2 44. I bite my fingernails
0 1 2 45. I am nervous or tense
0 1 2 46. Parts of my body twitch or make nervous movements (describe): _____
0 1 2 47. I have nightmares
0 1 2 48. I am not liked by other kids
0 1 2 49. I can do certain things better than most kids
0 1 2 50. I am too fearful or anxious
0 1 2 51. I feel dizzy or lightheaded
0 1 2 52. I feel too guilty
0 1 2 53. I eat too much
0 1 2 54. I feel overtired without good reason
0 1 2 55. I am overweight
56. Physical problems ***without known medical cause:***
0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feel sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe): _____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____

 Be sure you answered all items. Then see other side.

Please print. Be sure to answer all items.

0 = Not True **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 57. I physically attack people
0 1 2 58. I pick my skin or other parts of my body (describe): _____
_____
0 1 2 59. I can be pretty friendly
0 1 2 60. I like to try new things
0 1 2 61. My school work is poor
0 1 2 62. I am poorly coordinated or clumsy
0 1 2 63. I would rather be with older kids than kids my own age
0 1 2 64. I would rather be with younger kids than kids my own age
0 1 2 65. I refuse to talk
0 1 2 66. I repeat certain acts over and over (describe): _____
_____
0 1 2 67. I run away from home
0 1 2 68. I scream a lot
0 1 2 69. I am secretive or keep things to myself
0 1 2 70. I see things that other people think aren't there (describe): _____
_____
0 1 2 71. I am self-conscious or easily embarrassed
0 1 2 72. I set fires
0 1 2 73. I can work well with my hands
0 1 2 74. I show off or clown
0 1 2 75. I am too shy or timid
0 1 2 76. I sleep less than most kids
0 1 2 77. I sleep more than most kids during day and/or night (describe): _____
_____
0 1 2 78. I am inattentive or easily distracted
0 1 2 79. I have a speech problem (describe): _____
_____
0 1 2 80. I stand up for my rights
0 1 2 81. I steal at home
0 1 2 82. I steal from places other than home
0 1 2 83. I store up too many things I don't need (describe): _____
_____
0 1 2 84. I do things other people think are strange (describe): _____
_____
0 1 2 85. I have thoughts that other people would think are strange (describe): _____
_____
0 1 2 86. I am stubborn
0 1 2 87. My moods or feelings change suddenly
0 1 2 88. I enjoy being with people
0 1 2 89. I am suspicious
0 1 2 90. I swear or use dirty language
0 1 2 91. I think about killing myself
0 1 2 92. I like to make others laugh
0 1 2 93. I talk too much
0 1 2 94. I tease others a lot
0 1 2 95. I have a hot temper
0 1 2 96. I think about sex too much
0 1 2 97. I threaten to hurt people
0 1 2 98. I like to help others
0 1 2 99. I smoke, chew, or sniff tobacco
0 1 2 100. I have trouble sleeping (describe): _____
_____
0 1 2 101. I cut classes or skip school
0 1 2 102. I don't have much energy
0 1 2 103. I am unhappy, sad, or depressed
0 1 2 104. I am louder than other kids
0 1 2 105. I use drugs for nonmedical purposes (***don't*** include alcohol or tobacco) (describe): _____
_____
_____
_____
0 1 2 106. I like to be fair to others
0 1 2 107. I enjoy a good joke
0 1 2 108. I like to take life easy
0 1 2 109. I try to help other people when I can
0 1 2 110. I wish I were of the opposite sex
0 1 2 111. I keep from getting involved with others
0 1 2 112. I worry a lot

Please be sure you answered all items.

Please write down anything else that describes your feelings, behavior, or interests:

Health Outcomes Survey (HO)
Knack, 2009

Instructions: Rate indicate the frequency and severity of the following health symptoms.

Scale: Not at all

Sometimes

Often

All the time

1. Extreme fatigue (feeing extremely tired)
2. Allergic reaction
3. Sleep problems
4. Stomach ache
5. Nausea/vomiting (sick to your stomach/throwing up)
6. Diarrhea
7. Muscle aches and pains
8. Headaches or migraine
9. Weight gain of 5 or more pounds
10. Weight loss of 5 or more pounds
11. Respiratory congestion (cold in your chest)
12. Runny nose
13. Coughing
14. Sore throat
15. Sneezing
16. Blocked nose
17. Fever or chills
18. Dizziness
19. Double or blurred vision
20. Trouble catching breath
21. Having a cold
22. Chest pains
23. Numbness or tingling
24. Low energy
25. Ear infections
26. Getting sick
27. Heart beating too quickly
28. Visits to the doctor
29. Visits to the school nurse

Appendix B

Tables and Figures

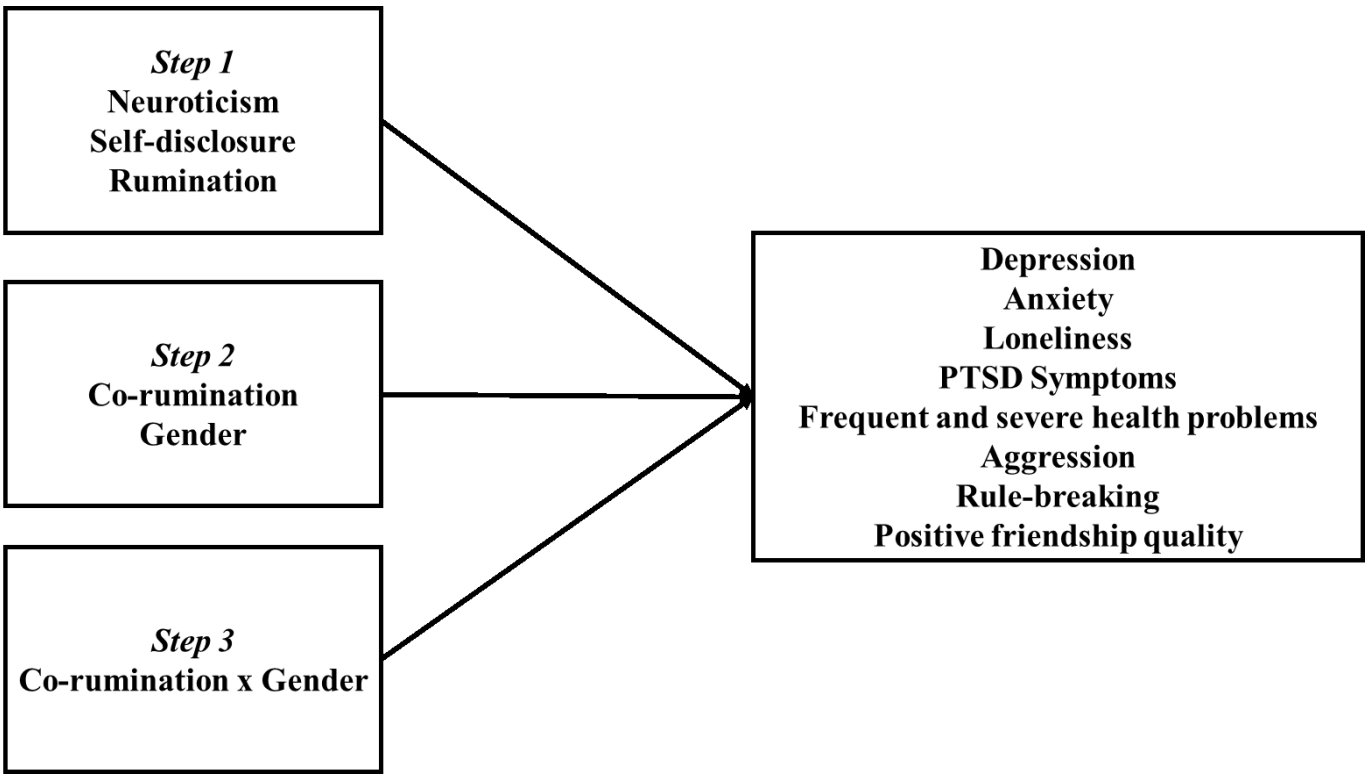

Figure 1. Hierarchical regression model of outcomes of co-rumination.
Note: Each outcome was run in a separate model.

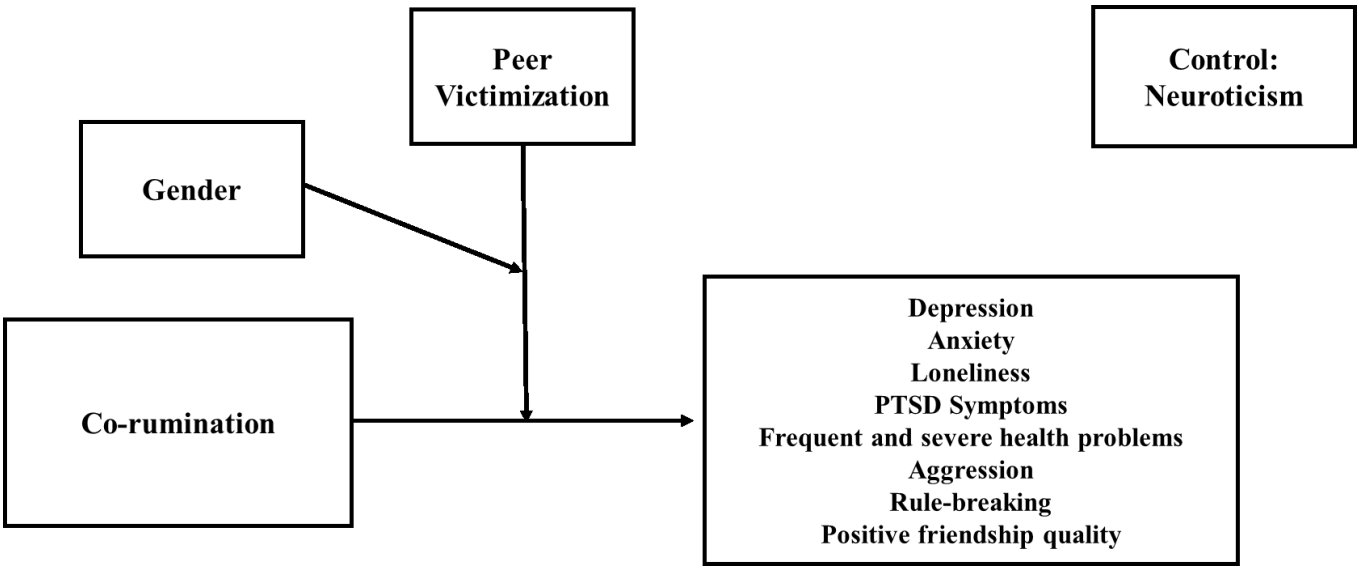

Figure 2a. Moderating effect of peer victimization and sex of participant in the co-rumination-health relationship.
Note: Each outcome was run in a separate model.

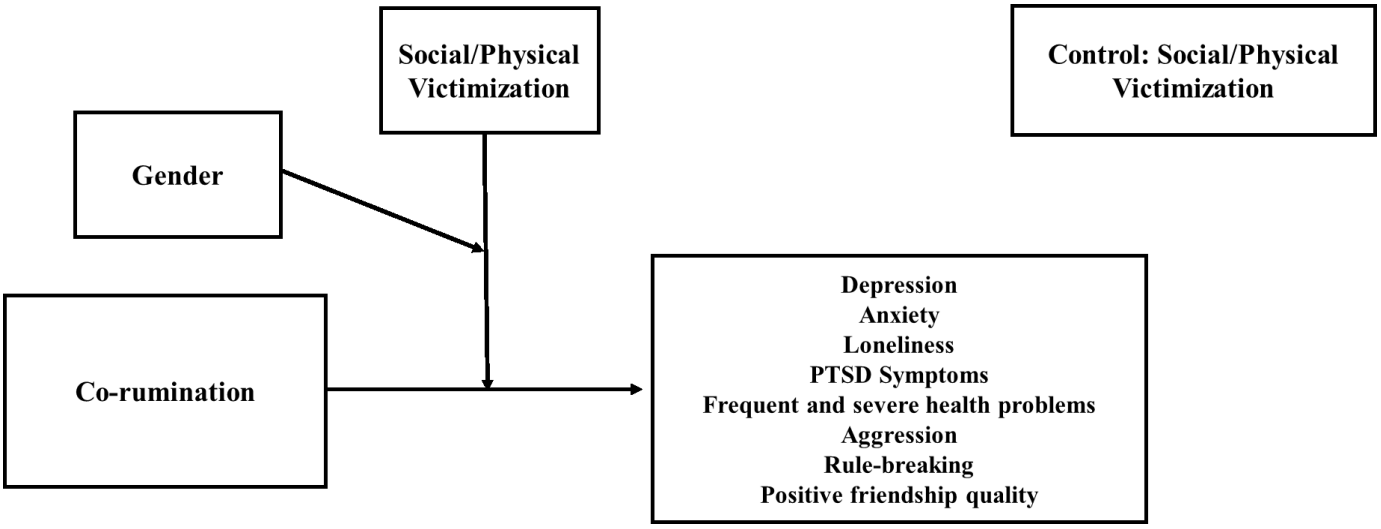

Figure 2b. Moderating effect of social/physical victimization and sex of participant in the co-rumination-health relationship.
Note: Each outcome was run in a separate model.

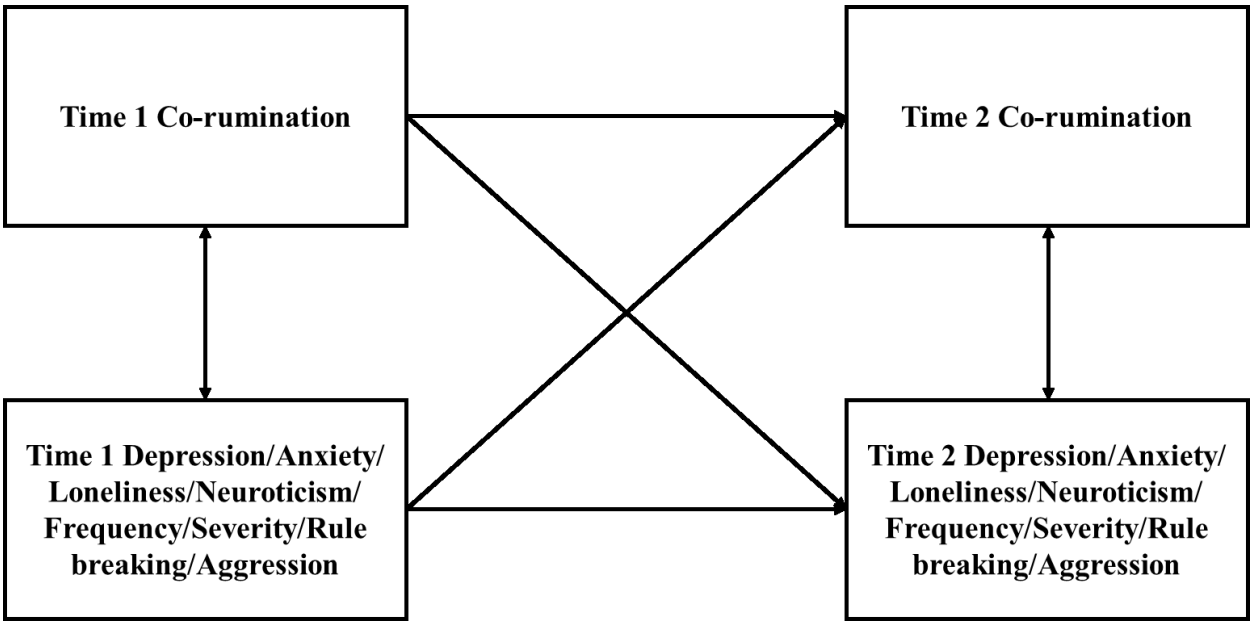

Figure 3. Bidirectional effects of co-rumination and health/behavioral outcomes.
Note: Each predictor/outcome was run in a separate model.

Table 1. Descriptive statistics for interpersonal and control variables.

Measure	Range	Min.	Max.	*M*	*SE*	Skewness	Kurtosis	α
Total Co-rumination	3.67	1.00	4.67	2.47	0.07	0.35	-0.72	0.96
Extent	4.00	1.00	5.00	2.62	0.08	0.29	-0.79	0.83
Rehashing	3.67	1.00	4.67	2.05	0.08	0.85	0.14	0.71
Speculating	4.00	1.00	5.00	2.57	0.09	0.23	-0.94	0.91
Encouragement	4.00	1.00	5.00	2.54	0.09	0.31	-0.68	0.86
Dwelling	3.80	1.00	4.80	2.31	0.08	0.57	-0.61	0.86
Rumination	3.58	1.17	4.75	3.21	0.09	-0.22	-0.55	0.88
Self-Disclosure	4.00	1.00	5.00	3.23	0.13	-0.28	-0.94	0.91
Neuroticism	3.75	1.25	5.00	2.94	0.09	0.14	-0.74	0.76
Positive Support	60.00	15.00	75.00	57.61	1.10	-0.96	1.29	0.90

Note: The standard errors for skewness and kurtosis were .21 and .41, respectively for all co-rumination measures and positive support. Those for other variables were .28 and .56.

Table 2. Descriptive statistics for internalizing problems (Study 1).

Measure	Range	Min.	Max.	*M*	*SD*	Skewness	Kurtosis	α
Depression	31.00	50.00	81.00	55.55	0.64	1.39	1.17	
Anxiety	4.36	0.00	19.00	5.05	0.39	1.08	0.58	
Loneliness	56.00	16.00	72.00	29.12	0.87	1.18	1.60	0.90
PTSD	59.00	17.00	76.00	31.50	1.05	1.20	1.08	0.91

Note: The standard errors for skewness and kurtosis are .21 and .42, respectively.

Table 3. Descriptive statistics for physical health problems (Study 1).

Measure	Range	Min.	Max.	*M*	*SD*	Skewness	Kurtosis	α
Frequency of Symptoms	62.00	29.00	91.00	47.46	0.98	1.15	1.81	0.91
Severity of Symptoms	34.00	29.00	63.00	40.07	0.67	0.79	0.26	0.87

Note: The standard errors for skewness and kurtosis are .21 and .42, respectively.

Table 4. Descriptive statistics for externalizing problems (Study 1).

Measure	Range	Min.	Max.	*M*	*SD*	Skewness	Kurtosis
Rule-breaking	17.00	0.00	17.00	2.86	3.23	1.99	4.82
Aggression	23.00	0.00	23.00	5.81	0.38	1.12	1.36

Note: The standard errors for skewness and kurtosis are .21 and .42, respectively.

Table 5. Descriptive statistics for victimization (Study 1).

Measure	Range	Min.	Max.	*M*	*SE*	Skewness	Kurtosis	α
Type								
Physical	17.00	7.00	24.00	9.06	0.22	2.51	9.65	0.69
Verbal	16.00	5.00	21.00	8.95	0.31	1.28	1.31	0.78
Indirect	36.00	12.00	48.00	20.28	0.54	1.36	2.80	0.81
Overt	11.00	5.00	16.00	6.70	0.19	1.80	3.55	0.72
Relational	16.00	5.00	21.00	8.34	0.29	1.09	1.00	0.82
Composite Measures								
Social	5.84	-1.36	4.48	0.00	0.09	1.33	2.74	0.83
Physical	6.38	-1.05	5.33	0.00	0.09	2.14	6.61	0.90
Total	16.00	7.00	23.00	10.67	0.25	1.53	3.89	0.91

Note: the standard errors for skewness and kurtosis are .21 and .42, respectively.

Table 6. Intercorrelations between overall co-rumination with facets of co-rumination.

Measure	Extent	Rehashing	Speculating	Encouragement	Dwelling
Co-rumination	0.86**	0.87**	0.92**	0.88**	0.89**
Extent		0.69**	0.72**	0.69**	0.69**
Rehashing			0.76**	0.74**	0.79**
Speculating				0.74**	0.78**
Encouragement					0.71**
Dwelling					

*Note: **p<.001*

Table 7. Intercorrelations between interpersonal and control variables (Study 1).

Predictor	Self-Disclosure	Rumination	Neuroticism	Positive Support
Co-rumination	0.56**	-0.15	0.29*	0.45**
Extent	0.59**	-0.23	0.27**	0.50**
Rehashing	0.45**	-0.15	0.19*	0.34**
Speculating	0.47**	-0.06	0.24**	0.35**
Encouragement	0.48**	-0.16	0.30**	0.40**
Dwelling	0.45**	-0.08	0.24**	0.36**
Self-disclosure		-0.21	0.37**	0.74**
Rumination			0.01	-0.28*
Neuroticism				0.18*
Positive Support				

*Note: *p<.01 **p<.001*

Table 8. Intercorrelations between co-rumination and internalizing problems (Study 1).

Measure	Loneliness	Depression	PTSD	Anxiety
Co-rumination	0.14	0.14	0.44**	0.15
Extent	-0.10	0.18*	0.32**	0.20*
Rehashing	-0.13	0.07	0.32**	0.08
Speculating	-0.13	0.12	0.38**	0.13
Encouragement	-0.19*	0.13	0.48**	0.11
Dwelling	-0.06	0.18	0.40**	0.15
Loneliness		0.44**	0.21*	0.47**
Depression			0.58**	0.53**
PTSD				0.52**
Anxiety				

*Note: *p < .05 **p<.001*

Table 9. Intercorrelations between co-rumination and physical health problems (Study 1).

Measure	Frequency	Severity
Co-rumination	0.21*	0.25**
Extent	0.14	0.16
Rehashing	0.18*	0.24**
Speculating	0.19*	0.22*
Encouragement	0.25**	0.24**
Dwelling	0.18*	0.24**
Frequency		0.70**
Severity		

*Note: *p < .05 **p<.001*

Table 10. Intercorrelations between co-rumination and externalizing problems (Study 1).

Measure	Rule Breaking	Aggression
Co-rumination	0.08	0.18*
Extent	0.07	0.18*
Rehashing	0.07	0.15
Speculating	0.07	0.14
Encouragement	0.11	0.21*
Dwelling	0.03	0.12
Rule Breaking		0.58**
Aggression		

*Note: *p < .05 **p<.001*

Table 11. Intercorrelations between co-rumination and types of peer victimization (Study 1).

Measure	Co-rumination	Extent	Rehash	Speculate	Encourage	Dwell
Overt	0.01	-0.01	-0.01	0.02	0.04	0.01
Relational	0.21*	0.18*	0.22*	0.17*	0.14	0.26*
Physical	-0.02	-0.05	-0.01	-0.02	-0.02	-0.02
Verbal	0.10	-0.01	0.13	0.05	0.16	0.16
Indirect	0.22*	0.17*	0.20*	0.17*	0.17*	0.27*
Social	0.22*	0.15	0.22*	0.17*	0.18*	0.28*
Physical	-0.02	-0.08	-0.01	-0.02	0.03	-0.02
Overall	0.17*	0.10	0.17*	0.13	0.15	0.22*

*Note: *p < .05*

Table 12. Gender differences for Study 1 variables.

	Male		Female	
Variable	*M*	*SD*	*M*	*SD*
Co-rumination*	2.21	0.83	2.65	0.87
Self-disclosure**	2.61	1.03	3.66	1.04
Rumination	3.25	0.75	3.19	0.80
Neuroticism*	2.67	0.74	3.11	0.77
Depression	55.45	6.77	55.69	7.84
Anxiety*	4.05	3.57	5.76	4.89
Loneliness	27.41	9.42	30.29	10.55
PTSD symptoms	29.68	11.21	32.74	12.89
Frequency of health problems*	44.73	8.69	49.34	12.89
Severity of health problems*	38.41	6.22	41.19	8.71
Rule breaking	2.85	3.49	2.87	3.05
Aggression	5.00	3.97	6.38	4.63
Positive support**	52.13	13.31	61.41	11.44
Total Victimization	10.41	3.19	10.84	2.74
Social Victimization*	-0.22	0.96	0.15	1.00
Physical Victimization**	0.29	1.23	-0.20	0.75

*Note: *p<.05 **p<.001*

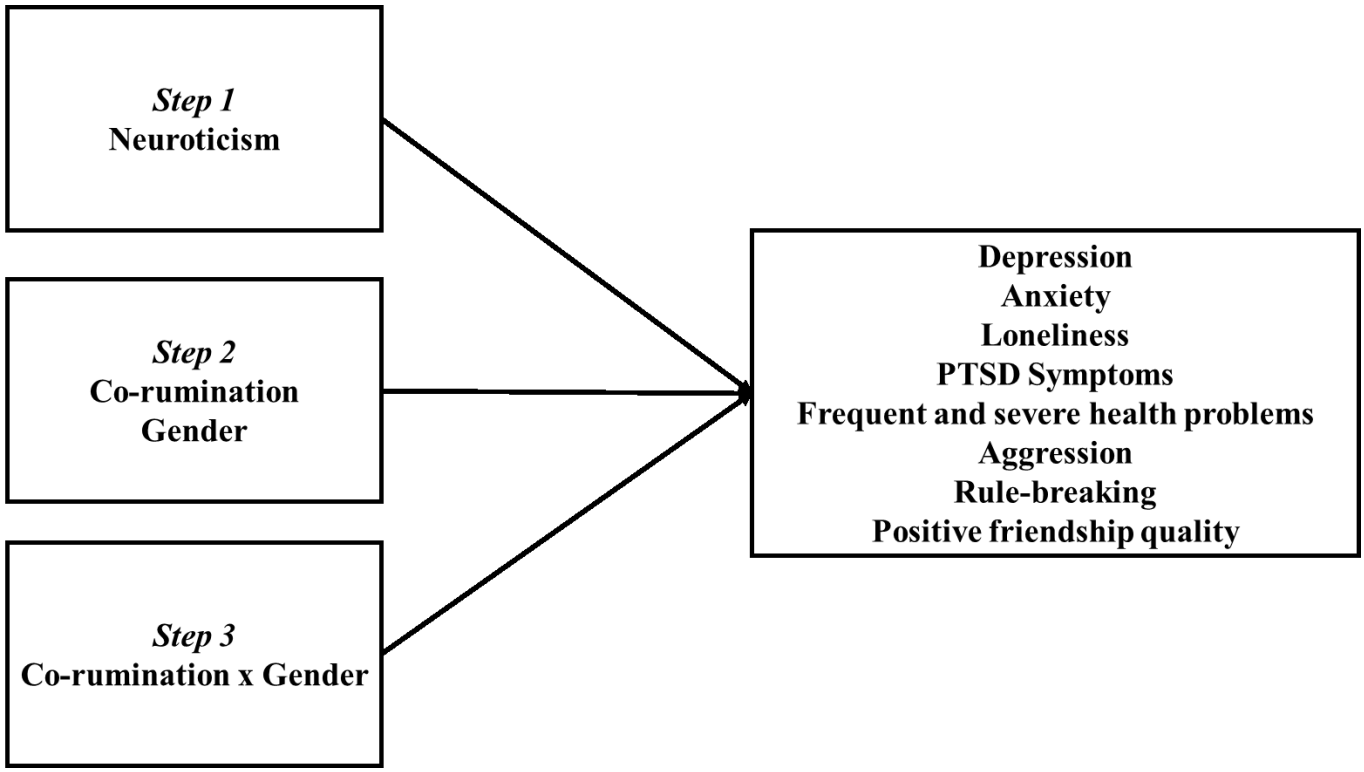

Figure 4. Revised hierarchical regression model for Aim 1.
Note: Each outcome was run in a separate model.

Table 13. Co-rumination and gender predicting internalizing problems.

	Depression	Loneliness	PTSD	Anxiety
STEP 1				
Neuroticism	5.21**	4.50**	8.47**	3.47**
STEP 2				
Neuroticism	5.67**	5.31**	7.31**	3.53**
Co-rumination	-0.08	-3.78**	4.88**	-0.18
Gender	-1.27	1.15	-1.16	0.01
ΔR^2	0.03	0.10	0.10	<.01
STEP 3				
Neuroticism	5.59**	5.18**	7.34**	3.50**
Co-rumination	0.06	-3.52*	4.81**	-0.14
Gender	-1.31	1.07	-1.14	-0.002
CR X Gender	-0.52	-0.97	0.25	-0.17
ΔR^2	<.01	0.01	<.01	<.01

*Note: Reported figures are b-weights. *p = .001 **p < .001*

Table 14. Co-rumination and gender predicting physical health problems.

	Frequency	Severity
STEP 1		
Neuroticism	6.82**	3.21**
STEP 2		
Neuroticism	6.11**	2.51*
Co-rumination	1.68	1.77
Gender	0.49	0.39
ΔR^2	0.10	<.01
STEP 3		
Neuroticism	6.24**	2.57*
Co-rumination	1.42	1.63
Gender	0.57	0.43
CR X Gender	0.98	0.51
ΔR^2	<.01	<.01

*Note: Reported figures are b-weights. *p = .005 **p < .001*

Table 15. Co-rumination and gender predicting externalizing problems.

	Rule breaking	Aggression
STEP 1		
Neuroticism	1.04*	2.55**
STEP 2		
Neuroticism	1.11*	2.49**
Co-rumination	0.06	0.15
Gender	-0.26	0.06
ΔR^2	0.02	<.01
STEP 3		
Neuroticism	1.17*	2.49**
Co-rumination	-0.04	0.14
Gender	-0.23	0.06
CR X Gender	0.4	0.03
ΔR^2	<.01	<.01

*Note: Reported figures are b-weights. *p < .004 **p < .001*

Table 16. Co-rumination and gender predicting positive support.

	Positive Support
STEP 1	
Neuroticism	2.92
STEP 2	
Neuroticism	-0.04
Co-rumination	5.46**
Gender	3.44*
ΔR^2	0.23
STEP 3	
Neuroticism	-0.25
Co-rumination	5.87**
Gender	3.32*
CR X Gender	-1.50
ΔR^2	0.01

*Note: Reported figures are b-weights. *p < .003 **p < .001*

Table 17. Co-rumination, victimization, and gender predicting internalizing problems.

	Depression	Loneliness	PTSD	Anxiety
Neuroticism	5.40**	4.78**	6.41**	3.35
Co-rumination	-0.12	-3.66**	4.41**	-0.25
Gender	-1.22	0.85	-1.38	0.04
Victimization	0.16	0.63	1.00	1.00
CR x Victim	0.27	-0.24	0.24	0.22
CR x Gender	-0.50	-1.23	-0.29	-0.21
Victim x Gender	0.05	0.20	0.51	0.07
CR x Victim x Gender	0.20	0.60	0.86	0.16
ΔR^2	<0.01	0.01	0.02	<0.01

*Note: Reported figures are b-weights. **p < .001*

Table 18. Co-rumination, victimization, and gender predicting physical health problems.

	Frequency	Severity
Neuroticism	5.39**	1.72*
Co-rumination	0.94	1.21
Gender	0.63	0.36
Victimization	0.50	0.61**
CR x Victim	0.97**	0.66**
CR x Gender	0.74	0.29
Victim x Gender	0.24	0.09
CR x Victim x Gender	0.53	0.58
ΔR^2	0.01	0.03

*Note: Reported figures are b-weights. *p < .05 **p <.01*

Table 19. Co-rumination, victimization, and gender predicting externalizing problems.

	Rule breaking	Aggression
Neuroticism	1.04**	2.18**
Co-rumination	-0.05	0.03
Gender	-0.28	0.21
Victimization	0.01	-0.04
CR x Victim	0.13	0.11
CR x Gender	0.31	0.01
Victim x Gender	0.03	-0.16
CR x Victim x Gender	0.20	0.42*
ΔR^2	0.01	0.03

*Note: Reported figures are b-weights. *p < .007 **p < .001*

Table 20. Co-rumination, victimization, and gender predicting positive support.

	Positive Support
Neuroticism	-0.02
Co-rumination	6.00**
Gender	3.32*
Victimization	-0.14
CR x Victim	-0.19
CR x Gender	-1.54
Victim x Gender	0.13
CR x Victim x Gender	-0.16
ΔR^2	<.01

*Note: Reported figures are b-weights. *p = .002 **p < .001*

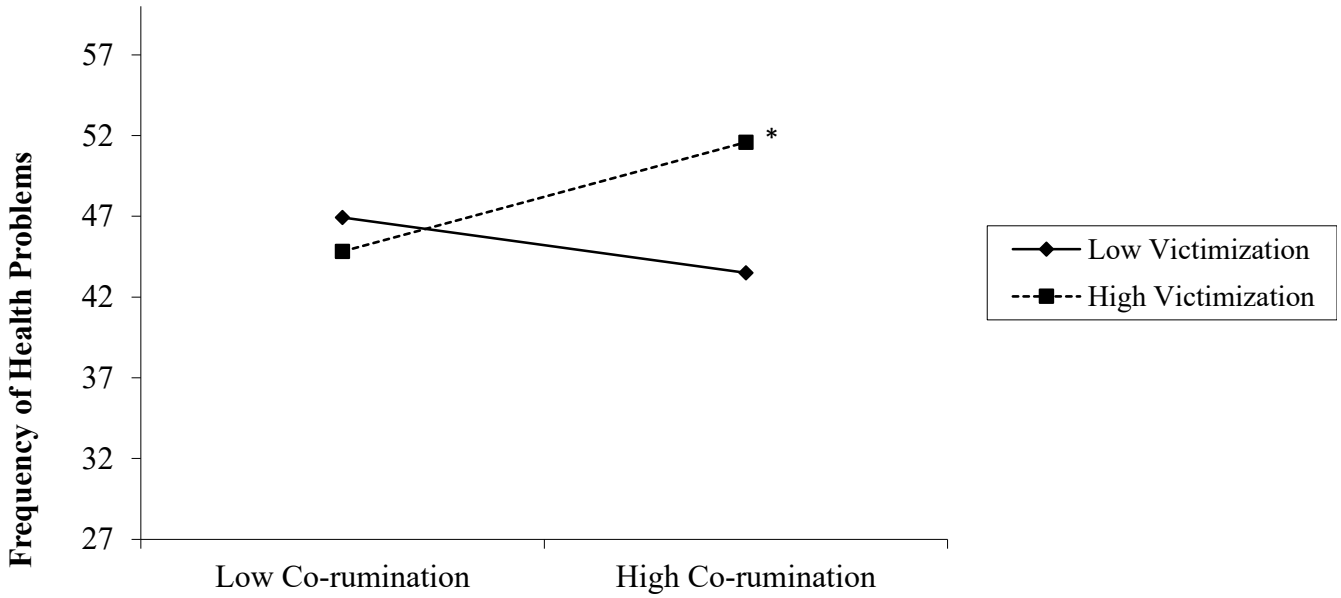

Figure 5. Effects of co-rumination and peer victimization on frequency of health problems.
*Note: *p = .003*

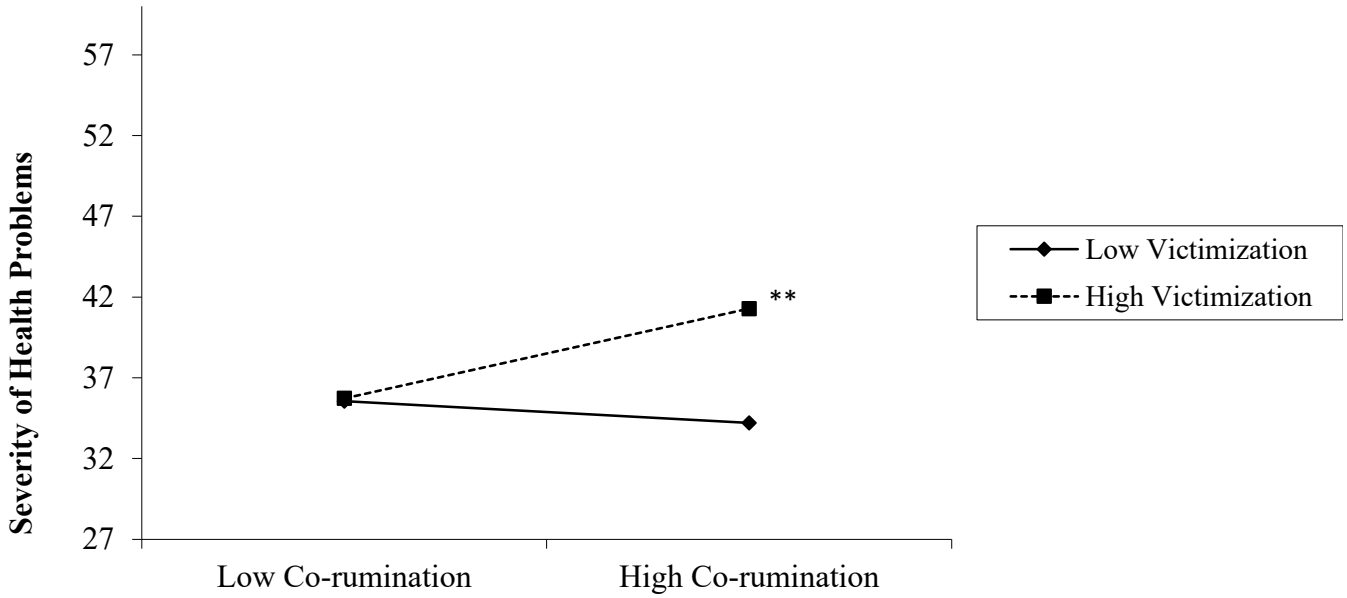

Figure 6. Effects of co-rumination and peer victimization on severity of health problems.
*Note: **p < .001*

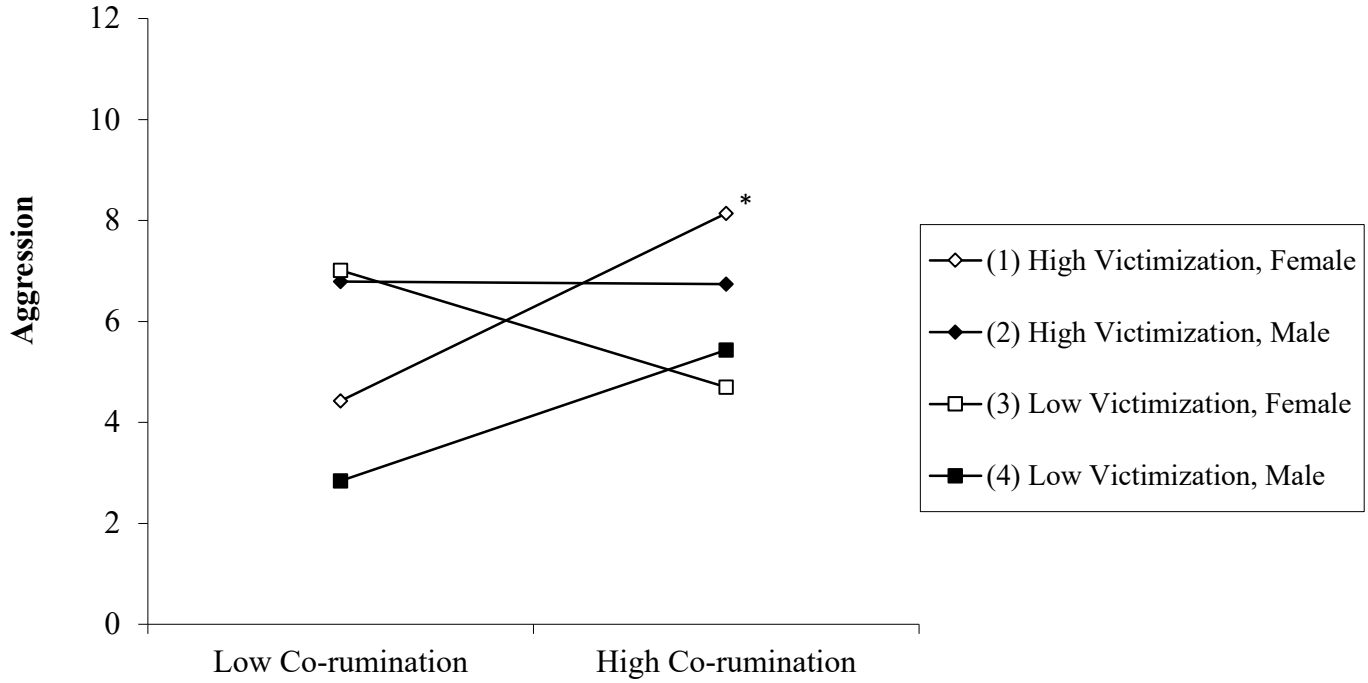

Figure 7. Effects of co-rumination, peer victimization, and sex of participant on aggression.
*Note: *p = .008. Slopes 1 and 3 were significantly different from one another (p = .005), as were Slopes 3 and 4 (p = .037).*

Table 21. Principal components analysis loadings for victimization type.

Type	Social	Physical
Indirect	**0.92**	0.34
Relational	**0.89**	0.40
Verbal	**0.80**	**0.63**
Overt	0.56	**0.91**
Physical	0.34	**0.93**

Note: The values from the structure matrix are reported.

Table 22. Co-rumination, social victimization, and gender predicting internalizing problems.

	Depression	Loneliness	PTSD	Anxiety
Physical Victimization	-0.97	-1.13	-0.81	-0.32
Co-rumination	1.45	-2.37	5.07**	0.43
Gender	0.83	0.60	-1.02	0.39
Social Victimization	4.22**	3.12*	4.16**	0.86
CR x Gender	0.29	-1.92	-0.82	-0.69
CR x Social	-0.25	-1.17	1.08	0.67
Social x Gender	-0.71	0.10	0.36	0.04
CR x Social x Gender	1.25	2.13	2.42	0.46
ΔR^2	0.01	0.03	0.02	0.01

*Note: Reported figures are b-weights. *p < .006 **p < .001*

Table 23. Co-rumination, social victimization, and gender predicting physical health problems.

	Frequency	Severity
Physical Victimization	-0.22	0.77
Co-rumination	1.35	1.90
Gender	1.35	0.78
Social Victimization	2.09	1.46
CR x Gender	-0.14	0.02
CR x Social Victim	3.74*	2.17*
Social Victim x Gender	0.40	0.25
CR x Social x Gender	1.47	1.58
ΔR^2	0.01	0.02

*Note: Reported figures are b-weights. **p < .001*

Table 24. Co-rumination, social victimization, and gender predicting externalizing problems.

	Rule breaking	Aggression
Physical Victimization	-0.42	0.18
Co-rumination	0.09	0.45
Gender	-0.29	0.20
Social Victimization	0.40	0.78
CR x Gender	0.12	-0.17
CR x Social	0.49	0.35
Social x Gender	-0.05	-0.61
CR x Social x Gender	0.57	1.28*
ΔR^2	0.02	0.02

*Note: Reported figures are b-weights. *p < .006*

Table 25. Co-rumination, social victimization, and gender predicting positive support.

	Positive Support
Physical Victimization	-1.07
Co-rumination	5.90**
Gender	3.00
Social Victimization	0.21
CR x Gender	-1.59
CR x Social	-0.17
Social x Gender	0.04
CR x Social x Gender	-0.25
ΔR^2	<.01

*Note: Reported figures are b-weights. **p < .001*

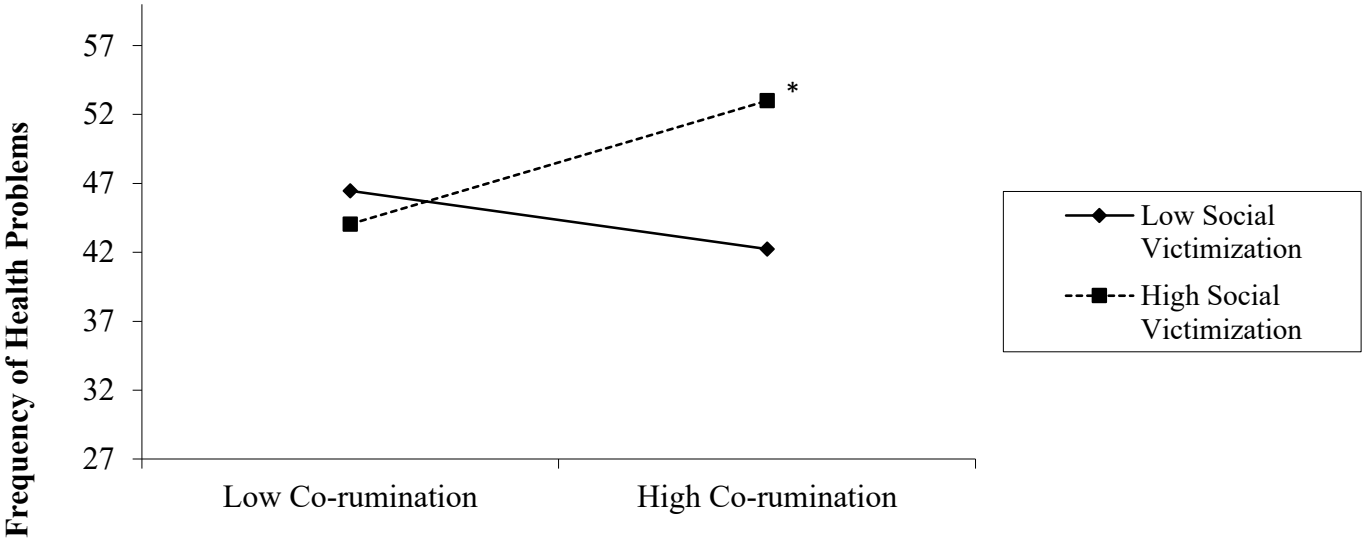

Figure 8. Effects of co-rumination and social victimization on frequency of health problems.
Note: *p = .001

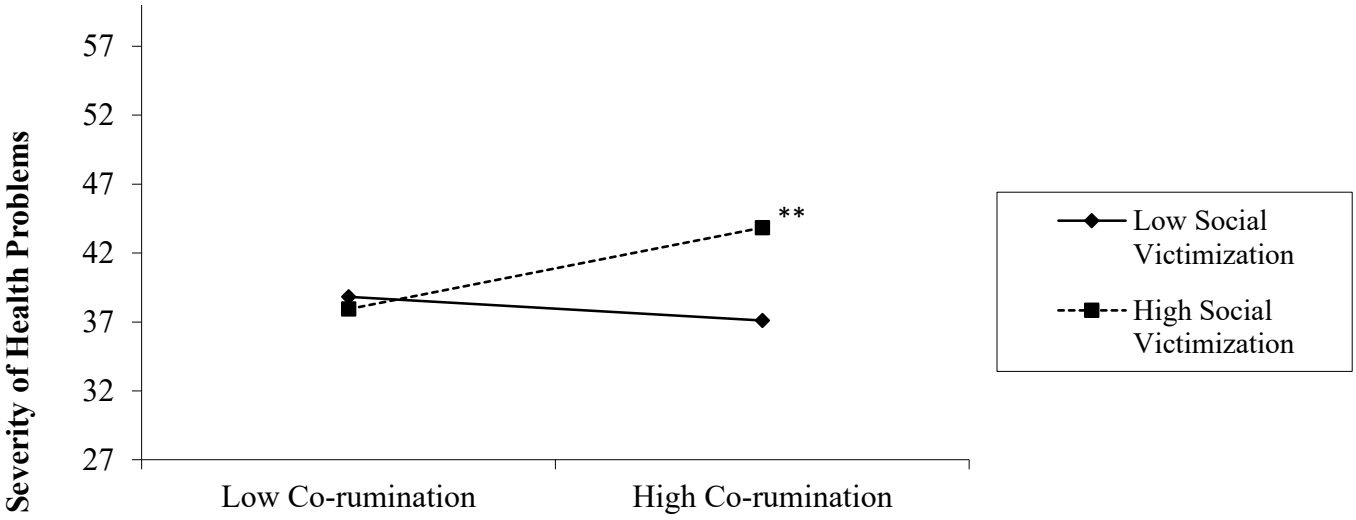

Figure 9. Effects of co-rumination and social victimization on severity of health problems.
Note: **p<.001

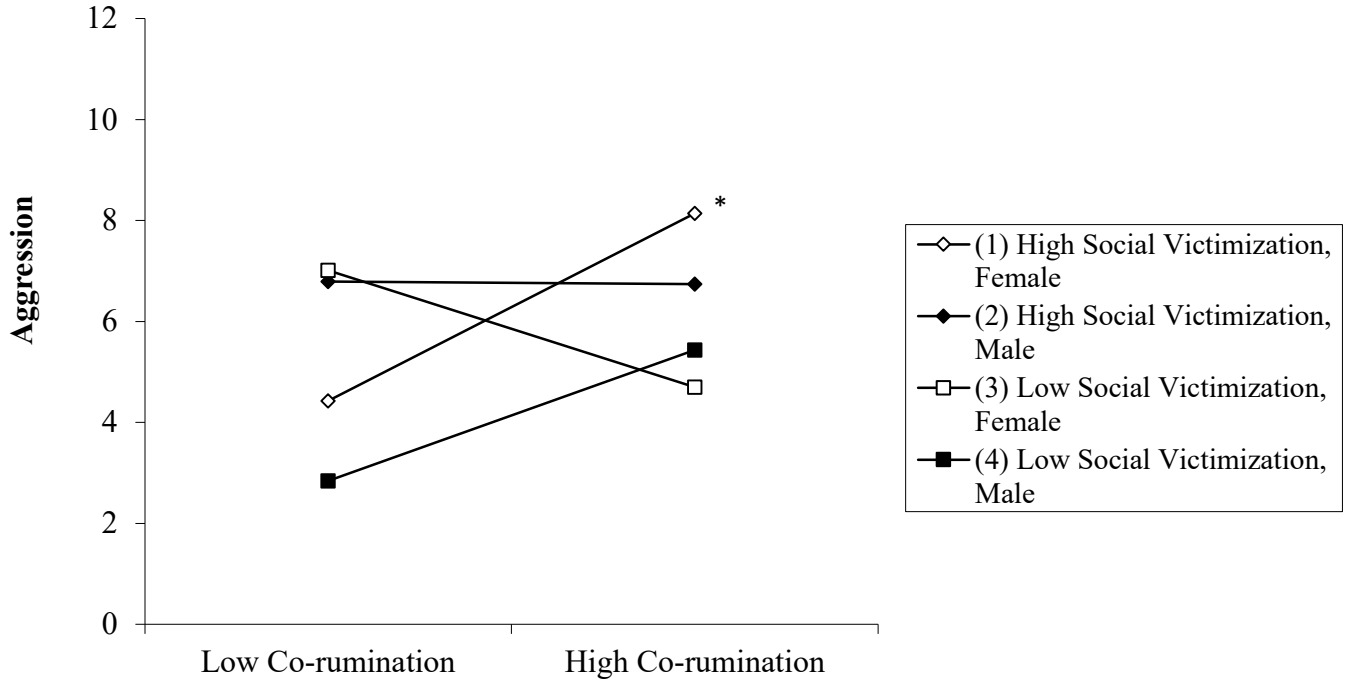

Figure 10. Effects of co-rumination, social victimization, and sex of participant on aggression.
Note: p = .012

Table 26. Co-rumination, physical victimization, and gender predicting internalizing problems.

	Depression	Loneliness	PTSD	Anxiety
Social Victimization	4.13**	3.45*	5.30**	1.15
Co-rumination	2.04	-1.87	5.62**	0.39
Gender	1.07	0.79	-0.96	0.46
Physical Victimization	-1.05	-1.36	-1.18	-0.58
CR x Gender	0.38	-2.02	-0.45	-0.36
CR x Physical	1.47	0.23	1.04	0.75
Physical x Gender	<.01	0.52	0.88	-0.33
CR x Physical x Gender	2.19	1.10	1.58	0.18
ΔR^2	0.03	0.01	0.01	<.01

*Note: Reported figures are b-weights. *p < .006 **p < .001*

Table 27. Co-rumination, physical victimization, and gender predicting physical health problems.

	Frequency	Severity
Social Victimization	3.71*	2.61*
Co-rumination	1.42	1.48
Gender	1.23	0.76
Physical Victimization	-0.99	0.27
CR x Gender	0.69	0.55
CR x Physical	1.37	1.16
Physical x Gender	-0.85	-0.10
CR x Physical x Gender	0.68	1.11
ΔR^2	<.01	0.01

*Note: Reported figures are b-weights. *p < .006*

Table 28. Co-rumination, physical victimization, and gender predicting externalizing problems.

	Rule breaking	Aggression
Social Victimization	0.69	1.02
Co-rumination	0.15	0.67
Gender	-0.26	0.40
Physical Victimization	-0.55	0.08
CR x Gender	0.22	-0.12
CR x Physical	0.05	0.31
Physical x Gender	-0.15	-0.21
CR x Physical x Gender	0.13	0.62
ΔR^2	<.01	0.01

Note: Reported figure are b-weights.

Table 29. Co-rumination, physical victimization, and gender predicting positive support.

	Positive Support
Social Victimization	0.19
Co-rumination	5.71**
Gender	2.94
Physical Victimization	-0.93
CR x Gender	-1.80
CR x Physical	-1.26
Physical x Gender	-0.31
CR x Physical x Gender	-1.13
ΔR^2	0.01

*Notes: Reported figures are b-weights. **p < .001*

Table 30. Descriptive statistics for co-rumination and internalizing problems (Study 2).

Measure	Range	Min.	Max.	*M*	*SD*	Skewness	Kurtosis	α
Time 1								
Co-rumination	3.89	1.00	4.89	2.42	0.82	0.65	0.30	0.96
Depression	11.00	0.00	11.00	3.18	2.57	0.71	0.03	
Anxiety	19.00	0.00	19.00	5.28	4.39	1.23	1.33	
Loneliness	41.00	16.00	57.00	28.35	10.97	0.94	-0.01	0.93
Neuroticism	3.75	1.13	4.88	2.84	0.82	0.00	-0.54	0.83
Time 2								
Co-rumination	3.84	1.13	4.97	2.58	0.78	0.44	-0.07	0.96
Depression	13.00	0.00	13.00	3.67	2.96	0.84	-0.05	
Anxiety	24.00	0.00	24.00	5.48	4.95	1.44	2.14	
Loneliness	44.00	16.00	60.00	28.00	10.94	1.28	1.13	0.93
Neuroticism	3.84	1.13	4.97	2.88	0.83	0.23	-0.08	0.87

Note: The standard errors for skewness and kurtosis for T1 variables are .25 and .49. Those for T2 are .26 and .51, save for neuroticism (.27 and .53) and loneliness (.25 and .40).

Table 31. Descriptive statistics for physical health problems (Study 2).

Measure	Range	Min.	Max.	*M*	*SD*	Skewness	Kurtosis	α
Time 1								
Frequency	45.00	27.00	72.00	42.70	8.51	0.96	1.37	0.87
Severity	36.80	27.00	63.80	37.61	8.57	1.28	1.05	0.88
Time 2								
Frequency	65.00	28.00	93.00	45.58	10.71	1.27	3.40	0.95
Severity	62.00	27.00	89.00	37.48	9.97	2.21	7.37	0.92

Note: The standard errors for skewness and kurtosis for T1 variables are .25 and .49. Those for T2 are .25 and .50.

.

Table 32. Descriptive statistics for externalizing problems (Study 2).

Measure	Range	Min.	Max.	*M*	*SD*	Skewness	Kurtosis	α
Time 1								
Rule-breaking	18.00	0.00	18.00	3.58	3.76	1.57	2.67	
Aggression	25.00	0.00	25.00	7.02	4.93	0.89	0.98	
Time 2								
Rule-breaking	20.00	0.00	20.00	3.81	3.39	1.86	5.80	
Aggression	18.00	0.00	18.00	6.10	3.69	0.74	1.11	

Note: The standard errors for skewness and kurtosis for all variables are .25 and .49.

Table 33. Intercorrelations between co-rumination and internalizing problems (Study 2).

	Time 2				
Time 1	Co-rumination	Loneliness	Depression	Anxiety	Neuroticism
Co-rumination	**0.29****	-0.06	0.31**	0.32**	0.22
Loneliness	0.13	**0.48****	0.10	0.07	0.08
Depression	0.11	0.34**	**0.55****	0.34**	0.29**
Anxiety	0.23*	0.32**	0.49**	**0.63****	0.44**
Neuroticism	0.17	0.38**	0.52**	0.46**	**0.44****

*Note: *p<.05 **p<.001*

Table 34. Intercorrelations between co-rumination and physical health problems (Study 2).

	Time 2		
Time 1	Co-rumination	Frequency	Severity
Co-rumination	**0.29****	0.23*	0.23*
Frequency	0.27*	**0.48****	0.35**
Severity	0.23*	0.53**	**0.53****

*Note: *p<.05 **p<.001*

Table 35. Intercorrelations between co-rumination and externalizing problems (Study 2).

	Time 2		
Time 1	Co-rumination	Rule breaking	Aggression
Co-rumination	**0.29****	0.10	0.23*
Rule breaking	0.10	**0.51****	0.37**
Aggression	0.10	0.43**	**0.53****

*Note: *p<.05 **p<.001*

Table 36. Gender differences for Time 1 Variables.

	Male		Female	
Variable	*M*	*SD*	*M*	*SD*
Co-rumination	2.26	0.82	2.55	0.82
Loneliness*	31.36	11.82	26.24	9.63
Depression*	2.52	2.04	3.74	2.82
Anxiety*	3.74	3.00	6.64	4.99
Neuroticism	2.73	0.77	2.94	0.86
Frequency of health problems	40.96	7.11	44.01	9.24
Severity of health problems	36.19	6.65	38.55	9.51
Rule breaking	3.55	3.17	3.62	4.27
Aggression	6.81	4.29	7.28	5.49

*Note: *p<.05*

Table 37. Gender differences for Time 2 Variables.

	Male		Female	
Variable	*M*	*SD*	*M*	*SD*
Co-rumination*	2.41	0.74	2.76	0.79
Loneliness	27.86	10.96	28.55	11.05
Depression*	2.69	2.43	4.35	3.09
Anxiety**	3.18	3.60	7.31	5.19
Neuroticism**	2.49	0.77	3.20	0.74
Frequency of health problems*	41.88	7.46	45.54	12.26
Severity of health problems*	34.49	6.21	36.65	11.86
Rule breaking	3.87	2.71	3.83	3.88
Aggression*	5.15	3.06	6.90	4.02

*Note: *p < .05 **p < .001*

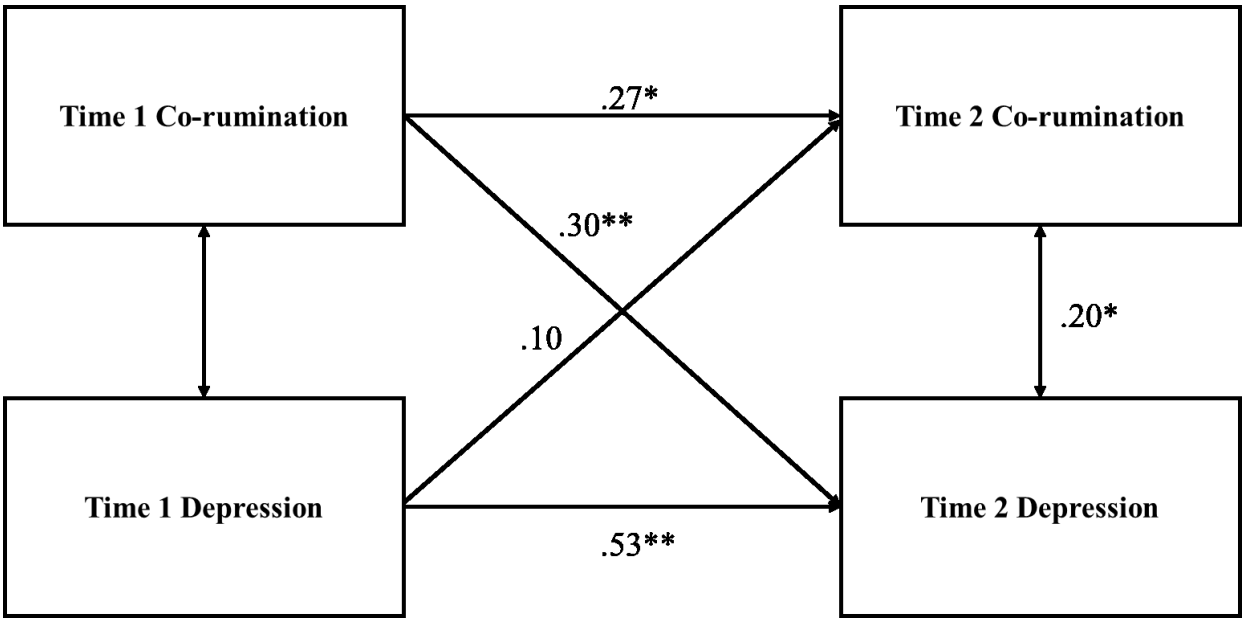

Figure 11. Bidirectional relationship between co-rumination and depression over time.
*Note: *p < .05 **p < .001*

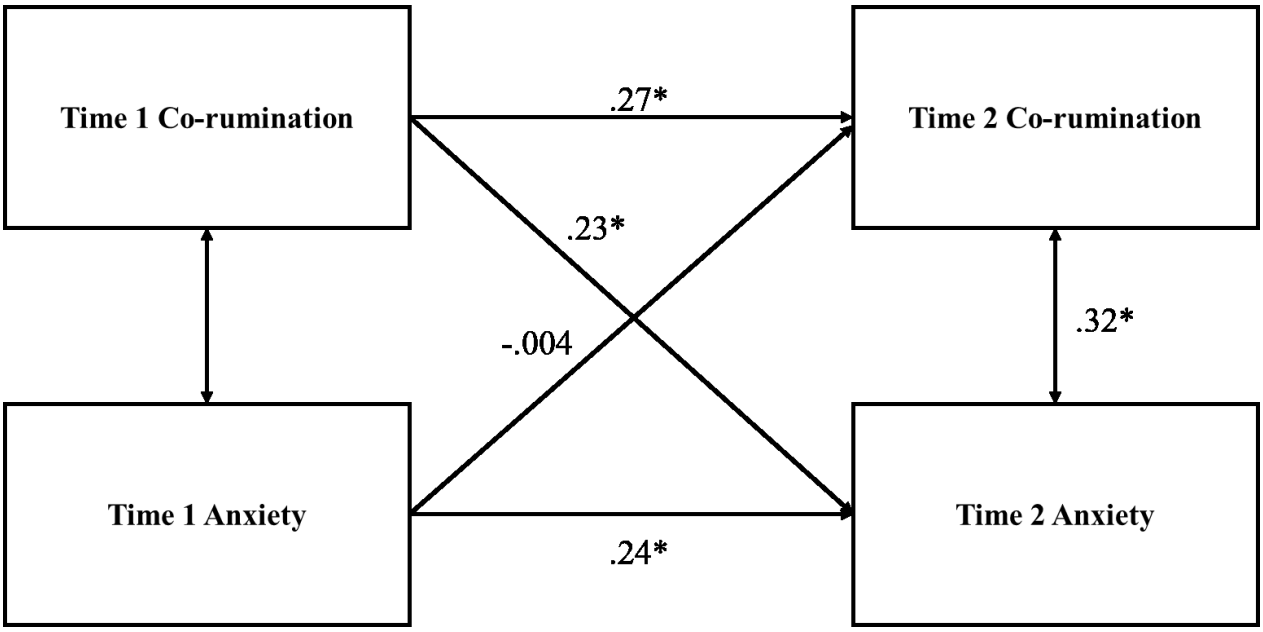

Figure 12. Bidirectional relationship between co-rumination and anxiety over time.
*Note: *p < .02*

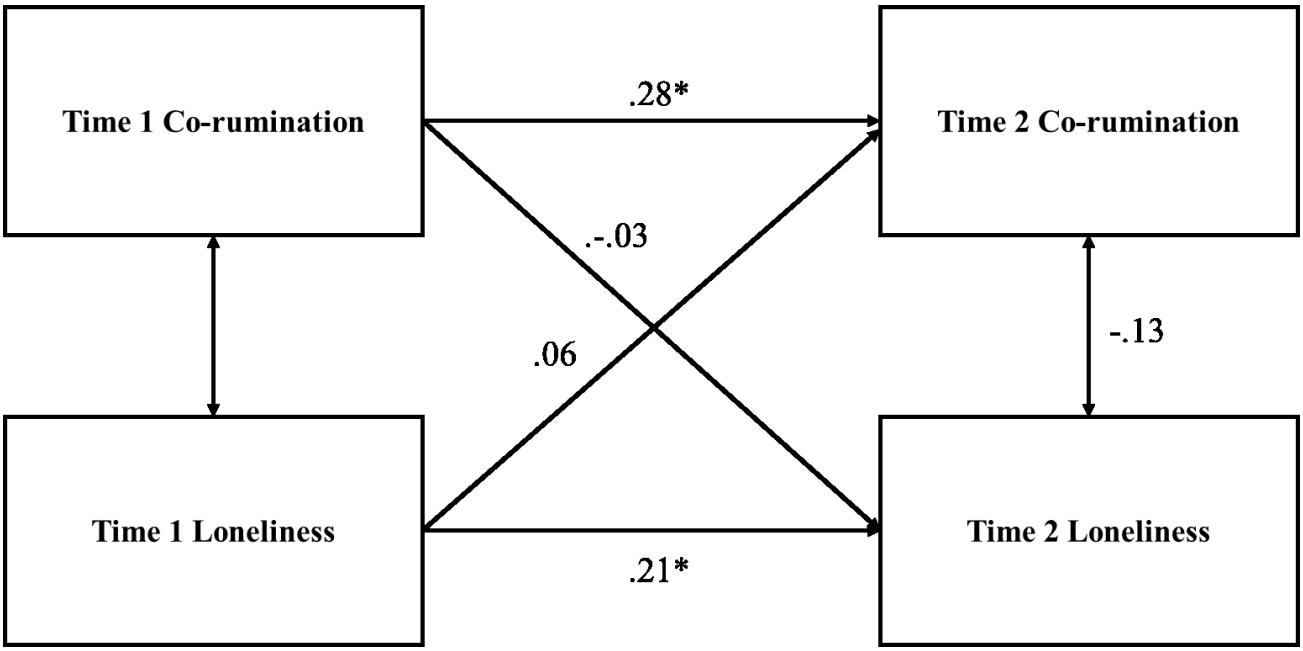

Figure 13. Bidirectional relationship between co-rumination and loneliness over time.
*Note: *p < .05*

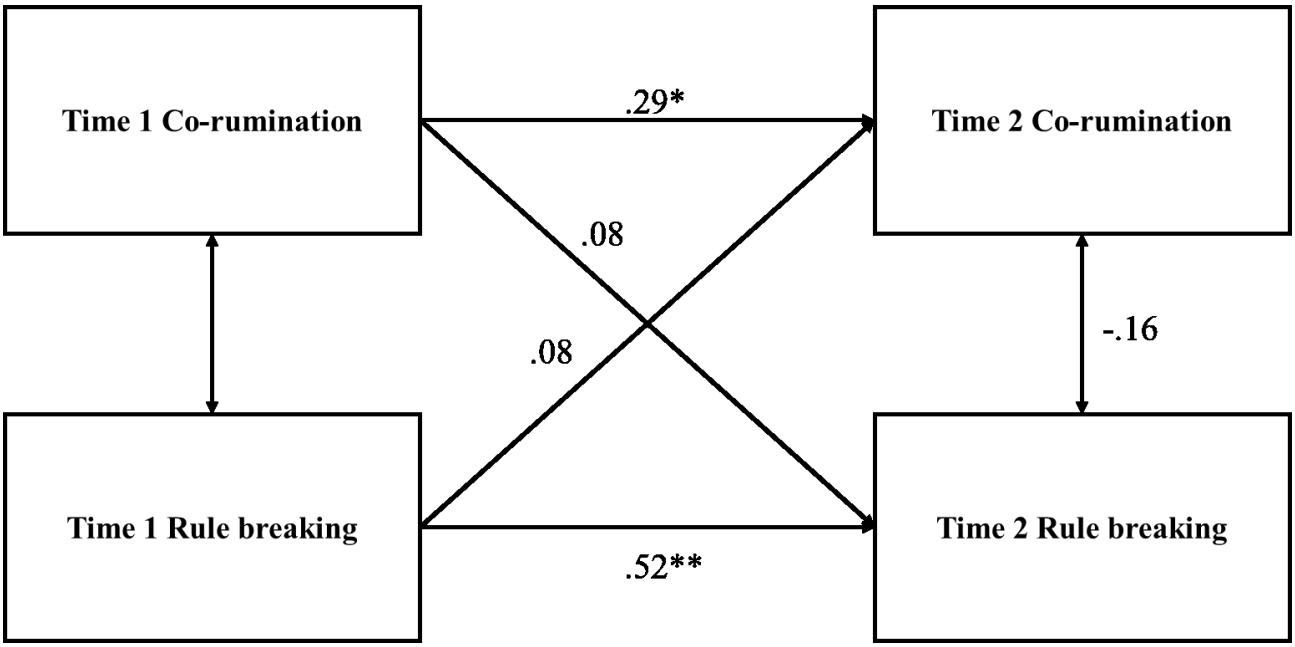

Figure 14. Bidirectional relationship between co-rumination and rule breaking over time.
*Note: *p = .002 **p < .001*

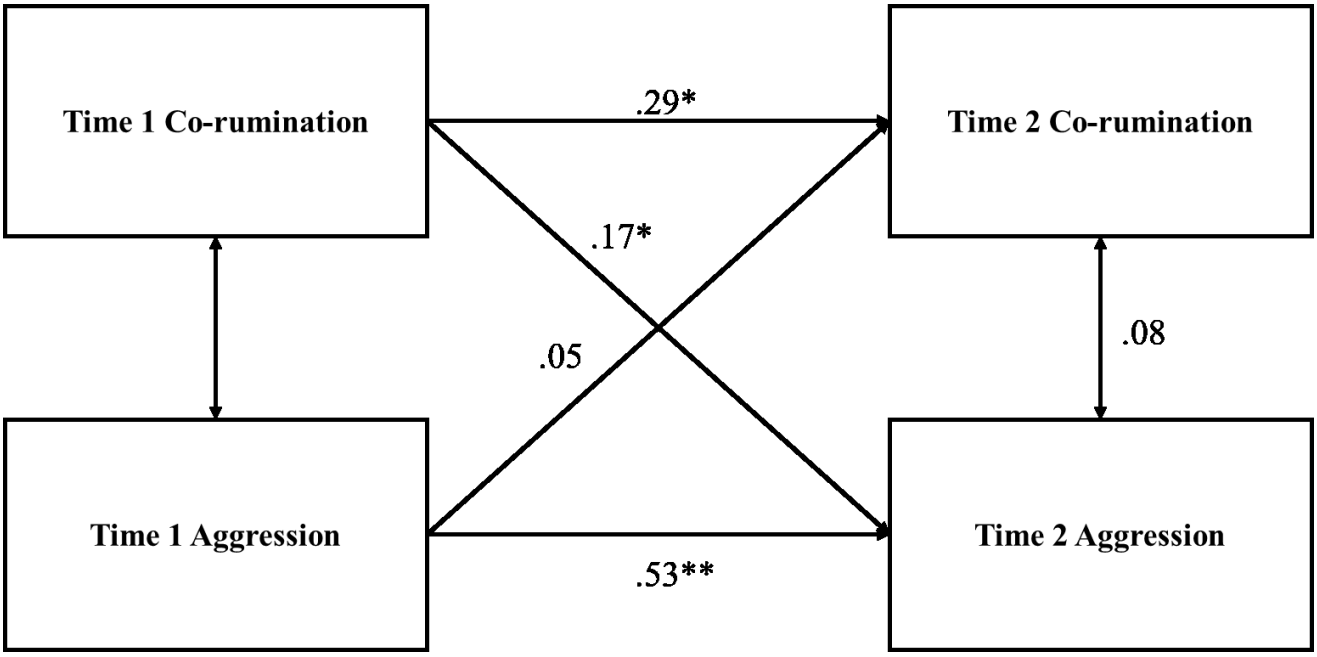

Figure 15. Bidirectional relationship between co-rumination and aggression over time.
*Note: *p < .05 **p < .001*

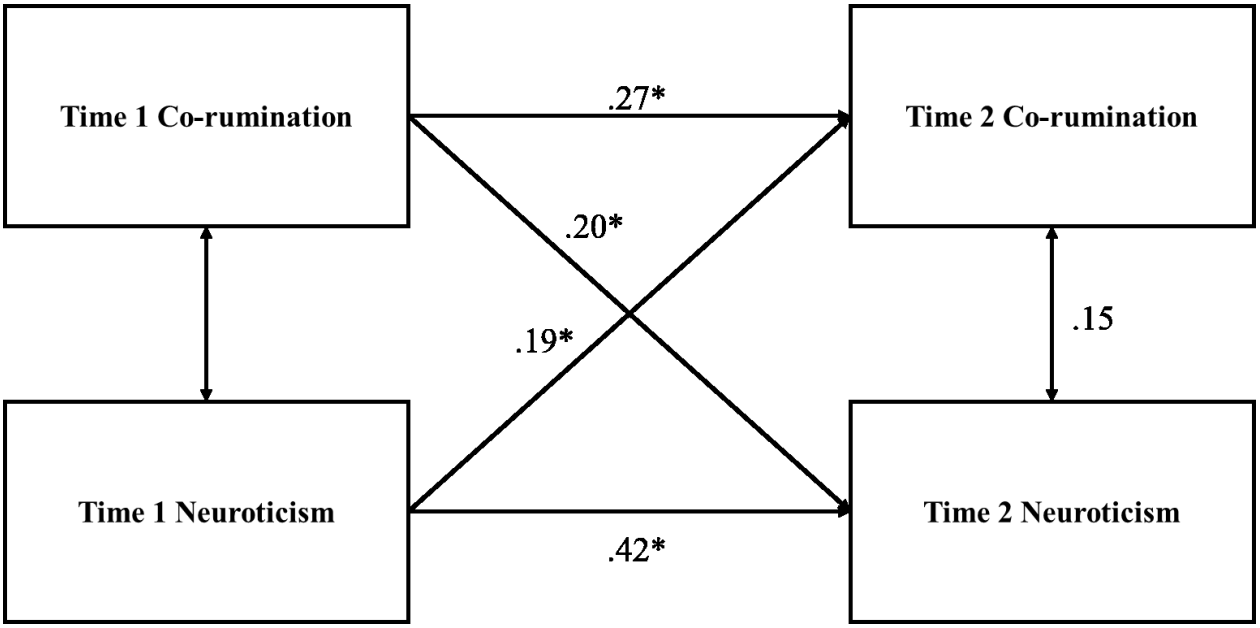

Figure 16. Bidirectional relationship between co-rumination and neuroticism over time.
*Note: *p < .05 **p < .001*

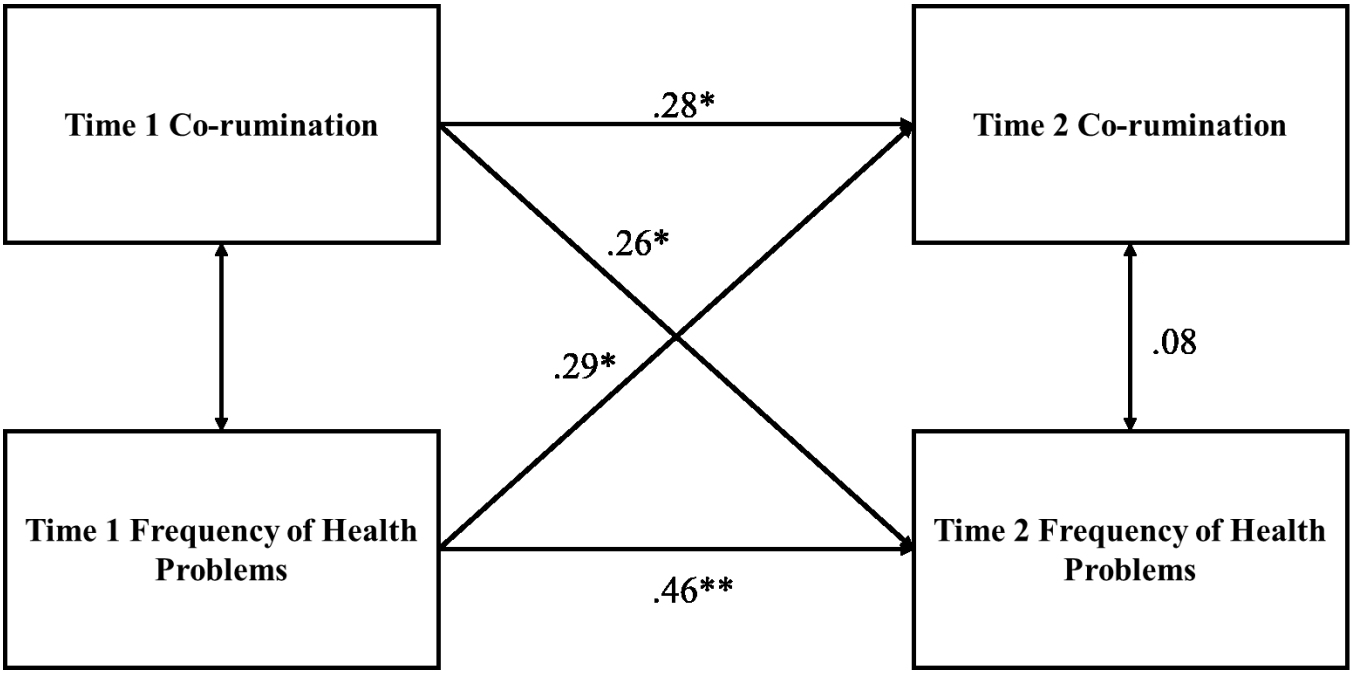

Figure 17. Bidirectional relationship between co-rumination and frequency of health problems over time.
*Note: *p < .005 **p < .001*

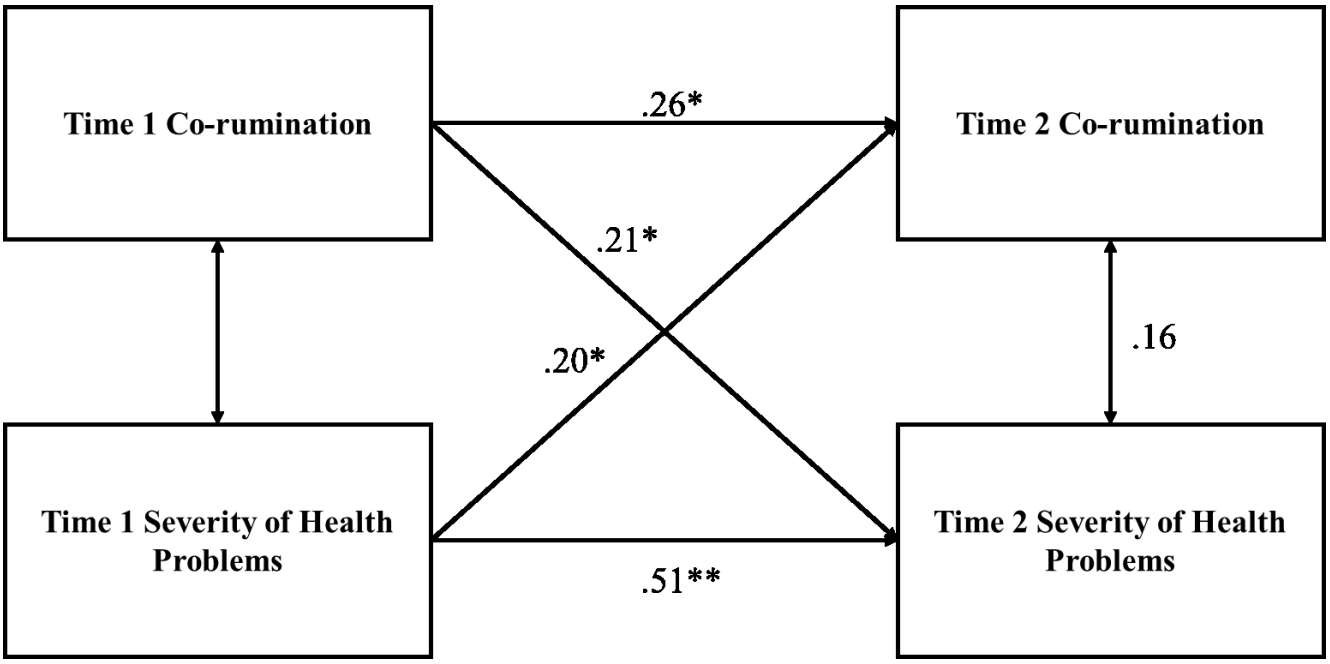

Figure 18. Bidirectional relationship between co-rumination and severity of health problems over time.
*Note: *p < .05 **p < .001*

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