AN EXAMINATION OF THE COGNITIVE, PERSONALITY, AND SOCIAL COMPONENTS ASSOCIATED WITH GENDER DIFFERENCES IN RATES OF DEPRESSION

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CHAPTER I

INTRODUCTION

More than one in four girls is likely to have a diagnosable Major Depressive Episode (MDE) during adolescence, whereas only one in eight adolescent boys suffer from this disorder (Lewinsohn, Hops, Roberts, Seeley & Andrews, 1993). Early onset depression is particularly troublesome, insofar as research has associated adolescent depression with a substantial increase in the likelihood of recurrent depression in adulthood (Garber, Kriss, Koch, & Lindholm, 1988; Kovacs, Akiskal, Gatsonis, & Parrone, 1994; Lewinsohn, Clarke, Seeley, & Rohde, 1994; Rao et al., 1995; Weissman et al., 1999). As many as 45% of adolescents, who are currently experiencing an MDE, will develop a new episode between the ages of 19 and 24 (Lewinsohn, Rohde, & Seeley, 1998). What exactly causes this gender difference is at the center of decades of intense research and debate, yielding few definitive answers thus far. Efforts to understand the disparity between female and male depression rates have explained only part of this gender difference, with most studies accounting for only 5 to 30% of the effect (Bebbington, 1996). One theory suggested that rumination, or the tendency to perseverate about symptoms and causes of one's depression, may be a possible explanation for the emergence of these sex differences (Response Style Theory, Nolen-Hoeksema, 1987, 1991). In support of the theory, many studies of adults have found that women tend to ruminate significantly more than men (Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema & Jackson, 2001). Some studies of adult samples suggested that

controlling for measures of rumination eliminated the apparent gender difference in depression (Butler & Nolen-Hoeksema, 1994).

This study addressed several questions regarding the nature of rumination in younger populations. Specifically, we described the developmental trajectory of rumination and discuss implications of this trajectory for explaining the emergent gender difference in depression during adolescence (specifically in regard to three models posited by Nolen-Hoeksema and Girgus, 1994, reviewed below). Further, we examined two candidate risk factors associated with the emergence of rumination: gender intensification and co-rumination; and examined their role in relation between rumination and depression.

Explaining the Emergent Gender Difference in Depression

A number of researchers have attempted to explain the developmental nature of the emergent gender difference in depression. Many have suggested specific risk factors for the development of depression (e.g. Cyranowski, Frank, Young, & Shear, 2000; Hankin & Abramson, 2001; Hyde, Mezulis, & Abramson, 2008). In contrast, Nolen-Hoeksema and Girgus (1994) attempted to illustrate the necessary developmental trajectories of these risk factors to explain the development of depression. The authors proposed three models to explain the emergent gender difference in depression. The first model stated that the risk factors for depression are the same for boys and girls; but that these risk factors become more prevalent in early adolescence for girls than boys. The second model posited that different risk factors for boys and girls lead to the development

of depression, and that those risk factors necessary for girls to become depressed increase in prevalence during early adolescence. The final model stated that girls may carry more risk factors for developing depression than boys do even during early childhood; however these risk factors only lead to the development of depression when they interact with various stressors that come on-line during adolescence. We recently completed a review in which we examined the developmental trajectories of several risk factors for the development of depression, including rumination, and attempted to designate which risk variables were compatible with the models above (Felton & Cole, unpublished manuscript). In order for rumination to be an example of Nolen-Hoeksema and Girgus's (1994) model 1, we would expect similar, low, rates of rumination for boys and girls during childhood, and then an increase in rates during adolescence for girls but not boys. Model 2 would suggest that rumination rates for girls rise between childhood and adolescence. This model does not specify the level or trajectory of rates of rumination in boys; however, the model does suggest that even though males may report engaging in a ruminative coping style, this does not put them at risk for developing depression. Finally, model 3 states that gender differences in rumination may exist even in childhood; however, rumination does not lead to depression until rumination interacts with stressful events that emerge during adolescence. Nolen-Hoeksema and Girgus (1994) suggested that girls experience more negative life events than boys, leading to the emergent gender difference in depression.

Our review included nine studies that examined the age by sex interaction predicting levels of rumination in community samples of children and adolescents. Of these nine studies, four found that during childhood, girls and boys have similar, low

rates of rumination, but during adolescence girls become more likely to report engaging in ruminative coping than boys, reflecting Nolen-Hoeksema and Girgus's (1994) model 1 (Grabe, Hyde, & Lindberg, 2007; Hampel & Petermann, 2005; Jose & Brown, 2008; Weir & Jose, 2008). The remaining five studies did not find a significant age by sex interaction (Abela, Vanderbilt, & Rochon, 2004; Broderick & Korteland, 2002; Hampel, 2007; Hampel, Meier, & Kummel, 2008; Hampel & Petermann, 2006). The paper also reviewed 16 additional studies with community samples of students that focused on correlations between rumination, age, and sex. Twelve of these studies found a positive correlation between being female and endorsing a ruminative coping style. The remaining four did not find a significant correlation between sex and rumination. Only two studies found that levels of rumination increase from childhood to adolescence. Seven studies did not find a correlation between age and rumination.

In their own review of potential risk factors, Nolen-Hoeksema and Girgus (1994) concluded that the preponderance of risk factors mirrored the developmental trajectory of Model 3. To our knowledge only one other study has examined a rumination x stress model predicting depression in adolescence. In support for rumination as a reflection of Model 3, Driscoll, Lopez, and Kistner (2009) found that girls indicated greater ruminative response styles than boys in grades four through seven. Using a cross-sectional diathesis-stress model, the authors found a rumination x sex interaction did not significantly predict changes in depression, supporting the notion that the causes of depression are the same for boys and girls. Additionally, they found that rumination ratio scores (formed by dividing rumination scores by distraction scores) interacted with changes in number of daily hassles to predict change in self-reported depressive

symptoms. Their model did not fully test Model 3, however, as the authors did not include age in their analyses.

Our review of the available literature suggested that findings on the developmental trajectory of rumination are too inconsistent to determine which of Nolen-Hoeksema and Girgus (1994) models reflects the effects of rumination on the development of depression. One goal of the proposed study was to examine mean levels of rumination in childhood and adolescence in order to help identify which of Nolen-Hoeksema and Girgus's (1994) models reflects the developmental trajectory of rumination.

Gender Role Identification

A second overarching goal of the study was to examine why rumination may come on-line during adolescence, or, if young children report ruminating, why early rumination in childhood does not lead to depression. One hypothesis was that adolescence is associated with unique social, physical, and cognitive changes that affect the nature and rates of rumination. Specifically, adolescence is a time of physical and social development that brings about an intensified identification with one's sex (Hill & Lynch, 1983). Hill and Lynch (1983) termed this change "gender role intensification." They suggested that same-sex role identification increases during middle childhood, with maximum polarization occurring by early adolescence. Conway, Giannopoulos and Stiefenhofer (1990) speculated that interest in and thinking about emotions (i.e., rumination) may also be part of female role identification. If so, adoption of a ruminative

coping style would increase in girls during middle childhood and early adolescence as a function of gender role identification.

Developmental changes for girls, including female sex role identification, have already been shown to explain a portion of the sex differences in depression rates (Wichstrom, 1999). Gender intensification may also play an important role in rumination. Strauss et al. (1997) asked 155 college students to describe what they perceived to be stereotypical sex-role reactions to the hypothetical occurrence of various stressful events. Results indicated that both males and females believed that females were more likely than males to use rumination as a method of coping with such problems. Conversely, findings suggested children believed that males would be more likely than females to use distraction (originally conceived of as the opposite of rumination) as a coping strategy. Broderick and Korteland (2002) found similar results for adolescents. They presented 146 6^{th}, 7^{th} and 8^{th} graders with vignettes that depicted adolescent girls and boys reacting to stressful situations either by ruminating or distracting themselves. Regardless of grade or sex, adolescents thought the ruminative reaction was more appropriate for girls than for boys. Further, girls in older grades were significantly more likely to link rumination to femininity than were girls in younger grades. Consistent with gender intensification theory, these results indicated that sex-role stereotypes evolve in depth and complexity during adolescence, affecting even one's perception of gender-appropriate coping styles.

Research supports the idea that individual differences in sex-role stereotyping are also reflected in self-reported tendencies to use rumination as a coping mechanism. Ingram and colleagues (1988) found that adults who identified themselves as having

primarily female traits (regardless of their actual sex) showed markedly higher levels of both rumination and depression, compared to androgynous and male-identified participants. Similarly, Broderick and Korteland (2002) found that 9-year old boys and girls who endorsed mostly feminine traits on a sex-role inventory were more likely to report ruminative responses to stress than were their masculine and androgynous counterparts. This finding was replicated in 2004 by Washburn-Ormachea, Hillman, and Sawalowski, who found that gender-role orientation, but not gender, predicted differences in coping styles used by adolescents. Feminine-typed boys and girls were more likely to use emotion-focused coping than those who did not endorse a female-role orientation.

Recent research by Priess, Lindberg, and Hyde (2009) contradict these findings. They did not find support for the gender-intensification theory and, citing several other researchers' work, declared that gender intensification is empirically unsupported. Cox, Mezulis, and Hyde (2010), however, found that female sex role (rather than gender intensification) did mediate the sex – rumination relation over a four year period.

Consequently, further goals of the proposed study were to examine (a) the effect of gender role identification on the rates of rumination and (b) estimate the meditational effect of rumination on the relation between gender role identification and depression during the transition from middle childhood to adolescence.

Co-Rumination

A second overarching goal of the study was to examine how changing social roles across development may bring about depression during adolescence. Specifically, co-rumination, or the process of repeatedly discussing personal problems and negative affect with friends, has been linked to increases in symptoms of depression (Rose, 2002; Rose, Carlson, & Waller, 2007). Byrd-Craven, Geary, Rose, and Ponzi (2008) used an experimental paradigm in which the authors randomly instructed half of their participants to co-ruminate. They found that co-rumination was associated with a significant increase in cortisol (a hormone found to covary with stress levels), after controlling for self-reported co-rumination and prior levels of cortisol. Conversely, co-rumination has also been shown to predict increases in friendship quality for both sexes (Rose et al., 2007). Calmes and Roberts (2008), using a cross-sectional design, found that co-rumination mediated the relation between gender and both depression levels and friendship satisfaction.

Several researchers have noted that girls are more likely than boys to report engaging in co-rumination in childhood and adolescence (Rose, 2002; Rose et al., 2007). Rose et al., (2007) found that this gender difference increased during adolescence. The authors noted that levels of co-rumination rise for girls as they enter into adolescence while rates drop precipitously for boys during the same period. Further, co-rumination predicted increases in depression levels for girls but not boys. In a later study, Starr and Davila (2009) looked at a group of 83 7th and 8th grade girls and found that co-rumination positively correlated with depressive symptoms and friendship quality, but did not predict changes in depressive symptoms over one year. The authors noted, however, that the effect size was nearly identical to that found by Rose et al. (2007). Starr and Davila

(2009) suggested that this effect failed to reach significance because of the small sample size.

To our knowledge, only one study has examined the relation of co-rumination to rumination in children. Rose (2002) found a significant correlation between rumination and co-rumination, and that both co-rumination and rumination correlated with internalizing symptoms. When Rose statistically controlled for rumination levels, however, co-rumination was related to *fewer* internalizing symptoms. Rose hypothesized that co-rumination was linked to depression only through its shared variance with rumination. Due to the cross-sectional nature of her study, she was not able to examine the temporal or mediational nature of these variables. Our study expanded on these findings by looking at: (a) whether co-rumination produced increased levels of rumination, and (b) whether rumination mediated the relation between co-rumination and depression.

Current Study

The current study examined the developmental trajectory of rumination and its potential for explaining the emergent gender difference in depression. We addressed five research questions:

Question 1. Which of Nolen-Hoeksema and Girgus's (1994) models reflects the developmental trajectory of rumination?

Question 2. What is the effect of increased female sex-role identification on rates of rumination?

Question 3. Does rumination mediate the relation of increased female sex-role identification to depressive symptoms?

Question 4. Does co-rumination drive an increase in levels of rumination?

Question 5. Does rumination mediate the relation between co-rumination and depression?

Question One. Our first study goal was to describe the developmental nature of rumination and its role as a risk factor for developing depression by examining which of Nolen-Hoeksema and Girgus's (1994) models mapped onto our data. To date, empirical tests of Response Styles Theory in pre-pubescent populations have generated unexpected results. On the one hand, theories of emotional development (Harter, 1999) and socio-cognitive development (Broderick & Korteland, 2002), suggest that the inclination and ability to introspect about one's emotions is a relatively sophisticated activity that almost certainly increases with age. Jose and Brown (2009) found that the gender differences in rumination onset at the age of 12, and that both male and female adolescents are more likely to ruminate than male and female children, respectively. On the other hand, research by Abela and colleagues suggested that children ruminate more (not less) than adolescents. In one study, Abela, Brozina and Haigh (2002) found that of 314 third and seventh graders, the third graders of both sexes were more likely to ruminate than older participants. A later study by Abela et al. (2004) replicated these results, finding eight- and nine-year-olds were more likely to endorse ruminative response styles than were adolescents.

Our study also looked at levels of rumination across development; however, we made several improvements over prior research. First, both Abela et al. (2004) and Jose

and Brown (2008) used only a single measure of rumination, developed specifically for their respective studies. In child populations, ruminative coping style may be difficult to assess. In the current study, we obtained multiple measures of rumination (the Children's Response Styles Questionnaire and the Response Styles Questionnaire) from which we extracted a latent variable. Using structural equation modeling, we examined relations between latent, not manifest, variables. Second, the majority of studies have used cross-sectional data to infer the temporal relation between rumination and depression. Third, only one study (Driscoll et al, 2009) looked at a diathesis-stress model, using cross-sectional data. By utilizing a longitudinal design, latent constructs, and a wide age-range of participants, we were able to statistically control for prior levels of depression and determine whether rumination, and its interaction with stress, predicted changes in depression over time, as well as across age groups.

Question Two. Our study also examined how a ruminative coping style may be related to female identification as a part of the gender intensification process. This research question examined whether female sex-role identification is a precursor to rumination. Conway, Alfonsi, Pushkar, and Gianopolus (2008) gave the Eysenk Personal Attributes Questionnaire to undergraduate students in a cross-sectional study and found a significant correlation between communality, or "feminine" attributes, and rumination. Only one study, Cox et al., (2010) looked directly at feminine role and rumination in a group of adolescence, finding that endorsing a female sex-role mediated the relation between sex and depressive affect. In the current study we improved upon Cox and colleagues (2010) design by administering multiple measures of gender role, enabling us

to extract a latent gender role variable. We looked at gender role identification across development and its relation to a ruminative cognitive style.

Question 3. We tested whether female sex role identification acted as a mediator of the gender-rumination relation, and as a step in the causal chain that links gender to depression during adolescence. Previous research has suggested that there is a relation between gender role, coping style, and depression (e.g. Nezu & Nezu, 1987; Cox et al., 2010). Wichstrom (1999) found that gender differences in depression rates could be explained in part by increased importance of feminine sex role identification. Conversely, Barrett and White (2002) looked at students from ages 12 to 25 in a four-wave prospective study and found that having low and decreasing levels of masculinity was associated with manifesting depressive symptoms; however, there was no relation between femininity and depression. Our goal was to examine these relations from a developmental perspective. We looked at the relation of our latent gender role variable to a latent rumination factor and a latent depression factor from middle childhood through early adolescence. This allowed us to estimate key parts of the meditational effect of rumination on gender role and depressive symptomology and examine how these relations change from childhood to adolescence.

Question 4. Our study also examined the causal relation between rumination and co-rumination. Rose (2002) found a significant correlation between these constructs; however, due to the single-wave design of her study, she was not able to look at which variable predicted change in the other variable. Our longitudinal design allowed us to test what percent of the variance in rumination can be explained by prior co-rumination

(controlling for prior rumination). To our knowledge, no research has looked at this temporal relation in children and adolescents.

Question 5. Our final goal was to examine whether rumination mediated the relation between co-rumination and depression. Using a cross-sectional design with undergraduate students, Calmes and Roberts (2008) found that co-rumination significantly mediated the sex-depression relation; however, the meditational effect dropped to non-significant levels when the authors statistically controlled for rumination. These findings are somewhat limited, however, in that they were not able to look at the prospective relations between these variables. Our use of a longitudinal design allowed us to estimate the effect of one variable on another, controlling for previous levels of the outcome variable.

CHAPTER II

METHOD

Participants

One hundred and fifty-seven male and 206 female participants were recruited from public elementary, middle and high schools in several small southern cities. One hundred and fifteen fifth graders, 32 sixth graders, 105 seventh graders, 89 eighth graders, and 22 ninth graders received consent and participated in the study. Of these participants, 86.8% were White, 3.3% African American, 4.7% Hispanic, 0.5% Asian, 4.7% biracial or multiracial, and 1.1% who described their ethnicity as "other." Racial makeup of this sample was similar to county demographics. Participants were screened and excluded based on special needs (such as diagnosed learning disability or limited command of English) that may have interfered with their ability to participate in the study.

Measures

We administered a demographic questionnaire, two measures of sex role identification, one measure of co-rumination, two measures of rumination, three measures of depressive symptoms, one measure of friendship quality, and one measure of external stressors. All measures were self-report.

Sex-Role Identification. We collected two measures of sex-role identification. The Children's Sex Role Inventory (CSRI; Boldizar, 1991) was designed to be a children's version of Bem's Sex Role Inventory. The self-report questionnaire consists of three subscales: masculinity, femininity and neutral (filler), each with 20 items. Subscales tapped each respondent's tendency to identify with cultural sex-role norms, including items such as: "When someone's feelings have been hurt, I try to make them better" (femininity scale item) and "I like to do things that boys and men do" (masculinity scale item). For the purposes of this study, we only used the femininity subscale. All items were rated on 4-point Likert-type scales ranging from 1 = not at all true of me to 4 = very true of me. In previous studies, the femininity scale has an internal consistency alpha of 0.84, an adequate test-retest reliability alpha of 0.71 over one year and strong construct validity (Boldizar, 1991). In our own study, the femininity scale had an internal validity construct of alpha = 0.90.

The Children's Personal Attributes Questionnaire (CPAQ; Hall & Halberstadt, 1980) is based on the Personal Attributes Questionnaire (Spence, Helmreich, & Stapp, 1973). The CPAQ includes all items from the original PAQ with the exception of three that were deemed inappropriate for children. The measure is composed of three subscales: masculine, feminine, and masculine-feminine. The subscale demonstrates moderate internal consistency reliabilities (average Cronbach's alpha = 0.60). The short version of the CPAQ includes 21 items (8 items per masculine and feminine subscale and 5 items from the masculine-feminine subscale), including: "I cry when things upset me" and "I am a gentle person." Respondents endorsed how true each item is for them on 4-

point Likert scales. We used only the femininity scale in the current study and found an internal reliability construct of alpha = 0.70.

Co-rumination. The Co-rumination Questionnaire (CRQ; Rose, 2002) is an inventory that assesses the tendency to perseverate on problems within a friendship dyad, including repeatedly discussing a problem with a peer, encouraging a peer to engage in rehashing a problem, hypothesizing about the causes and consequences of a problem, and focusing on negative affect associated with a problem. The questionnaire has 27-items including: "When we talk about a problem that one of us has, we usually talk about that problem every day even if nothing new has happened." Items are summed together to form a composite co-rumination score. Cronbach's alphas are very high, ranging from $\alpha = 0.96 - 0.97$ (Rose, 2002; Rose, Carlson, & Waller, 2007). Internal reliability was also high in the current study, Wave 1 alpha = 0.96 and Wave 2 alpha = 0.97.

Rumination. The Response Style Questionnaire (RSQ, Nolen-Hoeksema & Morrow, 1991) is one of the most commonly used measures of rumination/distraction coping styles and has been utilized with adult, adolescent, and child populations. The RSQ contains two subscales: the Rumination Response Scale (RRS) and the Distraction Response Scale (DRS). Both scales use 4-point, Likert-type scales. Respondents endorsed items from 1 (almost never) to 4 (almost always). The RRS is composed of 17 items and attempts to tap into ruminative responses to feeling depressed, with such items as "Think about how alone you feel." The DRS has 10 items and taps into distractive responses to depressed mood, including items like "Go to a favorite place to get my mind off my feelings." The RSQ has demonstrated good internal reliability with adult (Nolen-Hoeksema & Morrow, 1991) and adolescent populations (Schwarts & Koenig, 1996). In

this study, internal reliability was strong, for Wave 1 alpha = 0.82 and Wave 2 alpha = 0.85.

The Children's Response Styles Questionnaire (CRSQ; Abela, Rochon & Vanderbilt, 2000) was developed for use in children and adolescents. The CRSQ is composed of two subscales and has a total of 24 items all rated on Likert-type scales of 0 to 3 with 0 = almost never and 3 = almost always. The Ruminative Response subscale has 13 items and describes self-focused responses to depressed mood, including items such as "when I am sad, I think about how alone I feel." The subscale correlated positively with depressive symptoms and has a Cronbach's alpha of 0.76 in 3rd grade populations and 0.84 in a sample of 7th graders (Abela et al., 2000). In our study, the Ruminative Response subscale had an internal consistency at Wave 1 of alpha = 0.88 and Wave 2 of alpha = 0.89. The Distracting Response subscale has seven items and depicts various distraction-type responses to negative affect, including items such as "when I am sad, I help someone else with something so I don't think about my problem." A recent factor analysis of the CRSQ by Abela, Aydin and Auerbach (2007) indicate 8 items loaded on to the Distracting Response factor; the authors found this subscale had an internal consistency of alpha = 0.71 and a test-retest reliability of $r = 0.71$ over a four week interval. In our study the scale had adequate internal consistency; at Wave 1 alpha = 0.79 and at Wave 2 alpha = 0.79.

Self-reported Depression. To assess depression we used three self-report measures. The Children's Depression Inventory (CDI, Kovacs, 1992) is a widely used and well-validated measure of children's depressive symptomatology (see Reynolds, 1994, for a review). The self-report questionnaire consists of 27 items tapping into

cognitive, affective and behavioral aspects of depression. Items are clumped in groups of three statements, each describing varying degrees of a depressive symptom; for example: (0) I am sad once in while, (1) I am sad many times, and (2) I am sad all the time. Each item is rated on a 0 to 2 scale, with higher scores correlating with more severe depressive symptomatology. The scale has strong internal consistency and validity in non-clinical populations (Saylor, Finch, Spirito, & Bennett, 1984). In our own study, the measure demonstrated strong internal consistency, for Wave 1 alpha = 0.90 and Wave 2 alpha = 0.91.

We also used the Center for Epidemiological Studies-Depression Scale (CES-D, Radloff, 1977). The CES-D is a 20-item self-report questionnaire designed to assess depressive symptomology in the last week. Respondents rated items on 0 to 3 Likert-type scales where 0 = rarely or none of the time and 3 = most or all of the time. High levels of convergent and concurrent validity have been shown (Radloff, 1977) and prior research has also yielded good internal consistency (alpha > 0.85; Radloff, 1977). In the current study, alpha = 0.90 in Wave 1 and alpha = 0.92 in Wave 2.

Finally, we administered the Short Mood and Feelings Questionnaire (SMFQ; Angold, Costello, Messer, & Pickles, 1995). The measure consists of 13 items designed to tap specific symptoms of depression in children and adolescents. Each participant was asked to rate how true an item was for him or her over the past two weeks on three-point Likert scales, from 0 = not true to 2 = true. The scale is significantly correlated with clinical interviews of depression with outpatient participants (Wood, Kroll, Moore, & Harrington, 1995). In this study, internal consistency alpha = 0.88 for Wave 1 and alpha = 0.89 for Wave 2.

Self-reported Stressors. We will administer the Junior High Life Experiences Survey (JHLES; Swearingen & Cohen, 1985b). The scale is widely used and shows strong predictive validity, including a significant correlation between negative life events and later maladjustiment and missed school days (Swearingen & Cohen, 1985a). In accordance with this and other research that suggested negative events are more correlated with psychopathology than positive events (Wagner & Compas, 1990), we administered only items reflecting undesirable events. This pared-down scale consisted of 33 negative events, such as "someone I was close to died." Respondents were asked if each event happened to them over the past year.

Procedure

Consent forms were given to all parents of 5th through 9th graders at five elementary, middle, and high school in the beginning of the school year. The first wave of data collection took place during school hours in late October and November (with the exception of two classes which, due to scheduling conflicts, completed the first wave of data collection in January). Children whose parents had consented to allow them to participate were pulled out of their classrooms and taken to a cafeteria, auditorium, or other classroom. At the beginning of each data collection a trained research assistant reviewed and administered an assent form to each student. Children in the 7th, 8th and 9th grades proceeded through the questionnaire packets on their own. Due to concerns about reading fluency at younger grades, we read the questionnaires aloud to participants in the 5th and 6th grades. At the end of the data collection, participants received a $10 gift card

to a local store. At Wave 1, researchers administered all of the measures listed above. Researchers returned four months later to re-administer the same questionnaire battery, with the exception of the sex role inventories. The same procedures described above were used at the second wave of data collection.

CHAPTER III

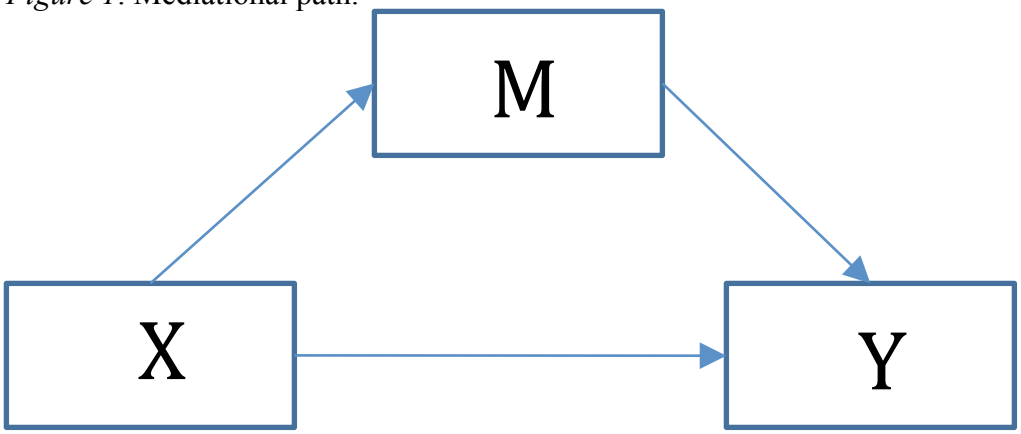
RESULTS

Data Analytic Plan

The present study included tests of both moderation and mediation. All Structural Equation Models (SEM) were created using Analysis of Moment Structures (AMOS; Arbuckle, 1989). We accounted for missing data using a maximum likelihood estimation method. Due to the conceptual and statistical difficulties associated with creating interactions between manifest and latent variables, in tests of moderation we chose instead to create manifest composite variables of constructs for which we had multiple measures. We then used these composite variables to create our interaction terms. In total, we created three manifest composite variables, including a composite female sex role, rumination and depression. Each composite variable was formed by taking the z-score of a participant's mean score on each measure of a given construct. These z-score means were then averaged together to create the composite score.

For our meditational models, we created latent constructs from our manifest variables. Traditional tests of mediation, however, necessitate at least three waves of data (Cole & Maxwell, 2003). As shown in the figure below (Figure 1), a predictor variable (X) must temporally precede the mediation variable (M), which, in turn, must precede the outcome variable (Y).

Figure 1. Mediational path.



We were unable, therefore, to test directly for meditating effects in our current two-wave research design. Cole and Maxwell (2003) suggested, however, than an estimate of meditational effects can also be derived from two waves of data. To do this, we used path estimates and standard errors from X to M and from M to Y to test the indirect effect of X, through M, on Y (Sobel, 1982). This Sobel test provides an estimate of meditational effects and was used in all meditational tests below.

Preliminary Analyses

Table 1 displays the descriptive statistics for depression, femininity, rumination, negative life events, and co-rumination measures, broken down by gender, grade level, and wave. Table 2 displays the correlations between these measures, broken down by wave.

Table 1. *Descriptive Statistics for Depression, Rumination, Femininity, Negative Life Events and Co-Rumination*

		Girls				Boys			
		Wave A		Wave B		Wave A		Wave B	
Measure	Grade	M	(SD)	M	SD	M	SD	M	SD
CDI	5	7.50	(7.49)	5.74	6.19	6.58	(5.97)	6.58	(6.90)
	6	6.74	(6.89)	5.60	5.99	7.08	(8.37)	4.55	(4.27)
	7	8.16	(8.85)	8.96	9.77	7.99	(8.67)	8.87	(10.04)
	8	8.12	(7.77)	9.20	9.34	5.73	(5.06)	4.40	(4.86)
	9	11.00	(7.20)	7.00	5.58	6.44	(4.98)	4.26	(2.74)
CES-D	5	34.19	(10.09)	31.75	10.92	30.08	(7.14)	30.17	(9.16)
	6	30.93	(7.70)	29.58	8.94	29.66	(7.22)	28.09	(6.70)
	7	33.60	(10.79)	34.81	13.95	33.01	(9.80)	32.40	(12.10)
	8	35.18	(13.03)	33.70	12.76	30.93	(8.64)	26.69	(5.91)
	9	36.57	(11.45)	35.11	11.53	31.85	(7.44)	26.50	(3.11)
SMFQ	5	4.19	(4.60)	3.56	3.61	3.09	(3.95)	3.28	(4.66)
	6	4.73	(4.33)	2.73	3.35	2.83	(2.79)	1.55	(1.44)
	7	5.16	(5.60)	6.07	5.85	4.22	(4.88)	4.00	(5.29)
	8	4.72	(5.29)	4.94	5.39	2.73	(3.16)	1.94	(2.58)
	9	5.86	(4.54)	4.41	4.50	2.71	(2.63)	0.75	(0.50)
RSQ	5	35.03	(9.96)	26.43	8.80	30.86	(9.67)	23.95	7.83
	6	27.50	(8.94)	26.05	6.86	26.83	(9.86)	23.45	(4.55)
	7	30.52	(9.79)	30.58	11.20	27.82	(8.47)	26.13	(10.27)
	8	31.72	(9.98)	28.96	11.19	25.56	(7.12)	22.04	(4.74)
	9	31.36	(5.97)	30.01	10.22	27.01	(7.66)	19.50	(2.38)
CRSQ	5	25.79	(8.81)	26.43	10.20	19.01	(4.36)	18.96	(5.93)
	6	25.48	(9.71)	25.80	7.80	23.92	(7.08)	26.36	(7.71)
	7	25.83	(8.55)	31.74	9.78	22.72	(7.70)	20.59	(7.15)
	8	26.19	(10.42)	34.87	11.02	20.85	(7.50)	23.44	(7.42)
	9	26.71	(6.46)	32.85	8.38	19.51	(3.38)	21.25	(12.82)
CPAQ	5	26.65	(4.29)			23.97	(4.23)		
	6	24.61	(2.81)			21.52	(5.20)		
	7	25.46	(3.26)			21.85	(4.81)		
	8	26.78	(3.07)			23.37	(3.51)		
	9	26.29	(4.16)			20.14	(3.48)		
CSRI	5	61.41	(8.15)			54.21	(7.79)		
	6	60.46	(7.06)			47.06	(9.37)		
	7	59.28	(6.79)			49.05	(10.50)		
	8	62.02	(7.10)			52.04	(9.22)		
	9	62.50	(7.67)			51.41	(8.15)		
JHLES	5	6.24	(3.66)	4.75	3.09	5.18	(3.04)	4.65	(3.56)
	6	6.96	(5.14)	4.80	3.38	6.96	(5.39)	3.45	(3.27)
	7	7.01	(4.49)	5.77	4.79	6.58	(4.27)	4.92	(3.40)
	8	74.67	(4.64)	6.61	4.53	5.09	(3.24)	4.00	(4.00)
	9	6.57	(2.79)	5.86	3.66	6.29	(3.73)	2.25	(2.06)
CRQ	5	73.51	(22.52)	56.24	23.65	52.85	(21.01)	39.38	(13.76)
	6	71.40	(14.46)	55.43	17.81	55.42	(18.37)	57.00	(16.59)
	7	76.26	(21.89)	65.98	21.84	54.00	(20.64)	43.53	(16.07)
	8	79.70	(20.46)	75.98	25.38	61.09	(19.65)	50.58	(17.80)
	9	80.79	(17.90)	71.31	16.61	57.29	(30.26)	45.25	(29.94)

Note. CDI = Children's Depression Inventory, CES-D = Center for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale, CPAQ = Children's Personality Attributes Questionnaire – Femininity Scale, CSRI = Children's Sex Role Inventory – Femininity Scale, JHLES = Junior High Life Events Scale, CRQ = Co-Rumination Questionnaire.

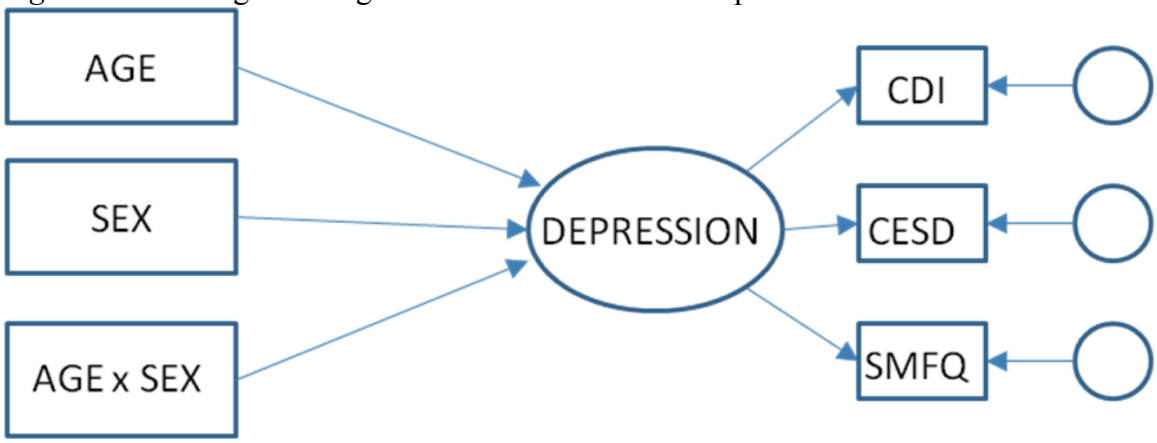
Table 2. *Zero-order correlations among independent variables, mediators, and dependent variables*

Measure	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. CDI	1.00	0.76	0.76	0.64	0.66	-0.13	-0.05	0.51	0.27
2. CES-D	0.78	1.00	0.77	0.63	0.67	-0.08	0.01	0.45	0.29
3. SMFQ	0.73	0.81	1.00	0.57	0.69	-.04	0.03	0.41	0.28
4. RSQ	0.61	0.73	0.71	1.00	0.82	0.15	0.26	0.36	0.40
5. CRSQ	0.25	0.32	0.33	0.48	1.00	0.15	0.31	0.37	0.42
6. CPAQ						1.00	0.66	0.01	0.29
7. CSRI							1.00	0.02	0.41
8. JHLES	0.47	0.45	0.43	0.43	0.30			1.00	0.24
9. CRQ	0.18	0.26	0.27	0.42	0.98			0.26	1.00

Note. CDI = Children's Depression Inventory, CES-D = Center for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale, CPAQ = Children's Personality Attributes Questionnaire – Femininity Scale, CSRI = Children's Sex Role Inventory – Femininity Scale, JHLES = Junior High Life Events Scale, CRQ = Co-Rumination Questionnaire.

Age and Sex Effects in Key Variables. We first examined each of our four key variables (depression, rumination, female sex role, and co-rumination) for developmental and sex main effects (see Figure 2).

Figure 2. Path diagram of age and sex effects in latent depression.



Note. CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

We created four separate models using age, sex, and an age x sex interaction term to predict Wave A latent depression (composed of Wave A CDI, CES-D, and SMFQ), Wave A latent rumination (composed of Wave A RSQ and CRSQ), latent sex role (composed of Wave A CSRI and CPAQ), and manifest co-rumination. All models, with the exception of the depression model, were just identified, meaning the model fit the data perfectly. The model including depression variables fit the data well (χ^2=12.17, df=6, TLI=0.99, CFI=1.0, RMSEA=0.05, 90% CI = 0.00-0.10). We found significant main effects for gender in each of the key variables, suggesting that girls scored higher on measures of depression, rumination, female sex role, and co-rumination than boys. We also found main effects for age on rumination and co-rumination, suggesting that younger students ruminated more than older students and that older students co-ruminated more than younger students. None of the age x sex interactions were significant.

Base Model of Rumination and Depression. Next, we created a basic model of the relation between rumination and depression. We tested a structural equation model with latent Wave A rumination and depression variables predicting latent Wave B rumination and depression variables with two groups: boys and girls. The model fit the data well (χ^2=110.87, df=48, TLI=0.94, CFI=0.98, RMSEA=0.06, 90% CI= 0.05-0.08). We tested the model for cross-lag invariance by constraining each Wave A factor loading to be the same as its Wave B equivalent. The change in chi-square was significant at the $p < .05$ level ($\Delta\chi^2$=16.96, Δdf=6); however, the model continued to fit the data well (χ^2=127.83, df=54, TLI=0.94, CFI=0.97, RMSEA=0.06, 90% CI=0.05-0.08). Next, we further constrained each loading to be the same for both genders (i.e. a model constrained across wave and sex). The change in chi-square was not significant ($\Delta\chi^2$=3.47, Δdf=3),

and the model fit the data well (χ^2=131.30, df=57, TLI=0.94, CFI=0.97, RMSEA=0.06, 90% CI=0.05-0.07). We present path estimates for this model for boys and girls in Table 3.

Table 3. *Path estimates for boys and girls for a base model of Wave A rumination predicting Wave B depression*

Sex	Predictors	Standard Estimates	*P*
Girls	A Rumination → B Depression	-0.19	0.14
	A Depression → B Rumination	0.19	0.22
Boys	A Rumination → B Depression	.01	0.96
	A Depression → B Rumination	0.33	0.00

Of note, rumination did not significantly predict change in depression for boys or girls; however, depression did predict changes in rumination for boys. To test whether these paths were significantly different between sexes, we constrained each of the five key paths individually across gender and examined whether constraining each path made the model fit significantly worse. Only one of these constraints, the correlation between Wave A rumination and depression, made the model fit significantly worse. This finding suggests the correlation between rumination and depression is significantly different for boys than for girls. Examining the path estimates showed the correlation was larger for girls than boys.

We then tested whether this correlation varied by development (approximately pre- and post-puberty). We divided the sample into four groups: younger (grades 5 and 6) and older (grades 7, 8, and 9) boys and girls. We tested a simplified model that only included Wave A latent rumination and depression. The model fit the data well (χ^2=28.1, df=16, TLI=0.96, CFI=0.99, RMSEA=0.05, 90% CI = 0.01-0.08). To test for

measurement model invariance across groups we restricted the factor loadings to be the same for each group. Although the change in fit, as measured by the change in χ^2, was significant ($\Delta\chi^2$=28.1, Δdf=15), the model continued to fit the data well (χ^2=66.86, df=31, TLI=0.94, CFI=0.97, RMSEA=0.06, 90% CI = 0.04-0.08). We then constrained the correlation between the latent variables to be the same across both groups. This did not significantly disturb the fit, suggesting that the correlation between these variables is not significantly different across groups. Next, we examined levels of the latent variables across groups by constraining one manifest variable factor loading for each construct to be equal to one, and retaining the cross-group constraints on all other factor loadings. We then relinquished any constraints on the mean and variance of the latent variable. This model continued to fit the data well (χ^2=42.9, df=25, TLI=0.96, CFI=0.98, RMSEA=0.05, 90% CI = 0.02-0.07). We performed a series of post-hoc pair-wise comparisons of mean differences between groups of students by constraining the mean of the latent variables to be equal in two groups and noting whether this constraint significantly perturbed the fit of the model. A significant perturbation of the fit of the model would suggest mean-level differences. We found three significant differences between groups. For boys, rumination mean levels significantly decreased across age groups. In older students, we found that girls reported ruminating significantly more than boys. In the younger age group, we found that younger girls exhibited significantly more depression then younger boys. Of note, there were considerable differences in the size of the latent constructs variances across groups. In particular, the variance of depression in older girls was almost twice as large as any other group. The variance of rumination was greater for girls than boys, but was not different across age groups between the sexes.

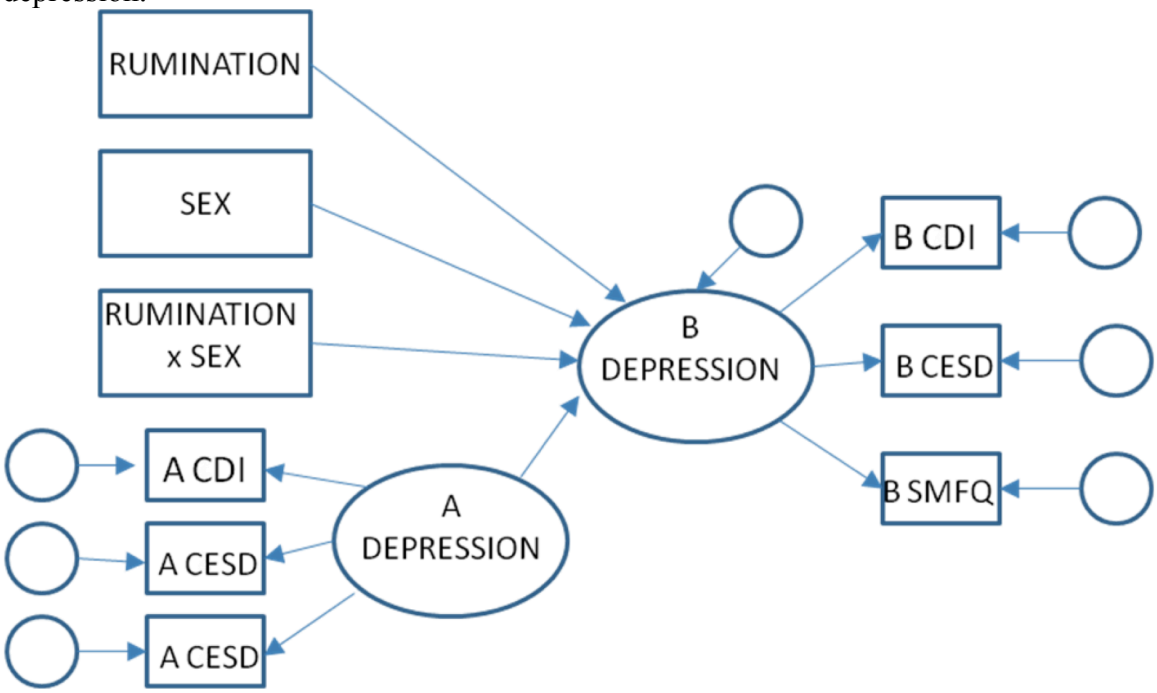
This suggests that as girls grow older, individual differences in self-reported depressive symptoms increased substantially, whereas the variance of rumination stays remarkably consistent.

Models of the Developmental Trajectory of Rumination

Model 1. Nolen-Hoeksema and Girgus' (1994) first model of the emergent gender difference in depression suggests (a) the risk factors for the development of depression are the same for boys and girls, and (b) during adolescence, girls are exposed to a greater level of these risk factors than boys. If the developmental trajectory of rumination mirrored that of Model 1 as described by Nolen-Hoeksema and Girgus (1994), we would expect to find similar, low, rates of rumination for boys and girls during childhood, and a greater increase in rumination during adolescence for girls than for boys. To test this model, we first looked at whether the causes of depression are the same for boys and girls. We created a structural equation model of Wave A composite rumination, sex, and a sex x composite rumination interaction predicting Wave B latent depression, controlling for Wave A latent depression (Figure 3). Support for this part of Nolen-Hoeksema and Girgus's (1994) Model 1 would require a significant main effect for rumination, but not a significant effect for the sex x rumination interaction. First, we looked at the model including the interaction term. The model fit the data well (χ^2=44.3, df=17, TLI=0.97, CFI=0.99, RMSEA=0.07, 90% CI = 0.04-0.09); the interaction term was not significant. In order to examine main effects, we removed the interaction term and re-ran the model. It continued to fit the data well (χ^2=33.7, df=13, TLI=0.97,

CFI=0.99, RMSEA=0.07, 90% CI = 0.04-0.10), but there was no significant main effect for rumination.

Figure 3. Path diagram of rumination, sex, and rumination x sex effects predicting depression.

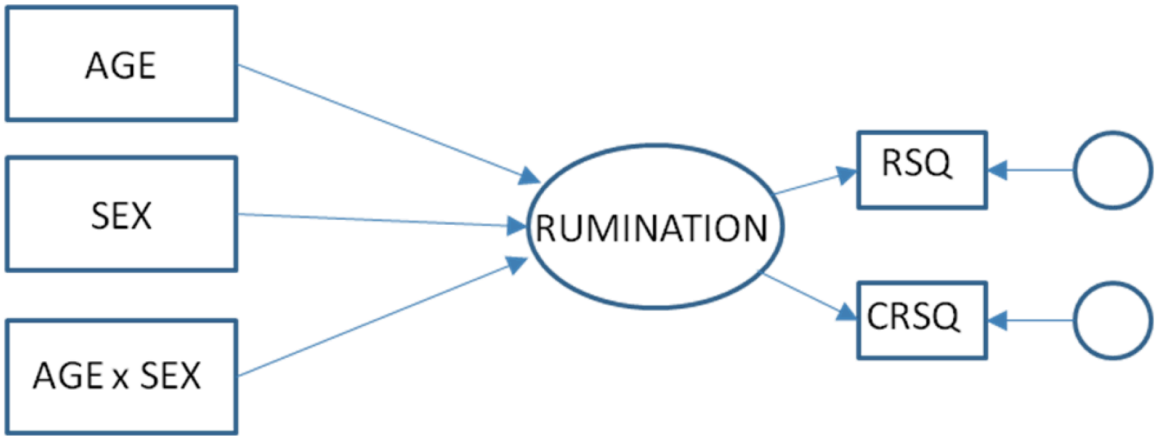


Note. CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

Second, we looked at whether these causes become more common in girls than boys in early adolescence. To examine this, we created a structural equation model with age, sex, and the age x sex interaction predicting a latent rumination variable (Figure 4). A significant age x sex interaction would provide support for this part of Model 1. For Wave A data, our model fit the data well (χ^2=1.8, df=2, TLI=1.0, CFI=1.0, RMSEA=0.07, 90% CI = 0.04-0.10). The interaction term was not significant. Next, we examined the model using Wave B data. Again, the model fit the data well (χ^2=2.6, df=2, TLI=1.0, CFI=1.0, RMSEA=0.03, 90% CI = 0.00-0.10); however, in this wave, the

interaction term was significant (β=1.58, S.E.=0.72, *p*=0.03). These findings provide partial support for Model 1.

Figure 4. Path diagram of age and sex effects in latent rumination



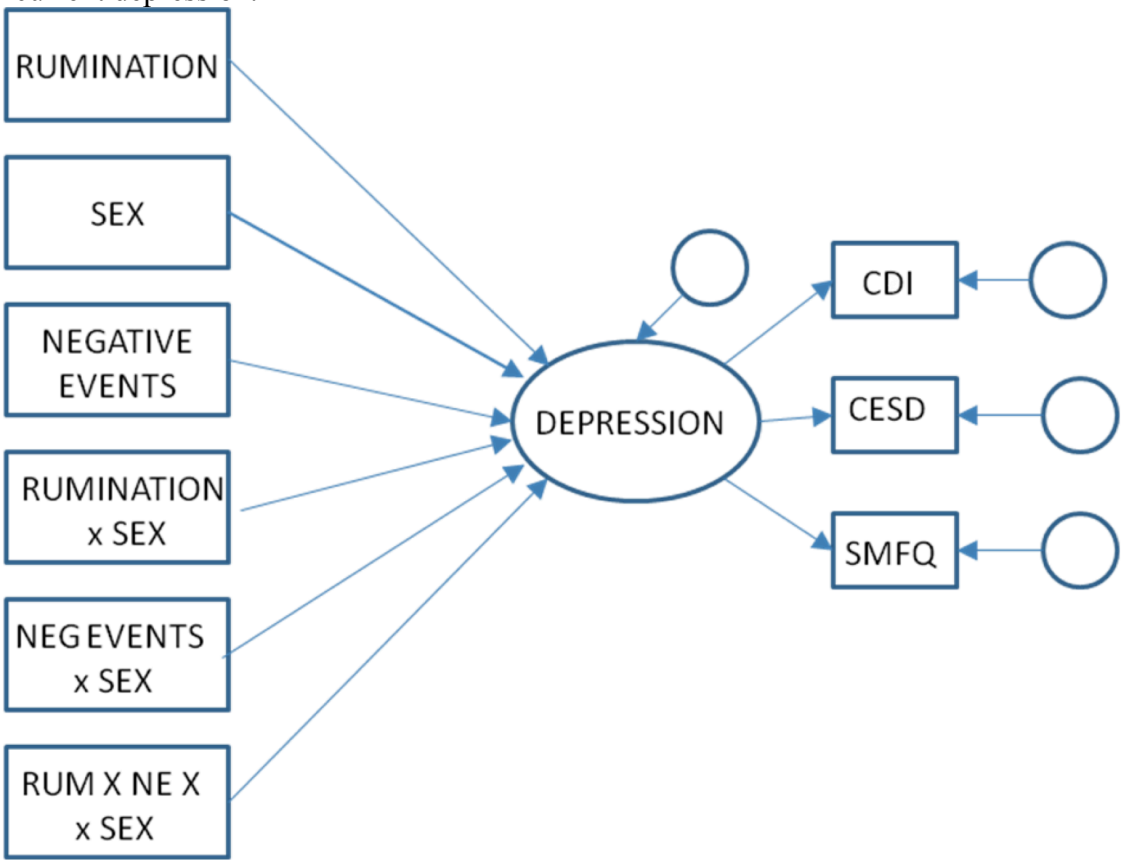
Note. RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

Model 2. Nolen-Hoeksema and Girgus's (1994) second model suggests (a) the risk factors for the development of depression are different for boys and girls, and (b) during adolescence, female risk factors for depression become more prevalent. If rumination reflects Nolen-Hoeksema and Girgus' (1994) Model 2, we would expect to find that rumination rates for girls are low during childhood and rise during adolescence. This model does not specify the level of rumination in boys; however, rumination would be less correlated with depression in boys than in girls. The first premise of Model 2 is that the causes of depression are different for boys and girls. If our data supported Model 2, we would expect to see a significant rumination x sex interaction. As noted above, the sex x rumination interaction term was not significant. Second, Model 2 suggests that there would be a significant correlation between rumination and age for girls. As shown

in Table 2, the Pearson correlation between the composite rumination variable and female participants' exact ages is not significant using either wave of data. We then entered age, sex (coding female = 0), and an age x sex into a regression analysis predicting concurrent rumination (for both Wave A and Wave B). Using simple slope analysis, we found age was not a significant predictor of rumination for girls using Wave A data, but was significant using Wave B data (indicating older girls are more likely to ruminate than younger girls). These findings provide partial support for Model 2.

Model 3. The third model of emergent gender differences in depression suggested in Nolen-Hoeksema and Girgus' (1994) paper states that (a) the causes of depression are the same for boys and girls, but that (b) these risk factors are more prevalent in girls even in childhood and (c) these risk factors do not lead to depression until they interact with stressors which come online during adolescence. As noted in Model 1, our sex x rumination interaction variable did not significantly predict changes in depression. Further, our models testing the effect of an age x sex interaction term predicting rumination found that the interaction was significant in Wave A but not in Wave B. In order to test part c of Model 3, we looked at the three-way interaction between a composite rumination score, stressful events, and age (Figure 5).

Figure 5. Path diagram of the association of rumination, sex, and negative events to concurrent depression.

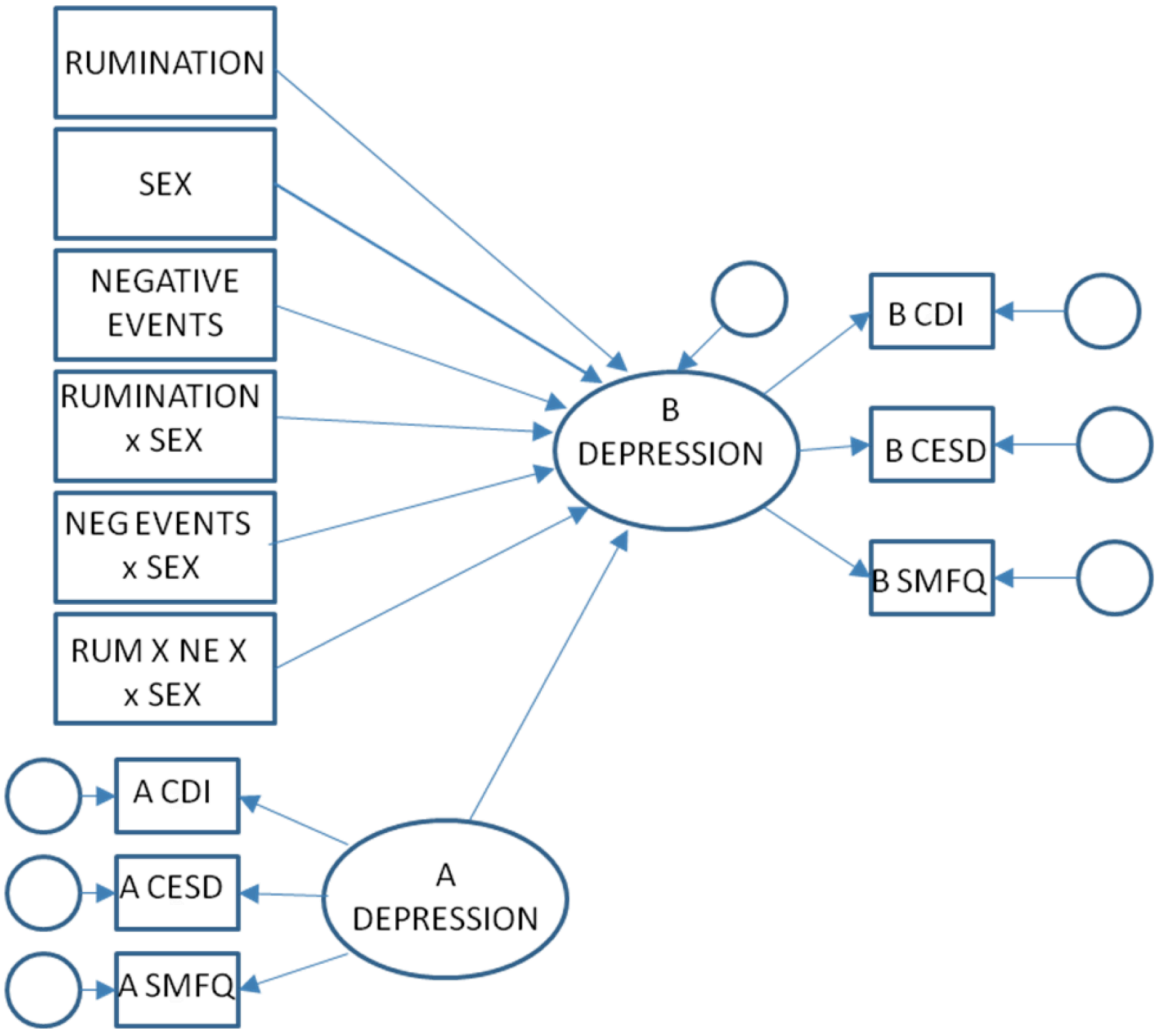


Note. CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

If rumination reflects Model 3, we would expect that the rumination x negative life events x age variable would significantly predict our latent depression construct. The model tested the effect of the manifest variables composite rumination, age, and sex, as well as all possible two- and three-way interactions on a concurrent, latent depression variable. This model fit our Wave A data well (χ^2=17.4, df=14, TLI=1.0, CFI=1.0, RMSEA=0.03, 90% CI = 0.00-0.06). The three-way interaction variable was not significant. We then removed this interaction from the model so as to interpret lower-order interaction variables. Our findings suggest that both rumination x age (β=0.65,

S.E.=0.18, p<0.001) and rumination x life events (β=0.63, S.E.=0.18, p<0.001) interaction variables were significant in predicting concurrent depressive symptoms. We used the same model to test our Wave B data and found that that model also fit the data well (χ^2=9.3, df=14, TLI=1.0, CFI=1.0, RMSEA=0.00, 90% CI = 0.00-0.04). Again, the three-way interaction was not significant. Removing this three-way interaction variable, we found only the rumination x life events variable was marginally significant (β=0.40, S.E.=0.22, p=0.06). We then re-ran these analyses replacing our total life events variable with one of four subscales derived from the life events scale, including: dependent, independent, achievement-oriented, and interpersonal-oriented events. None of the three way interaction variables (life events type x age x rumination) were significant using cross-sectional Wave A data. We then repeated the analyses using Wave B data. Two of our three-way interaction variables were significant: interpersonal-oriented events x age x rumination (β=0.35, S.E.=0.17, p=0.04) and achievement-oriented events x age x rumination (β=0.40, S.E.=0.22, p=0.06). Finally, we looked at a prospective model in which we predicted Wave B depression using Wave A rumination, stress, age, and all higher order interaction terms, controlling for Wave A depression. This model fit the data well (χ^2=66.8, df=33, TLI=0.99, CFI=1.0, RMSEA=0.05, 90% CI = 0.04-0.07). Again, the total life events scale score x age x rumination interaction variable was not significant. Removing this term from the model, we found that the main effect for age (β=-0.96, S.E.=0.37, p=0.01) and the age x life event interaction term (β=0.15, S.E.=0.05, p<0.01) was significant in predicting later depression. Graphing this interaction we found older students with greater numbers of stressors indicated more depression (see Figure 6).

Figure 6. Path diagram of rumination, sex, and negative events predicting depression.



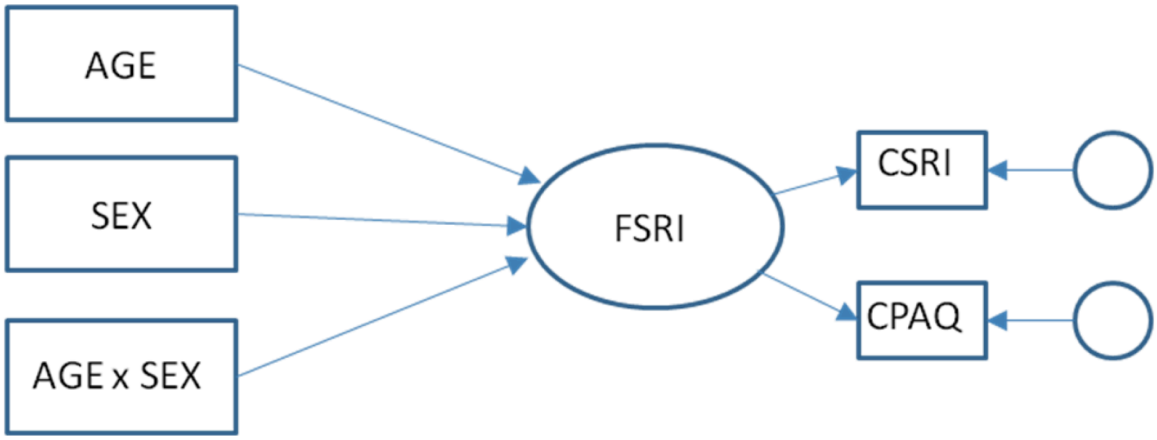
Note. CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

We re-ran the full longitudinal model four times replacing the total life events scale with each of the life event subscales. We failed to find any significant three-way interaction. These findings do not support Model 3.

Female Sex Role and Rumination

Our second research question concerns the relation of female sex role identification (FSRI) to rumination. In order to test whether females become more gender-role identified over time, we created a model in which age, sex, and an age x sex term predicted our femininity latent variable (Figure 7).

Figure 7. Path diagram of age, sex, and age x sex effects on female sex role identification.

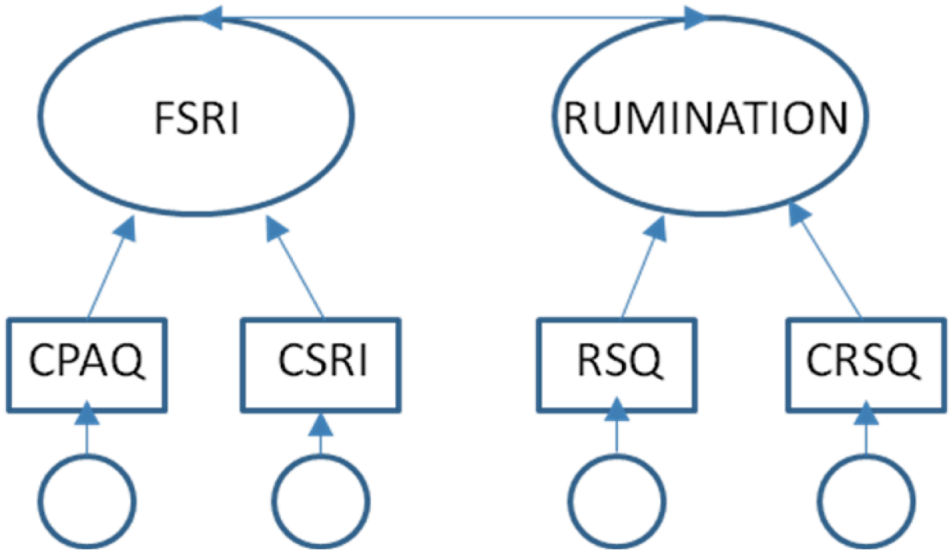


Note. FSRI = Female Sex Role Identity, CSRI = Children's Sex Role Inventory, CPAQ = Children's Personality Attributes Questionnaire.

The model fit well (χ^2=1.3, df=2, TLI=1.0, CFI=1.0, RMSEA=0.0, 90% CI = 0.00-0.09). The interaction term was not significant. We found a main effect for sex suggesting girls were more likely to endorse feminine items (β=-0.35, SE= 0.17, *p*=0.03). We then tested whether age was a significant predictor of FSRI for girls only. We found age did not significantly predict change in FSRI for girls, providing no support for the gender intensification hypothesis.

We then created a structural equation model to examine the correlation between a latent FSRI variable and latent Wave A rumination (Figure 8).

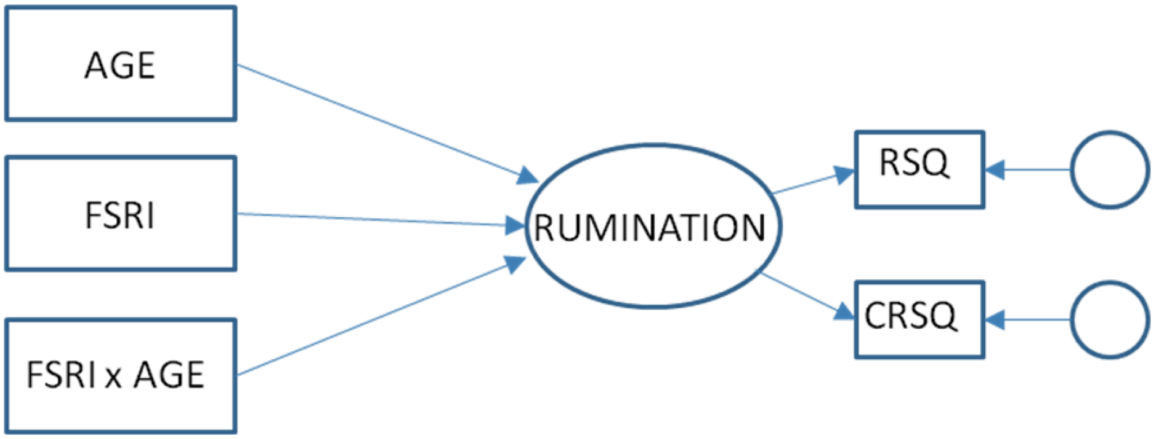
Figure 8. Correlation between latent female sex role identification and rumination.



Note. FSRI = Female Sex Role Identity, CSRI = Children's Sex Role Inventory, CPAQ = Children's Personality Attributes Questionnaire, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The model fit the data well (χ^2=1.2, df=1, TLI=1.0, CFI=1.0, RMSEA=0.02, 90% CI = 0.00-0.14), and there was a significant, small correlation between the latent FSRI and rumination variables (r = 0.29). To examine developmental effects we created a model with the composite FSRI variable, age, and a FSRI x age interaction term on to concurrent, latent, rumination (Figure 9).

Figure 9. Path diagram of age and female sex role identification effects on latent rumination.

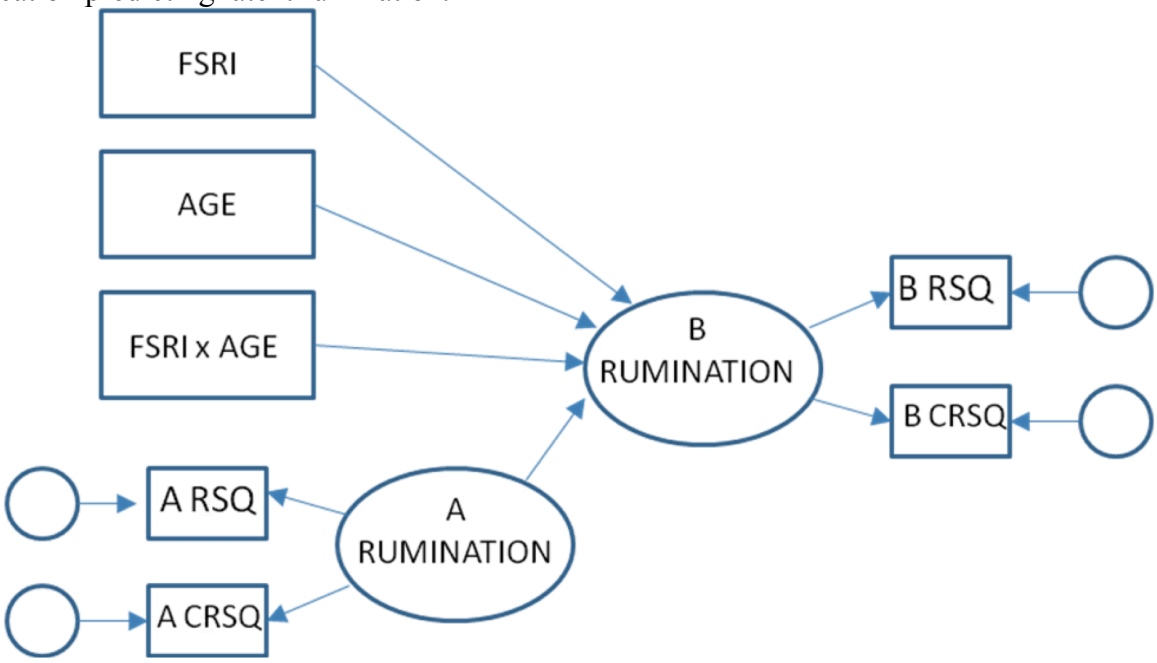


Note. FSRI = Female Sex Role Identity, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The model fit well (χ^2=1.6, df=2, TLI=1.0, CFI=1.0, RMSEA=0.0, 90% CI = 0.00-0.10). The interaction term was not significant, but an examination of the lower-order terms indicated significant positive main effects for both age (β=-0.71, SE=0.32, p=0.03) and FSRI (β=2.16, SE=0.48, p<0.01) predicting concurrent rumination, suggesting older students and more female-identified students were more likely to ruminate.

We then looked at the predictive nature of female sex role identification. First, we created a model using our composite FSRI, age, and a composite FSRI x age interaction to predict latent Wave B rumination, controlling for latent Wave A rumination (Figure 10).

Figure 10. Path diagram of age, female sex role identification, and age x female sex role identification predicting latent rumination.

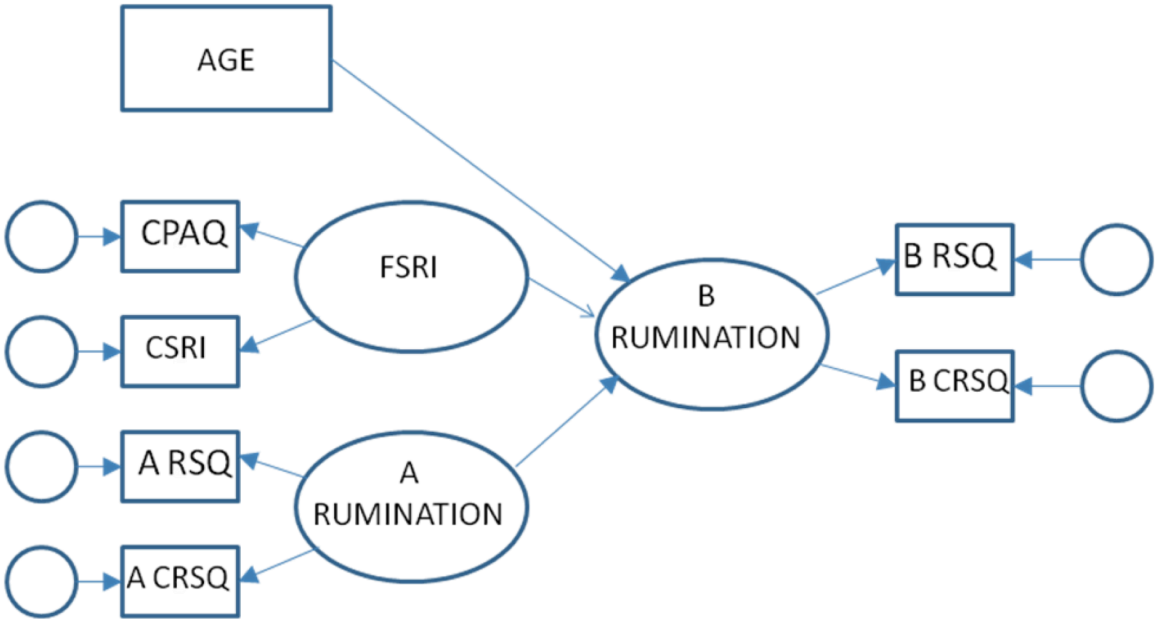


Note. FSRI = Female Sex Role Identity, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The model fit the data well (χ^2=6.4, df=5, TLI=1.0, CFI=1.0, RMSEA=0.03, 90% CI = 0.00-0.08). Again, the interaction term was not significant. Removing the interaction term from the model, we found a positive main effect for the age variable only, suggesting older students ruminate more over time when controlling for female role identification and prior levels of rumination (β=0.71, S.E.=0.27, *p*=0.01).

Next, we created a structural equation model including age and three latent constructs, Wave A FSRI, Wave A rumination, and Wave B rumination (Figure 11).

Figure 11. Path diagram of age and female sex role identification predicting latent rumination.



Note. FSRI = Female Sex Role Identity, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The model fit the data (χ^2=17.8, df=7, TLI=0.96, CFI=0.99, RMSEA=0.07, 90% CI = 0.03 - 0.10). There was a significant main effect for age predicting change in rumination, but FSRI was not a significant predictor of Wave B rumination when controlling for prior rumination and age. We re-ran the model using a multi-group analysis in which we compared boys and girls. Again, the FSRI variable was not significant for either sex.

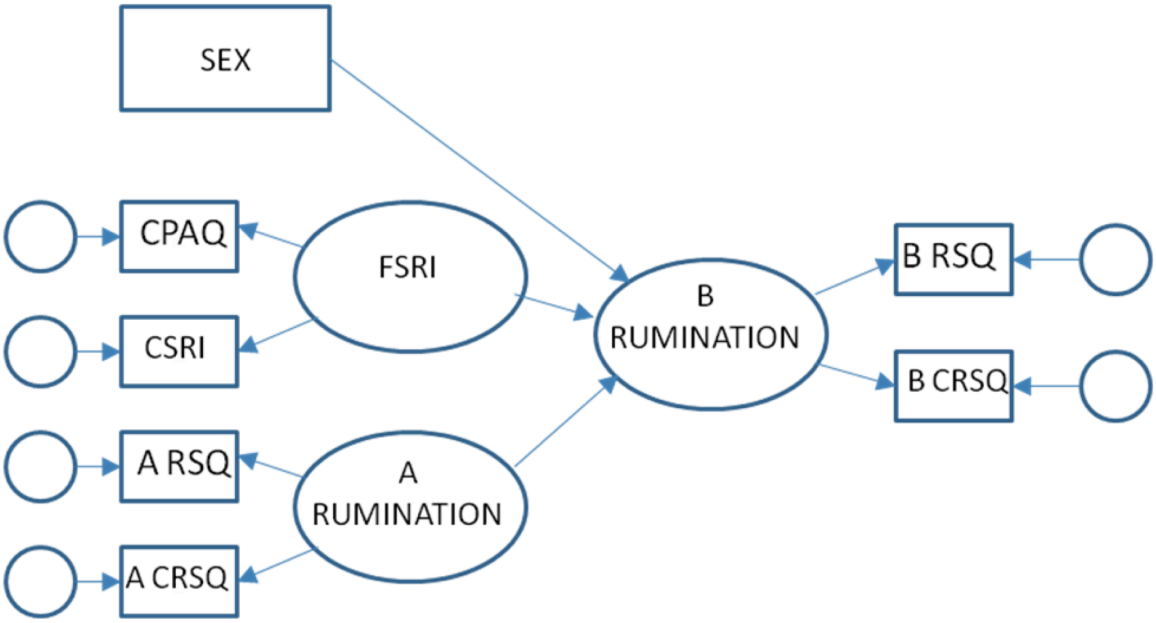
Sex Role and Rumination Effects on Depression

Our third research question has to do with the relation between female sex role identification, rumination, and depression. Specifically, we were interested in testing

whether FSRI mediates the relation between sex and rumination, and whether rumination mediates the role between female sex role identification and depression.

First, we examined a structural equation model predicting Wave B rumination from sex and FSRI, controlling for Wave A rumination (Figure 12).

Figure 12. Path diagram of sex and female sex role identification predicting latent rumination.

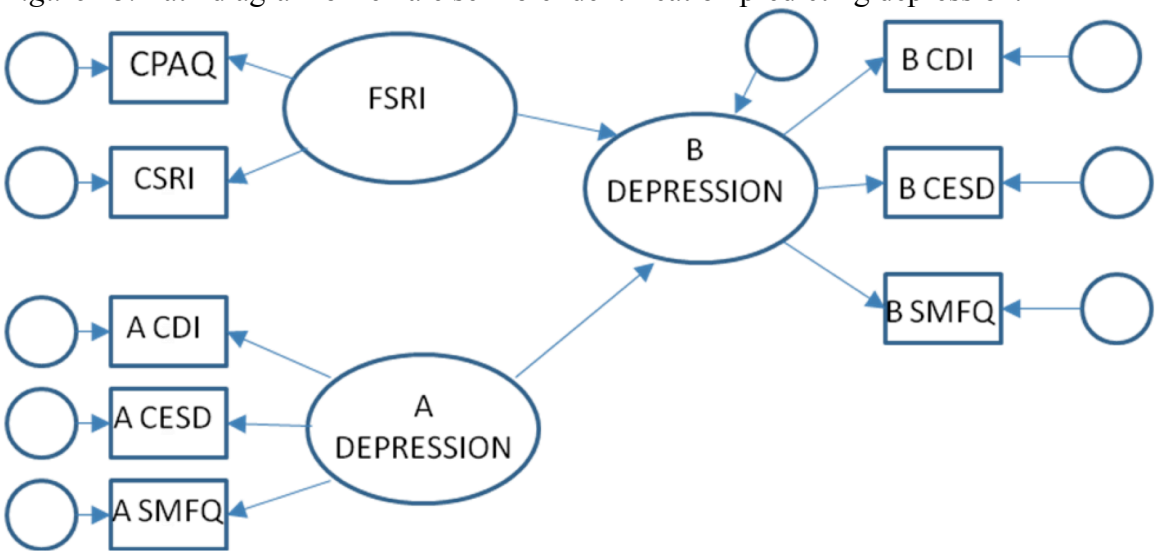


Note. FSRI = Female Sex Role Identity, RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The model fit the data well (χ^2=14.12, df=7, TLI=0.97, CFI=0.99, RMSEA=0.05, 90% CI = 0.00 - 0.10). Neither sex nor FSRI significantly predicted changes in rumination levels. Because the potential mediator (in this case, FSRI) did not have a significant, unique effect on rumination (a requirement for mediation), we concluded that FSRI does not mediate the sex → rumination relation.

Next, we looked at the relation between FSRI and depression. We created a model in which Wave A latent depression and FSRI predicted Wave B latent depression (Figure 13).

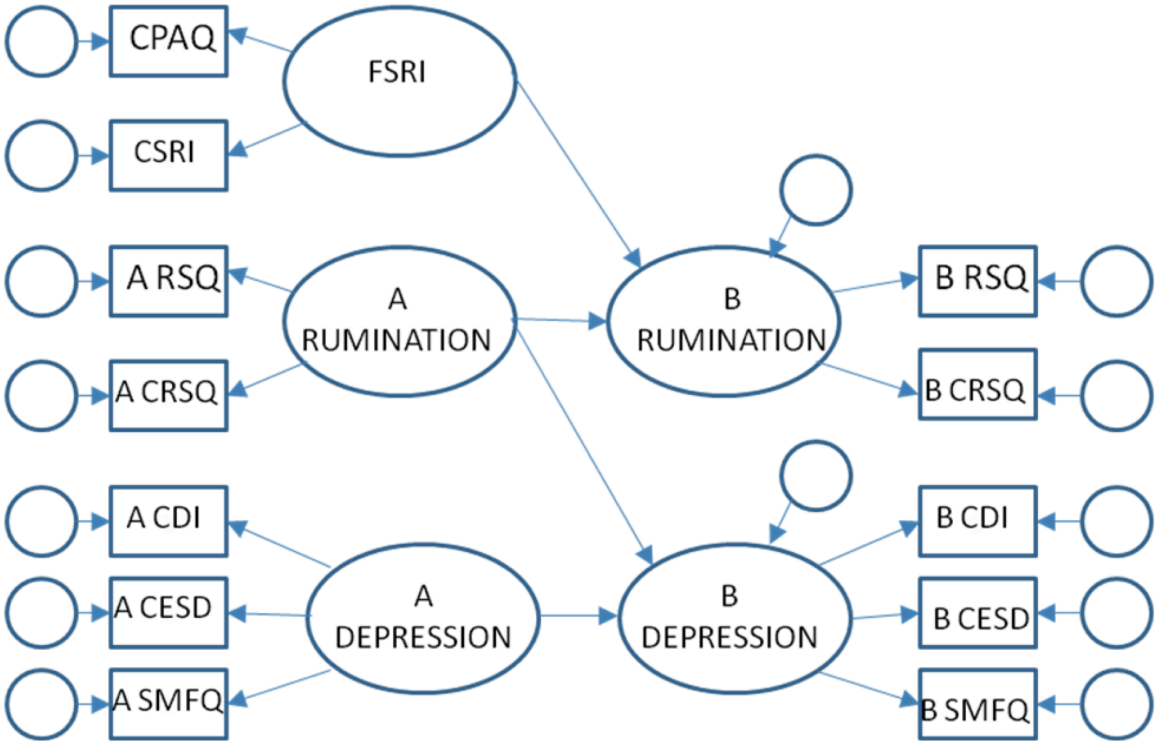
Figure 13. Path diagram of female sex role identification predicting depression.



Note. FSRI = Female Sex Role Identity, CSRI = Children's Sex Role Inventory, CPAQ = Children's Personality Attributes Questionnaire, CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

The data fit the model (χ^2=47.4, df=14, TLI=0.95, CFI=0.98, RMSEA=0.08, 90% CI = 0.06 - 0.11). FSRI significantly predicted Wave B depression while controlling for prior levels (β=0.12, S.E.=0.06, p=0.04). We then created a structural equation model to estimate whether rumination mediates the relation between FSRI and Wave B latent depression (Figure 14).

Figure 14. Path diagram of estimation of rumination mediating female sex role identification and depression.



Note. FSRI = Female Sex Role Identity, CSRI = Children's Sex Role Inventory, CPAQ = Children's Personality Attributes Questionnaire, CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

This data fit the model (χ^2=114.88, df=39, TLI=0.95, CFI=0.98, RMSEA=0.07, 90% CI = 0.06 - 0.09) and yielded four significant main effects (see Table 4).

Table 4. *Path estimates for boys and girls for a model of FSRI and rumination predicting depression*

Predictors	β	S.E.	*P*
A FSRI → B Rumination	0.40	0.16	0.01
A Rumination → B Depression	-0.12	0.06	0.03
A FSRI → B Depression	0.22	0.08	0.01
A Depression → B Rumination	0.57	0.20	<0.01

Note. FSRI = Female Sex Role Identification

We found Wave A FSRI predicted Wave B rumination, Wave A rumination predicted Wave B depression, Wave A FSRI predicted Wave B depression, and Wave A depression predicted Wave B rumination. Given these significant main effects, we next looked at whether rumination mediated the FSRI → depression relation. Using the method described earlier, we used path estimates and standard errors from Wave A FSRI to Wave B rumination and from Wave A rumination to Wave B depression to conduct a Sobel test. The Sobel test indicated that rumination does not significantly mediate the relation between rumination and depression. We then ran the model with two groups: boys and girls. The model continued to fit the data well (χ^2=167.25, df=78, TLI=0.94, CFI=0.97, RMSEA=0.06, 90% CI = 0.05 - 0.07). The path estimates for boys suggested that FSRI marginally predicted changes in Wave B rumination (β=0.39, SE=0.21, p=0.06) and that FSRI significantly predicted changes in depression over time (β=0.37, SE=0.11, p<0.01). Further, for boys, Wave A depression significantly predicts changes in Wave B rumination (β=0.83, SE=0.27, p<0.01). None of these relations, nor any other paths in the model, were significant for girls.

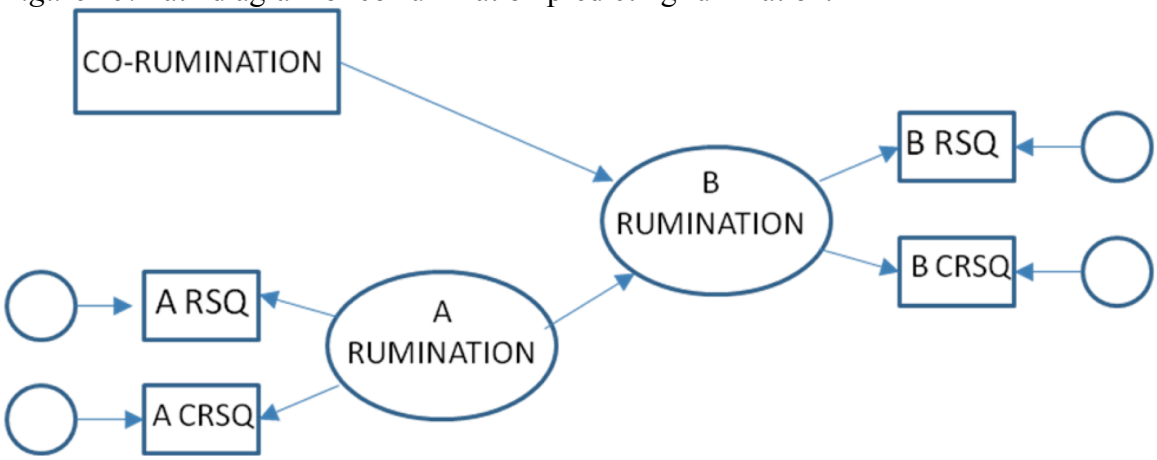
Next, we replaced rumination with co-rumination in the model above. This model also fit the data well (χ^2=53.78, df=24, TLI=0.97, CFI=0.99, RMSEA=0.06, 90% CI = 0.04-0.08). Using the whole sample, we found two significant paths: Wave A FSRI predicting Wave B depression (β=0.13, S.E.=0.07, p=0.05), and Wave A FSRI predicting Wave B co-rumination (β=0.93, S.E.=0.43, p=0.03). Next, we tested a two-group model (using boys and girls as our groups). The model continued to fit well (χ^2=87.7, df=52, TLI=0.96, CFI=0.98, RMSEA=0.05, 90% CI = 0.03-0.06). For boys, both Wave A FSRI

and Wave A co-rumination significantly predicted changes in depression. For girls, these paths were non-significant.

Co-rumination and Rumination

Our fourth research question concerns the relation between rumination and co-rumination. We used a structural equation model to look at whether co-rumination can predict changes in a latent rumination variable above and beyond prior levels of rumination (Figure 15).

Figure 15. Path diagram of co-rumination predicting rumination.

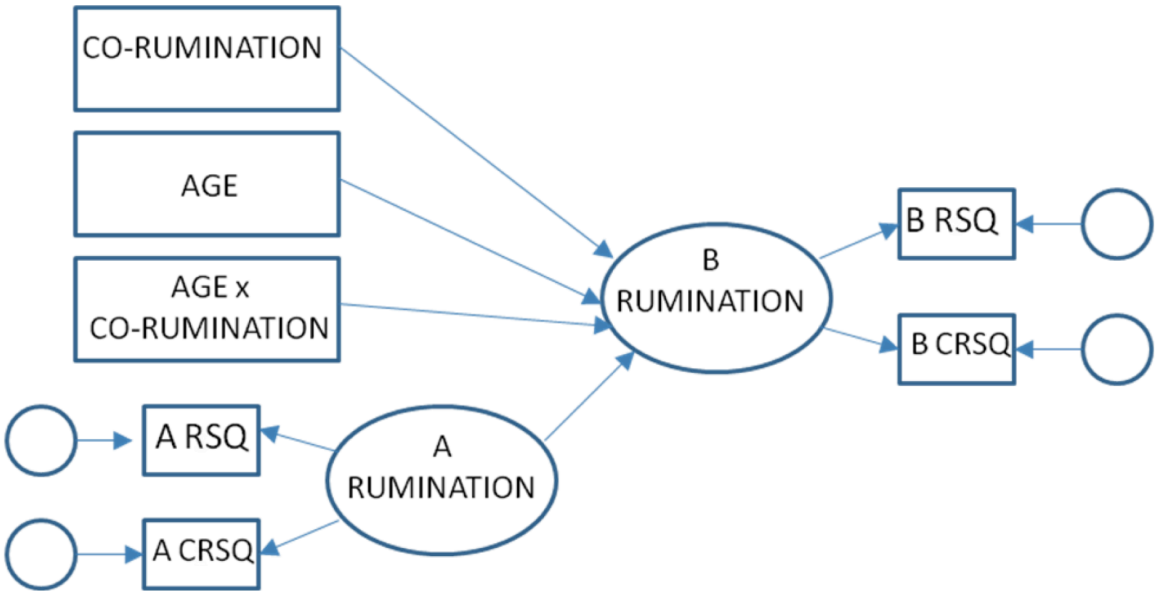


Note. RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The model fit the data well (χ^2=0.05, df=1, TLI=1.0, CFI=1.0, RMSEA=0.00, 90% CI = 0.00-0.08). Wave A co-rumination significantly predicted changes in Wave B rumination while controlling for prior levels of rumination (β=0.06, SE=0.02, p<0.01).

To test developmental changes in this relation we added a manifest age variable to the model, as well as an age x co-rumination interaction term (Figure 16).

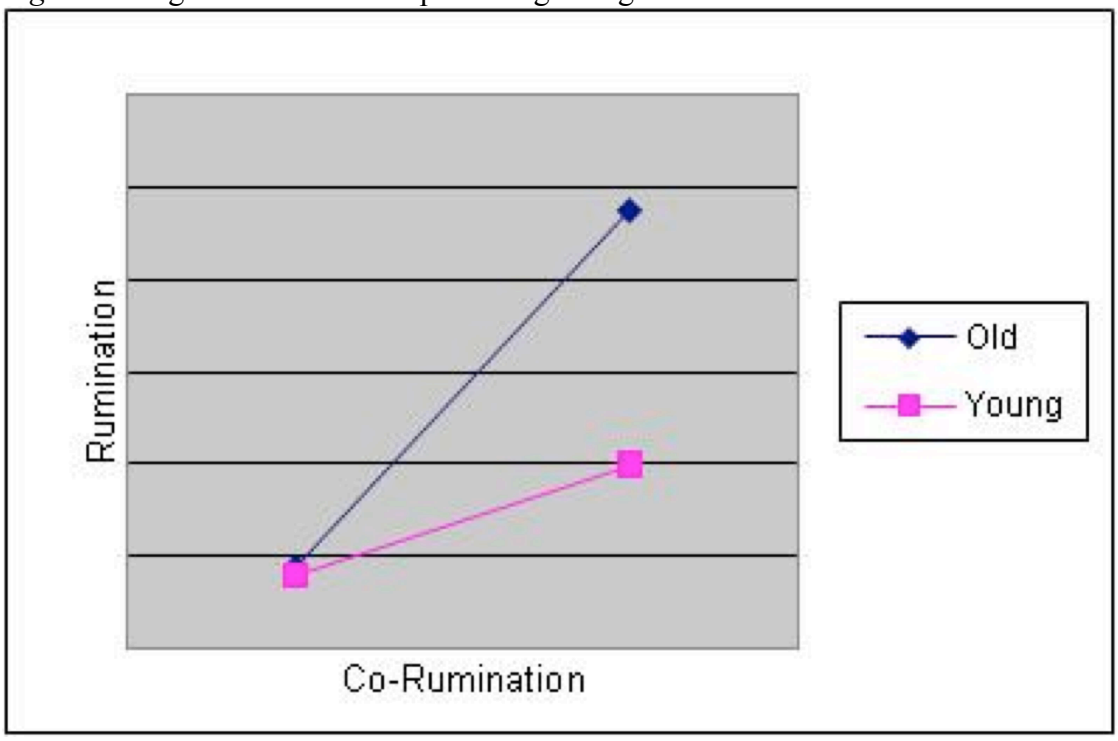
Figure 16. Path diagram of co-rumination, age, and age x co-rumination predicting rumination.



Note. RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale.

The new model continued to fit the data well (χ^2=8.9, df=5, TLI=0.99, CFI=1.0, RMSEA=0.05, 90% CI = 0.00-0.10). The interaction term was marginally significant (β=0.02, SE=0.01, p=0.07). We graphed the interaction and found that older students endorsing co-ruminative tendencies were indicating greater levels of rumination (Figure 17).

Figure 17. Age x co-rumination predicting changes in rumination.

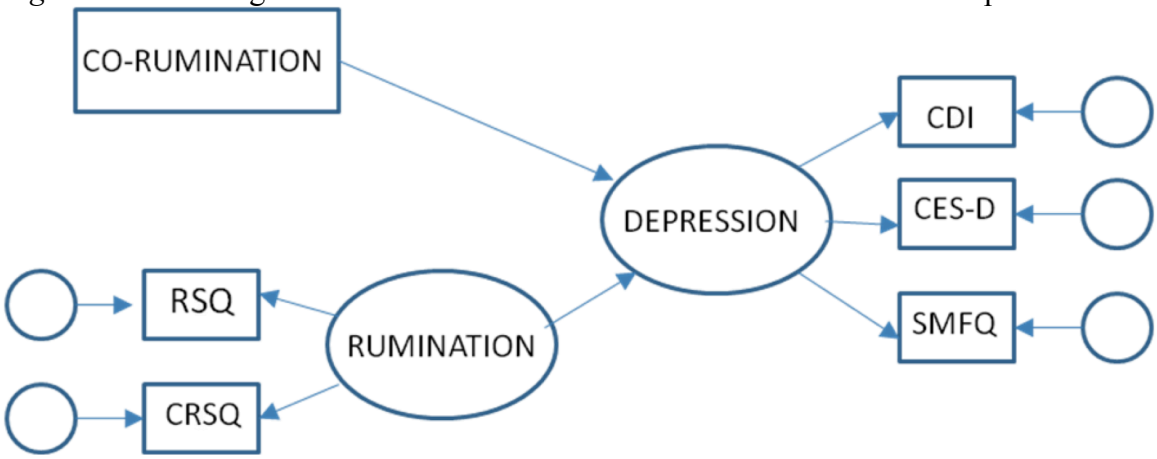


We also re-ran this analysis using sex and sex x co-rumination variables as predictors (removing the age and age x co-rumination terms). In this analysis neither sex nor the sex x co-rumination terms were significant predictors of change in rumination.

Co-rumination and Rumination Effects on Depression

The final research question examines whether rumination mediates the relation between co-rumination and depression. First, we sought to replicate Rose's (2002) finding that controlling for rumination eliminates the cross-sectional relation between co-rumination and depression. We created a structural equation model in which Wave A co-rumination and Wave A latent rumination were associated with Wave A latent depression (Figure 18).

Figure 18. Path diagram of co-rumination and rumination associated with depression.

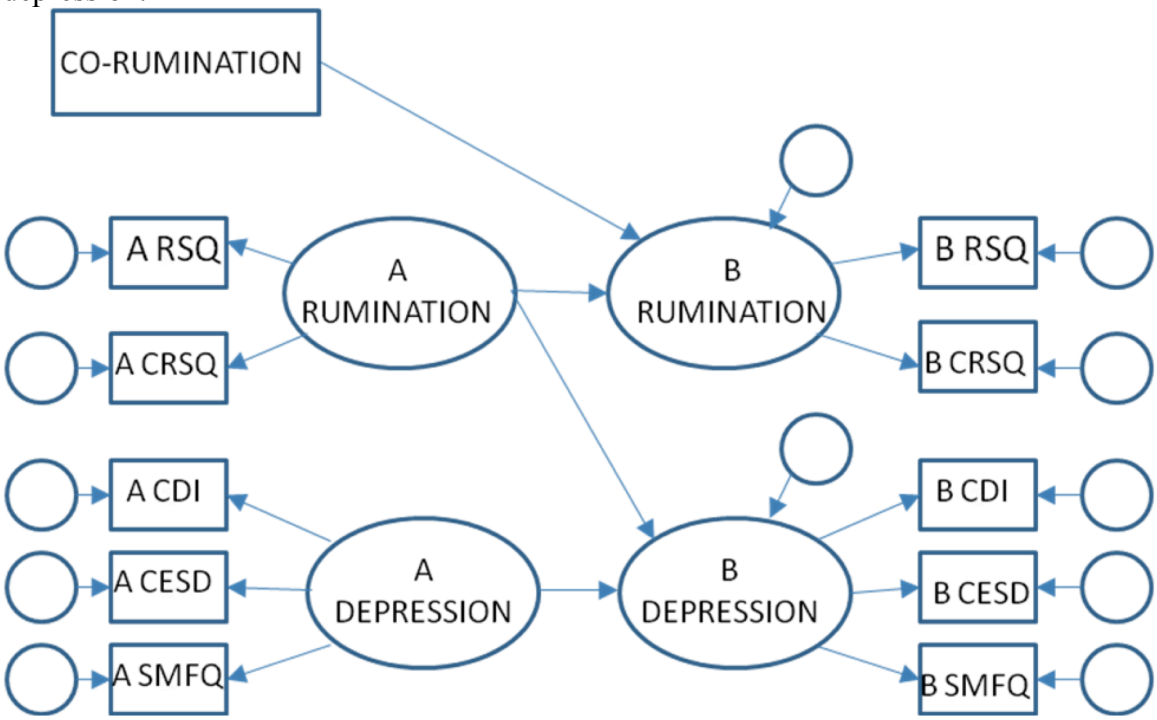


Note. RSQ = Response Styles Questionnaire – Rumination Scale, CRSQ = Children's Response Styles Questionnaire – Rumination Scale, CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

The data fit the model well (χ^2=12.6, df=7, TLI=0.99, CFI=1.0, RMSEA=0.05, 90% CI = 0.00-0.09). In the full model, the relation between co-rumination and depression was non-significant. When we removed rumination from the model, co-rumination was a significant predictor of depression (β=0.08, SE=0.02, p<0.01).

To expand on these analyses, we examined the relation between co-rumination, rumination and depression using a longitudinal latent variable model (Figure 19).

Figure 19. Path diagram of estimation of rumination mediating co-rumination and depression.



Note. CSRI = Children's Sex Role Inventory, CPAQ = Children's Personality Attributes Questionnaire, CDI = Children's Depression Inventory, CES-D = Central for Epidemiological Studies – Depression, SMFQ = Short Mood and Feelings Questionnaire.

This model fit the data well (χ^2=91.46, df=36, TLI=0.96, CFI=0.98, RMSEA=0.07, 90% CI = 0.05 - 0.08). Wave A co-rumination significantly predicted Wave B Rumination (β=0.04, SE=0.02, p=0.01); however, Wave A rumination did not significantly predict Wave B Depression scores after controlling for prior levels of depression. Nevertheless, we tested whether rumination mediated the relation between co-rumination and depression by conducting Sobel's test. The effect was non-significant. We also looked at other relations in the model and found that Wave A depression significantly predicted Wave B rumination, controlling for prior levels of rumination.

Finally, we divided the sample into boys and girls and ran the model using these two groups. The model continued to fit the data well (χ^2=148.38, df=72, TLI=0.94, CFI=0.97, RMSEA=0.06, 90% CI = 0.04 - 0.07). For boys, Wave A depression symptoms significantly predicted Wave B rumination, however no other path was significant. For girls, all paths were non-significant. The Wave A correlations between rumination and depression for girls remained very high (r = 0.83); however the rumination and co-rumination correlation for girls was small (r = 0.27) while it was moderate in boys (r = 0.48). The correlation between co-rumination and depression was small for both boys and girls (r's = 0.23 and 0.27, respectively).

CHAPTER IV

DISCUSSION

Our study sought to inform further our understanding of the relation between sex role identification, rumination, co-rumination, and depression. Each of these variables has been previously linked to the onset of depression, and yet, to our knowledge, no one has looked at these relations within a longitudinal, latent model. Our results suggest four important findings that illuminate these relations and further our understanding of adolescent depression. First, we found that none of Nolen-Hoeksema and Girgus' (1994) models accurately fit the developmental trajectory of rumination, suggesting the need to conceptualize another, alternative, model for describing these relations in children. Second, our study failed to find support for the gender intensification hypothesis, adding to the preponderance of research which has not found evidence for this theory. We did, however, find that female sex role identification predicted changes in depression when controlling for rumination. Third, we found that co-rumination drove changes in rumination, and that depression predicted changes in rumination. Finally, we discuss these changes in the context of explaining the emergent gender difference in depression.

Rumination as a Risk Factor in the Development of Depression

Our first set of findings has to do with the nature of rumination as a risk variable to explain the emergent gender difference in rates of depression during adolescence.

Nolen-Hoeksema and Girgus's (1994) models lay out three potential developmental models whereby a risk variable might cause sex differences to emerge. The authors suggested that their Model 3 shows the most support across risk factors; however, their own paper presents mixed evidence regarding which model best represents ruminative coping. This perplexing pattern of support was mirrored in our own data. Only one finding was consistently supported at both waves of data: girls endorsed higher levels of rumination than did boys. Evidence of developmental changes in rumination was not found across waves. There was no significant main effect for rumination predicting depression, and the age x sex interaction variable was significant in predicting rumination in one wave of data. These findings do not yield consistent support for rumination as an example of Model 1 or Model 2.

Our own findings also suggest only partial support for Model 3, and differ from Driscoll and colleague's (2009) report in several important ways. First, we found inconsistent support for the notion that the causes of depression are the same for boys and girls (the rumination x sex interaction was non-significant). Our findings did replicate an age x sex interaction effect on rumination cross-sectionally; such evidence emerged only at one wave. When we looked at the full, cross-sectional diathesis-stress model using rumination, age, and total stressful life events, we did not find a significant three-way interaction. Interestingly, Driscoll et al.'s model did not include age. Removing age from our model we still failed to find a significant rumination x life events interaction. When we divided the life events scale into subparts, we found support for rumination x age interacting with both interpersonal events and achievement events to significantly predict concurrent depression; however this finding was not replicated in the other wave

of data. Looking at a longitudinal model, which included controlling for initial levels of depression, we failed to find any three-way or rumination x life events interactions that could predict change in depression scores over time. In that model, the only significant predictors of Wave B depression were age and age x life events.

These findings begin to raise questions about the role of rumination in predicting the onset of depression during adolescence. We had some success in replicating previous research on the diathesis-stress model using cross-sectional models, but when we used a longitudinal model, which would inform our understanding of temporal precedence and causality, all significant results became non-significant. These findings provide initial evidence that rumination may not act as a diathesis in the prediction of depression during adolescence.

Gender Intensification as a Predictor of Pathology

Our second finding has to do with the relation between gender role identification, rumination, and depression. Of note, our results yielded non-significant relation between age and female sex-role in our female participants. Although these null findings do not disprove the gender intensification hypothesis, they add to other researchers' findings that also failed to find support for this process. Priess et al. (2009) suggested that generational effects may be, at least in part, why Hill and Lynch's (1983) theory has not received support in recent studies. Priess and colleagues (2009) hypothesized that modern-day adolescents may not feel the same social pressure to live up to "feminine ideals" as did early generations. It is also important to note that most measures of sex

role (including those used in this study) were created decades ago and may not tap attributes of modern feminine ideal. The field would benefit from further empirical examination of the changing role of culture, sex, and sex-role.

More research is also needed to understand the complicated relation of sex-role to negative cognitive, social and affective variables. We found a significant correlation between both manifest and latent female sex role identification, rumination, and co-rumination. Our test of female sex role identification mediating the role of sex and rumination, however, did not yield significant results, contrary to the Cox et al. (2010) finding that female sex role mediates the sex – rumination relation over a four year period. Looking at longitudinal models we further failed to find a prospective relation between female sex role and rumination. Replicating Priess et al., 2009 findings, we did not find a significant correlation between female sex role and depression. Those authors suggested that the female sex role may be linked with interpersonal variables that could have both positive outcomes (protection from negative affect) and negative outcomes. We were able to test these relations using an interpersonal variable (co-rumination). We found a significant relation between female sex role identification and later levels of depression when controlling for co-rumination and prior levels of depression. Interestingly, this path remained significant when we controlled for rumination as well, suggesting that female sex role identification is predictive of negative outcomes above and beyond certain negative cognitive correlates. When we divided the sample into two groups (boys and girls) the path remained significant for boys only. These findings underscore the need to re-examine sex role as an indicator of pathology with respect to

the relation between gender and various cognitive and social risk factors for the development of depression.

The Role of Co-Rumination in Predicting Depression

Our third key finding was the temporal relation between rumination, co-rumination, and depressive symptoms. Our study supported and extended several of Rose's (2002) findings providing evidence of significant cross-sectional and longitudinal significant relations between these variables. Most importantly, co-rumination levels significantly predicted changes in rumination over the course of the study. When we tested Rose's (2002) mediational model longitudinally, in order to statistically control for prior levels of rumination and depression, we did not replicate her findings. This failure to replicate a cross-sectional mediational model using a longitudinal design highlights that, prior to the current study, the temporal relation between these variables was not well understood. We found that both co-rumination and depression were driving changes in rumination, suggesting both a social and affective mechanism in the onset of ruminative tendencies. These relations dropped to non-significance when we examined them for girls, and only depression significantly predicted changes in rumination for boys.

Each of these findings suggests a surprising temporal relation between rumination and depression. Contrary to Response Style Theory (Nolen-Hoeksema, 1987, 1991), our data indicated that, for adolescent boys, depression drives changes in levels of rumination. This path is non-significant for girls. For girls, rumination does not significantly predict changes in depression, maybe due in part to the high

contemporaneous correlation between the two variables. Our data indicated that this relation is significantly stronger for girls than boys, suggesting that ruminative tendencies and depressive symptoms are almost indistinguishable for adolescent females. Further, as girls grow older, individual differences in levels of depressive symptoms becomes considerably greater. Future study should examine if indeed it is the affective, rather than cognitive, experience of depression that begins to differentiate for girls over development. For males, levels of rumination decrease over development. For those boys who continue to ruminate into adolescence, however, rumination represents a distinct and toxic construct. These findings indicate that measures of rumination may be particularly useful for predicting onset of depression for boys, but not girls. Instead, for girls, the large variance in depression at older ages and the very large correlation between rumination and depression, suggests that rumination is not a helpful predictor of depression, but rather an important concomitant part of the depressive experience. We propose that these findings suggest that other constructs may be more useful indicators of the onset of depression for adolescent girls.

The original Response Style Theory (Nolen-Hoeksema, 1987, 1991) hypothesized that rumination could explain both onset and maintenance of depression, as well as the gender difference in rates of the disorder. Our own findings bring into question the temporal relations between these variables and, more practically, the utility of using rumination to predict onset of depressive symptoms in females during adolescence. Instead, this study suggests that, for adolescent girls, rumination may be a key facet of the experience of depression. For boys, it appears that depression is in fact driving changes in rumination, rather than the other direction. These results suggest a complicated

interplay between rumination and depressive symptoms during adolescence and indicate that the relation is complex and still not well understood.

Limitations and Future Directions

Several findings of our study suggest significant changes to the current understanding of the relation between sex-role, rumination, co-rumination, and depression. Given our surprising results, follow-up studies are needed to replicate and clarify the causal relations between these variables. Future research would benefit from looking at different components of rumination, specifically brooding and reflection constructs, as suggested by Treynor, Gonzalez, and Nolen-Hoeksema (2003). Burwell and Shirk (2007) found brooding, but not reflective, symptoms of rumination, predicted increases in depressive symptoms. Our own study used an abbreviated version of the RSQ, making it impossible to analyze brooding alone.

A second limitation of the study is the lack of clinically significant levels of pathology in our participants. We note that correlations between symptoms and dimensional depression are typically consistent with correlations observed between symptoms and depressive disorder (Georgiades, Lewinsohn, Monroe, & Seeley, 2006; Kessler, Zhao, Blazer, & Swartz, 1997); however, including greater numbers of students with MDD may have allowed us to separate the cognitive components (e.g. rumination) from the affective components of the disorder. Beevers, Rohde, Stice, and Nolen-Hoeksema (2007) examined the level of change in ruminative tendencies in a large group of adolescent females over a five-year time line. They found that rumination levels

remained low and stable among participants who were never depression, but became elevated in groups of girls directly before experiencing a MDD, and jumped significantly during the episode, before returning to baseline during remittance of the MDD. Although these findings continue to suggest rumination is only marginally useful in the prediction of depression during adolescence, they raise interesting questions regarding maintenance of depression symptoms and risk for future MDD episodes.

Third, future research would benefit from looking at these constructs across a broader range of ages. Several researchers pinpoint the rise in rates of depression as taking place between 12 and 15 (see Merikangas & Knight, 2009, for review). Our own study had fewer participants at the older end of this age range, which may explain our nonsignificant developmental differences on key variables. Including older participants in future studies could expand our understanding of the developmental effects of social and affective constructs on the onset of depression.

Our findings have obvious implications for clinical work. Specifically, our data suggests an important link between cultural and social variables and depressive cognitive styles, particularly for boys. For boys, the importance of both sex role and co-rumination in predicting changes in depression, and conversely the lack of predictive power of rumination, suggest interventions focused on changing socio-cultural norms during adolescence might have a significant impact on preventing the onset of depression than addressing. For girls, however, the picture is more complicated. Rumination, as we currently conceptualize it, is nearly inextricable from the experience of adolescent depression. This suggests an opportunity to help alleviate depression in girls by focusing on changing the ruminative component of depression. By broadening our understanding

of the cognitive components of depression, and the social and personality correlates, we can better create therapies that target these toxic constructs.

APPENDIX

A. The Children's Sex Role Test (CSRT)

B. The Children's Sex Role Inventory (CSRI)

C. The Children's Personal Attributes Questionnaire (CPAQ)

D. The Co-rumination Questionnaire (CRQ)

E. The Response Style Questionnaire (RSQ)

F. The Children's Response Styles Scale (CRSS)

G. The Children's Response Styles Questionnaire (CRSQ)

H. The Children's Depression Inventory (CDI)

I. The Center for Epidemiological Studies – Depression Scale (CES-D)

J. The Short Mood and Feelings Questionnaire (SMFQ)

K. The Junior High Life Experiences Survey (JHLES)

Appendix A. Children's Sex Role Test

Read each statement and circle the number that best describes how well the sentence fits for you.

		Never	**Sometimes**	**Usually**	**Always**
1.	Are you a smart person?	1	2	3	4
2.	Are you a brave person?	1	2	3	4
3.	Are you a gentle person?	1	2	3	4
4.	Are you a kind person?	1	2	3	4
5.	Are you a bossy person?	1	2	3	4
6.	Are you a tidy person?	1	2	3	4
7.	Are you a lucky person?	1	2	3	4
8.	Are you a quick person?	1	2	3	4
9.	Are you a weak person?	1	2	3	4
10.	Are you an angry person?	1	2	3	4
11.	Are you a tough person?	1	2	3	4
12.	Are you a polite person?	1	2	3	4
13.	Are you a playful person?	1	2	3	4
14.	Are you a bold person?	1	2	3	4
15.	Are you a sweet person?	1	2	3	4
16.	Are you a bright person?	1	2	3	4
17.	Are you a dirty person?	1	2	3	4
18.	Are you a shy person?	1	2	3	4
19.	Are you a good person?	1	2	3	4
20.	Are you a strong person?	1	2	3	4
21.	Are you a soft person?	1	2	3	4
22.	Are you a sad person?	1	2	3	4
23.	Are you like other boys?	1	2	3	4
24.	Are you like other girls?	1	2	3	4

Appendix B. Children's Sex Role Inventory

Please read each question and rate how well it describes you on a scale of 1 – 4, as indicated below.

1 = Not At All True of Me
2 = A Little True of Me
3 = Mostly True of Me
4 = Very True of Me

1.	I am an honest person	1	2	3	4
2.	I care about what happens to others	1	2	3	4
3.	It's easy for me to make up my mind about things	1	2	3	4
4.	I think I'm better than most of the other people I know	1	2	3	4
5.	When someone's feelings have been hurt, I try to make them feel better	1	2	3	4
6.	I can take care of myself	1	2	3	4
7.	People like me	1	2	3	4
8.	I usually speak softly	1	2	3	4
9.	I can control a lot of the kids in my class	1	2	3	4
10.	I am a serious person	1	2	3	4
11.	I am a warm person	1	2	3	4
12.	I like to do things that boys and men do	1	2	3	4
13.	I have many friends	1	2	3	4
14.	I am a kind and caring person	1	2	3	4
15.	When a decision has to be made, it's easy for me to take a stand	1	2	3	4
16.	I usually get things done on time	1	2	3	4
17.	It's easy for people to get me to believe what they tell me	1	2	3	4
18.	I get pretty angry if someone gets in my way	1	2	3	4
19.	It's easy for me to fit into new places	1	2	3	4
20.	Sometimes I like to do things that younger kids do	1	2	3	4
21.	I am a leader among my friends	1	2	3	4
22.	I'm always losing things	1	2	3	4
23.	I don't like to say "bad" words or swear	1	2	3	4
24.	I'd rather do things my own way than take directions from others	1	2	3	4
25.	I am careful not to say things that will hurt someone's feelings	1	2	3	4
26.	I like babies and small children a lot.	1	2	3	4
27.	When I play games, I really like to win	1	2	3	4
28.	I like to do things that other people do	1	2	3	4
29.	I am a gentle person	1	2	3	4
30.	I'm willing to work hard to get what I want	1	2	3	4
31.	I like to help others	1	2	3	4

32.	When there's a disagreement, I usually give in and let others have their way	1	2	3	4
33.	I am sure of my abilities	1	2	3	4
34.	I am a mood person	1	2	3	4
35.	I am a cheerful person	1	2	3	4
36.	I stand up for what I believe in	1	2	3	4
37.	I'm the kind of person others can depend on	1	2	3	4
38.	I feel shy around new people	1	2	3	4
39.	I would rather do things on my own than ask others for help	1	2	3	4
40.	I like acting in front of other people	1	2	3	4
41.	When I like someone, I do nice things for them to show them how I feel	1	2	3	4
42.	I am good at sports	1	2	3	4
43.	I am a happy person	1	2	3	4
44.	I feel good when people say nice things about me	1	2	3	4
45.	It's easy for me to tell people what I think, even when I know they will probably disagree with me	1	2	3	4
46.	I never know what I'm going to do from one minute to the next	1	2	3	4
47.	I am faithful to my friends	1	2	3	4
48.	I make a strong impression most people I meet	1	2	3	4
49.	I always do what I say I will do	1	2	3	4
50.	I like to do things that girls and women do	1	2	3	4
51.	I can get people to do what I want them to do most of the time	1	2	3	4
52.	I feel bad when other people have something that I don't have	1	2	3	4
53.	It makes me feel bad when someone else is feeling bad	1	2	3	4
54.	I like to think about and solve problems	1	2	3	4
55.	I try to tell the truth	1	2	3	4
56.	I can usually tell when someone needs help	1	2	3	4
57.	I am good at taking charge of things	1	2	3	4
58.	I like to keep secrets	1	2	3	4
59.	I'm good at understanding other people's problems	1	2	3	4
60.	I am willing to take risks.	1	2	3	4

Appendix C. Children's Personal Attributes Questionnaire

Think about how you have been feeling for this last week. For each sentence, circle how often you have felt this way **for the past week.**

How often have these things happened?

		Not at all True of Me	**A Little True of Me**	**Mostly True of Me**	**Very True of Me**
1.	It is hard for me to make up my mind about things.	1	2	3	4
2.	My artwork and my ideas are creative and original.	1	2	3	4
3.	It is hard to hurt my feelings.	1	2	3	4
4.	In most ways, I am better than most of the other kids my age.	1	2	3	4
5.	I do *not* help other people very much.	1	2	3	4
6.	I am often very pushy with other people.	1	2	3	4
7.	I would rather do things for myself than ask grown-ups and other kids for help.	1	2	3	4
8.	I am a very considerate person.	1	2	3	4
9.	I am a quiet person.	1	2	3	4
10.	When things get tough, I almost always keep going.	1	2	3	4
11.	I am kind to other people almost all of the time.	1	2	3	4
12.	I cry when things upset me.	1	2	3	4
13.	I give up easily.	1	2	3	4
14.	I try to do everything I can for the people I care about.	1	2	3	4
15.	I am *not* good at fixing things or working with tools.	1	2	3	4
16.	I am often the leader among my friends.	1	2	3	4
17.	I like art and music a lot.	1	2	3	4

18.	I almost always stand up for what I believe in.	1	2	3	4
19.	I am a gentle person.	1	2	3	4
20.	It is easy for people to make me change my mind.	1	2	3	4
21.	I like younger kids and babies a lot.	1	2	3	4

Appendix D. Co-rumination Questionnaire

When We Talk About Our Problems

Think about the way you usually are with your best or closest friends who are women if you are a woman or who are men if you are a man. Circle the number for each of the following statements that best describes you.

1. We spend most of our time together talking about problems that my friend or I have.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

2. If one of us has a problem, we will talk about the problem rather than talking about something else or doing something else.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

3. After my friend tells me about a problem, I always try to get my friend to talk more about it later.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

4. When I have a problem, my friend always tries really hard to keep me talking about it.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

5. When one of us has a problem, we talk to each other about it for a long time.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

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 together.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

7. When my friend has a problem, I always try to get my friend to tell me every detail about what happened.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

8. After I've told my friend about a problem, my friend always tries to get me to talk more about it later.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

9. We talk about problems that my friend or I are having almost every time we see each other.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

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.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

11. When my friend has a problem, I always try really hard to keep my friend talking about it.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

12. When I have a problem, my friend always tries to get me to tell every detail about what happened.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

When we talk about a problem that one of us has...

1. ...we will keep talking even after we both know all of the details about what happened.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

2. ...we talk for a long time trying to figure out all of the different reasons why the problem might have happened.

1	2	3	4	5

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

3. ...we try to figure out every one of the bad things that might happen because of this problem.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

4. ...we spend a lot of time trying to figure out parts of the problem that we can't understand.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

When we talk about a problem that one of us has...

5. ...we talk a lot about how bad the person with the problem feels.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

6. ...we'll talk about every part of the problem over and over.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

7. ...we talk a lot about the problem in order to understand why it happened.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

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

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

9. ...we talk a lot about parts of the problem that don't make sense to us.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

10. ...we talk for a long time about how upset it has made one of us with the problem.

1	2	3	4	5

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

11. ...we usually talk about that problem every day even if nothing new has happened.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

12. ...we talk about all of the reasons why the problem might have happened.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

13. ...we spend a lot of time talking about what bad things are going to happen because of the problem.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

When we talk about a problem that one of us has...

14. ...we try to figure out everything about the problem, even if there are parts that we may never understand.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

15. ...we spend a long time talking about how sad or mad the person with the problem feels.

1	2	3	4	5
Not at all true	A little true	Somewhat true	Mostly true	Really true

Appendix E. Response Style Questionnaire
Please read each statement and rate how often you do these things when you are feeling sad, using the scale provided.

How often do you...

	Almost Never	.....		Almost Always
1. Think about how alone you feel.	1	2	3	4
2. Think "I won't be able to do my job/work because I feel so badly."	1	2	3	4
3. Thinking about your feelings of fatigue and achiness.	1	2	3	4
4. Think about how hard it is to concentrate.	1	2	3	4
5. Try to find something positive in the situation or something you learned.	1	2	3	4
6. Think "I'm going to do something to make myself feel better."	1	2	3	4
7. Help someone else with something in order to distract yourself.	1	2	3	4
8. Think about how passive and unmotivated you feel.	1	2	3	4
9. Remind yourself that these feelings won't last.	1	2	3	4
10. Think about how you don't seem to feel anything anymore.	1	2	3	4
11. Think "Why can't I get going?"	1	2	3	4
12. Go to a favorite place to get your mind off your feelings.	1	2	3	4
13. Go away by yourself and think about why you feel this way.	1	2	3	4
14. Think "I'll concentrate on something other than how I feel."	1	2	3	4
15. Do something that has made you feel better in the past.	1	2	3	4

16. Think about a recent situation, wishing it had gone better.	1	2	3	4
17. Think "I'm going to go out and have some fun."	1	2	3	4
18. Think about how sad you feel.	1	2	3	4
19. Think about all your shortcomings, faults, mistakes.	1	2	3	4
20. Do something you enjoy.	1	2	3	4
21. Think about how you don't feel up to doing anything.	1	2	3	4
22. Do something fun with a friend.	1	2	3	4
23. Analyze your personality to try and understand why you are depressed.	1	2	3	4
24. Go someplace alone to think about your feelings.	1	2	3	4
25. Think about how angry you are with yourself.	1	2	3	4
26. Listen to sad music.	1	2	3	4
27. Isolate yourself and think about the reasons you feel sad.	1	2	3	4

Appendix F. Children's Response Styles Scale

Please tell us how often you do each of the following things by circling a number from 0 to 10 where 0 represents "never" and 10 represents "always". When you are feeling sad, how often do you…

		NEVER ----------ALWAYS										
1.	I think back to other times I felt this way.	0	1	2	3	4	5	6	7	8	9	10
2.	I think about how I should have done something different.	0	1	2	3	4	5	6	7	8	9	10
3.	I think about something I did a little while ago that was a lot of fun.	0	1	2	3	4	5	6	7	8	9	10
4.	I go away by myself and think about why I feel this way.	0	1	2	3	4	5	6	7	8	9	10
5.	I do something I really like to do.	0	1	2	3	4	5	6	7	8	9	10
6.	I think, "I'll concentrate on something other than how I feel."	0	1	2	3	4	5	6	7	8	9	10
7.	I go someplace alone to think about my feelings.	0	1	2	3	4	5	6	7	8	9	10
8.	I think, "Why can't I stop feeling this way."	0	1	2	3	4	5	6	7	8	9	10
9.	I think, "I'm going to do something to make myself feel better."	0	1	2	3	4	5	6	7	8	9	10
10.	I do something that has made me feel better in my past.	0	1	2	3	4	5	6	7	8	9	10
11.	I think about other times things didn't go the way I wanted them to.	0	1	2	3	4	5	6	7	8	9	10
12.	I think about fun things.	0	1	2	3	4	5	6	7	8	9	10
13.	I think about what made me feel like this.	0	1	2	3	4	5	6	7	8	9	10
14.	I concentrate on something else that makes me happier.	0	1	2	3	4	5	6	7	8	9	10
15.	I try to take my mind off my feelings by doing something I like.	0	1	2	3	4	5	6	7	8	9	10
16.	I replay in my head what happened.	0	1	2	3	4	5	6	7	8	9	10
17.	I think, "I'm going to go out and have some fun."	0	1	2	3	4	5	6	7	8	9	10
18.	I think about a time when I was feeling much happier.	0	1	2	3	4	5	6	7	8	9	10
19.	I think about my feelings.	0	1	2	3	4	5	6	7	8	9	10
20.	I think about something that just	0	1	2	3	4	5	6	7	8	9	10

	happened, wishing it had gone better.	

Appendix G. Children's Response Styles Questionnaire

We are interested in what you are like. The following items ask you questions about how you feel. When people feel sad, they do and think different things. What about you – what do you do and think when you are sad? For each question, pleased indicate what you usually do, not what you think you should do.

		Almost none of the time	**Some of the time**	**A lot of the time**	**Almost all of the time**
1.	When I am sad, I think about how alone I feel.	1	2	3	4
2.	When I am sad, I help someone else with something so I don't think about my problem.	1	2	3	4
3.	When I am sad, I go away by myself and think about why I feel this way.	1	2	3	4
4.	When I am sad, I watch TV or play video games so I don't think about how sad I am.	1	2	3	4
5.	When I am sad, I think: "I'm ruining everything."	1	2	3	4
6.	When I am sad, I go to my favorite place to get my mind off my feelings.	1	2	3	4
7.	When I am sad, I think about how sad I feel.	1	2	3	4
8.	When I am sad, I spend a lot of time on my schoolwork.	1	2	3	4
9.	When I am sad, I go someplace alone to think about my feelings.	1	2	3	4
10.	When I am sad, I do something I enjoy.	1	2	3	4
11.	When I am sad, I think about how angry I am with myself.	1	2	3	4
12.	When I am sad, I do something fun with a friend.	1	2	3	4
13.	When I am sad, I think about other times when I have felt sad.	1	2	3	4

14.	When I am sad, I read a book or a magazine.	1	2	3	4
15.	When I am sad, I think about a recent situation wishing it had gone better.	1	2	3	4
16.	When I am sad, I ask a friend, parent, or teacher to help me solve my problem.	1	2	3	4
17.	When I am sad, I think: “There must be something wrong with me or I wouldn’t feel this way.”	1	2	3	4
18.	When I am sad, I try to find something good in the situation or something I have learned.	1	2	3	4
19.	When I am sad, I think: “I am disappointing my friends, family, or teachers.”	1	2	3	4
20.	When I am sad, I talk it out with someone I think can help me feel better.	1	2	3	4
21.	When I am sad, I think about my failures, faults and mistakes.	1	2	3	4
22.	When I am sad, I think of a way to make my problem better.	1	2	3	4
23.	When I am sad, I think: “Why can’t I handle things better?”	1	2	3	4
24.	When I am sad, I remind myself that this feeling will go away.	1	2	3	4
25.	When I am sad, I think about how I don’t feel like doing anything.	1	2	3	4

Appendix H. Children's Depression Inventory

Kids sometimes have different feelings and ideas. From each group of three sentences pick one sentence that describes you best **in the past two weeks**. There is no right or wrong answer. Place a check next to your choice.

1	__	I am sad once in a while.
	__	I am sad many times.
	__	I am sad all the time.
2	__	Nothing will ever work out for me.
	__	I am not sure if things will work out for me.
	__	Things will work out for me OK.
3	__	I do most things OK.
	__	I do many things wrong.
	__	I do everything wrong.
4	__	I have fun in many things.
	__	I have fun in some things.
	__	Nothing is fun at all.
5	__	I am bad all the time.
	__	I am bad many times.
	__	I am bad once in a while.
6	__	I think about bad things happening to me once in a while.
	__	I worry that bad things will happen to me.
	__	I am sure that terrible things will happen to me.
7	__	I hate myself.
	__	I do not like myself.
	__	I like myself.
8	__	All bad things are my fault.
	__	Many bad things are my fault.

	__	Bad things are not usually my fault.
9	__	I do not think about killing myself.
	__	I think about killing myself but I would not do it.
	__	I want to kill myself.
10	__	I feel like crying every day.
	__	I feel like crying many days.
	__	I feel like crying once in a while.
11	__	Things bother me all the time.
	__	Things bother me many times.
	__	Things bother me once in a while.
12	__	I like being with people.
	__	I do not like being with people many times.
	__	I do not want to be with people at all.
13	__	I cannot make up my mind about things.
	__	It is hard to make up my mind about things.
	__	I make up my mind about things easily.
14	__	I look OK.
	__	There are some bad things about my looks.
	__	I look ugly.
15	__	I have to push myself all the time to do my schoolwork.
	__	I have to push myself many times to do my schoolwork.
	__	Doing schoolwork is not a big problem.
16	__	I have trouble sleeping every night.
	__	I have trouble sleeping many nights.
	__	I sleep pretty well.
17	__	I am tired once in a while.
	__	I am tired many days.

	__	I am tired all the time.
18	__	Most days I do not feel like eating.
	__	Many days I do not feel like eating.
	__	I eat pretty well.
19	__	I do not worry about aches and pains.
	__	I worry about aches and pains many times.
	__	I worry about aches and pains all the time.
20	__	I do not feel alone.
	__	I feel alone many times.
	__	I feel alone all the time.
21	__	I never have fun at school.
	__	I have fun at school only once in a while.
	__	I have fun in school many times.
22	__	I have plenty of friends.
	__	I have some friends but I wish that I had some more.
	__	I do not have any friends.
23	__	My schoolwork is alright.
	__	My schoolwork is not as good as before.
	__	I do very badly in subjects I used to be good in.
24	__	I can never be as good as other kids.
	__	I can be as good as other kids if I want to.
	__	I am just as good as other kids.
25	__	Nobody really loves me.
	__	I am not sure if anybody loves me.
	__	I am sure that somebody loves me.
26	__	I usually do what I am told.

	__	I do not do what I am told most times.
	__	I never do what I am told.
27	__	I get along with people.
	__	I get into fights many times.
	__	I get into fights all the time.

Appendix I. Center for Epidemiological Studies - Depression

Think about how you have been feeling for this last week. For each sentence, circle how often you have felt this way **for the past week.**

How often have these things happened?

		Almost none of the time	**Some of the time**	**A lot of the time**	**Almost all of the time**
1.	I was bothered by things that usually don't bother me.	1	2	3	4
2.	I did not feel like eating; I wasn't very hungry.	1	2	3	4
3.	I wasn't able to feel happy, even when my family or friends tried to help me feel better.	1	2	3	4
4.	I felt like I was just as good as other kids.	1	2	3	4
5.	I felt like I couldn't pay attention to what I was doing this week.	1	2	3	4
6.	I felt down and unhappy this week.	1	2	3	4
7.	I felt like I was too tired to do things this past week.	1	2	3	4
8.	I felt like something good was going to happen.	1	2	3	4
9.	I felt like things I did before didn't work out right.	1	2	3	4
10.	I felt scared this week.	1	2	3	4
11.	I didn't sleep as well as I usually sleep this week.	1	2	3	4
12.	I was happy this week.	1	2	3	4
13.	I was more quiet than usual this week.	1	2	3	4
14.	I felt lonely, like I didn't have any friends.	1	2	3	4
15.	I felt like kids I knew were not friendly or that they didn't want to	1	2	3	4

	be with me.				
16.	I had a good time this week.	1	2	3	4
17.	I felt like crying this week.	1	2	3	4
18.	I felt sad.	1	2	3	4
19.	I felt people didn't like me this week.	1	2	3	4
20.	It was hard to get started doing things this week.	1	2	3	4

Appendix J. Short Mood and Feelings Questionnaire

This form is about how you might have been feeling or acting recently. For each question, please check how much you have felt or acted this way in the past two weeks. If a sentence was ***not true***, fill in the bubble for ***not true***. If it was ***sometimes true***, fill in the bubble for ***sometimes.*** If a sentence was ***true most of the time***, fill in the bubble for ***true***.

		0 **Not true**	**1** **Sometimes**	**2** **True**
1.	I felt miserable or unhappy.	○	○	○
2.	I didn't enjoy anything at all.	○	○	○
3.	I felt so tired I just sat around and did nothing.	○	○	○
4.	I was very restless.	○	○	○
5.	I felt I was no good anymore.	○	○	○
6.	I cried a lot.	○	○	○
7.	I found it hard to think properly or concentrate.	○	○	○
8.	I hated myself.	○	○	○
9.	I felt I was a bad person.	○	○	○
10.	I felt lonely.	○	○	○
11.	I thought nobody really loved me.	○	○	○
12.	I thought I could never be as good as other kids.	○	○	○
13.	I felt I did everything wrong.	○	○	○

Appendix K. Junior High Life Experiences Survey

Please check "yes" next to the events listed below if they happened to you in the *past year*. Please check no if the event did not happen to you within the *past year*.

	YES	NO
A friend I was close to died.	☐	☐
A pet I was close to died.	☐	☐
A brother or sister I was close to died.	☐	☐
A grandparent, aunt, uncle, or cousin I was close to died.	☐	☐
Someone I was close to died.	☐	☐
A close friend moved away.	☐	☐
A brother or sister moved out of the house.	☐	☐
Parents were separated.	☐	☐
A new brother or sister was born.	☐	☐
A new person joined the household.	☐	☐
A brother or sister had serious trouble at school.	☐	☐
A brother or sister got into trouble with the law.	☐	☐
Family had serious money trouble.	☐	☐
Mother and father argued more with each other.	☐	☐
Mother and father spent much more time away from home.	☐	☐
A close friend was seriously ill or injured.	☐	☐
A close friend about your age had sex for the first time.	☐	☐
A close friend about your age got pregnant.	☐	☐
One of your parents was seriously ill or injured.	☐	☐
A grandparent or other relative was seriously ill or injured.	☐	☐
Changed schools.	☐	☐
Your mother or father got fired or laid off.	☐	☐
Your mother or father got into trouble with the law.	☐	☐
You were a victim of a violent crime.	☐	☐
School suspension	☐	☐
Broke up with boyfriend/girlfriend	☐	☐

Broke up with close friend	☐	☐
Began drinking alcohol/taking drugs	☐	☐
Not accepted into important extra-curricular activity	☐	☐
Flunked a grade	☐	☐
Assaulted, robbed, or victim of other violent crime	☐	☐
Argued more with parents	☐	☐
Parents argued more with eachother	☐	☐

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