Published in final edited form as:

Cogn Emot. 2012 ; 26(5): 916–926. doi:10.1080/02699931.2011.621932.

Early Family Context and Development of Adolescent Ruminative Style: Moderation by Temperament

Lori M. Hilt,

Department of Psychology, University of Wisconsin–Madison, Waisman Center, 1500 Highland Avenue, Madison, WI 53705

Jeffrey M. Armstrong, and

Department of Psychiatry, University of Wisconsin School of Medicine and Public Health, 6001 Research Park Boulevard, Madison, WI 53719

Marilyn J. Essex

Department of Psychiatry, University of Wisconsin School of Medicine and Public Health, 6001 Research Park Boulevard, Madison, WI 53719

Abstract

We know very little about the development of rumination, the tendency to passively brood about negative feelings. Because rumination is a risk factor for many forms of psychopathology, especially depression, such knowledge could prove important for preventing negative mental health outcomes in youth. This study examined developmental origins of rumination in a longitudinal sample ($N = 337$; 51% girls) studied in preschool (ages 3½ and 4½ years) and early adolescence (ages 13 and 15 years). Results indicated that family context and child temperament, assessed during the preschool period, were risk factors for a ruminative style in adolescence. Specifically, early family contexts characterized by over-controlling parenting and a family style of negative-submissive expressivity predicted higher levels of later rumination. These associations were moderated by children's temperamental characteristics of negative affect and effortful control. Further, the interaction of these temperament factors exerted an additional influence on later rumination. Implications for prevention and intervention efforts are discussed.

Keywords

rumination; temperament; family environment; risk factors; adolescence

There are many ways to respond to negative emotion, including distraction, acceptance, and rumination. Those who ruminate are more likely to experience psychopathology, especially depression (Nolen-Hoeksema, Wisco, & Lyubormirsky, 2008). Although the role of rumination in psychopathology is well-established, we know little about its etiology. Existing studies suggest that early family environment and child temperament may be influential (Spasojevic & Alloy, 2002; Verstraeten, Bijttebier, Vasey, & Raes, 2011), but there is little evidence based on prospective longitudinal studies. Such information is critical for effective preventive interventions. The present study addresses this issue by examining prospectively the influence of early family and child risk factors on the development of rumination by adolescence.

Rumination, an emotion-regulation style involving passive dwelling on negative feelings, gained attention as a vulnerability factor for depression (Nolen-Hoeksema, 1991). Subsequent studies established rumination's association with depression (Nolen-Hoeksema et al., 2008), including in children and adolescents (Rood, Roelofs, Bogels, Nolen-Hoeksema, & Schouten, 2009), as well as anxiety (Verstraeten et al., 2011), binge eating (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007), substance use (Nolen-Hoeksema et al., 2007), and non-suicidal self-injury (Hilt, Cha, & Nolen-Hoeksema, 2008). Rumination is typically measured with the 22-item Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991). Because several of the items are confounded with depressive content, Treynor and colleagues (Treynor, Gonzalez, & Nolen-Hoeksema, 2003) removed these items and identified two factors: reflection, characterized by a neutral turning inward to analyze one's situation, and brooding, characterized by a passive, moody questioning of one's situation. Subsequent studies confirmed this factor structure in adolescents (Burwell & Shirk, 2007) and demonstrated that brooding is the more maladaptive component of rumination that predicts psychopathology and mediates the relationship between temperament and depressive symptoms (e.g., Verstraeten et al., 2011). Thus, in the present study, we focus specifically on the brooding component of rumination.

Most studies regarding the development of rumination have been retrospective (Spasojevic & Alloy, 2002) or involved short-term prospective designs (Cox, Mezulis, & Hyde, 2010; Nolen-Hoeksema et al., 2007). However, the identification of early risk factors requires that they are assessed prior to the development of a ruminative style. Although rumination has been measured via self-report in middle childhood, rumination does not become a stable, or trait-like, predictor of depressive symptoms until adolescence (Rood et al., 2009). Thus, in the present study, we assess trait-like rumination in early adolescence, which also precedes the increase in depression observed in girls ages 15-18 (Hankin, Abramson, Moffitt, Silva, McGee, & Angell, 1998).

The Role of Early Family Environment

Parenting style and the broader interactive style of the family are associated with children's emotion-regulation (Morris, Silk, Steinberg, Myers, & Robinson, 2007). Yet, we know of no longitudinal studies focused on the role of these early factors on the development of rumination.

Nolen-Hoeksema (1991) suggested that parents may play a role in the development of children's ruminative style. Subsequently, observational studies demonstrated that over-controlling parenting contributed to children's negative cognitions (e.g., Nolen-Hoeksema, Wolfson, Mumme, & Guskin, 2005). Additionally, in a retrospective study focused specifically on rumination, college students who ruminated reported being raised by over-controlling parents (Spasojevic & Alloy, 2002).

Children also learn about emotion expression and regulation from socialization in the larger family environment. Although moderate levels of family negative expressiveness may provide children with opportunities to develop coping strategies, higher levels may lead to poor outcomes such as negative emotionality, poorer emotion regulation, and internalizing symptoms in youth (Eisenberg, Gershoff, et al., 2001; Halberstadt & Eaton, 2002). Expression of submissive negative emotions such as sadness, guilt, and embarrassment may be especially relevant to the development of children's ruminative style. One study found that maternal negative-submissive expressiveness interacted with children's empathic concern to predict children's avoidant coping strategies (Goodvin, Carlo, and Torquati, 2006). Other research has found a positive correlation between negative-submissive family expressiveness and children's own negative-submissive expressiveness, an association which grows stronger with age (Halberstadt & Eaton, 2002).

The Role of Temperament

Prior theoretical (Nolen-Hoeksema, 1991) and empirical work (Mezulis, Priess, & Hyde, 2011; Verstraeten et al., 2011) suggests that proneness to negative affect and low effortful control may be especially relevant to the development of a ruminative style. Negative affect reflects a temperamental reactivity involving sadness, fear, shyness, and anger (Rothbart, Ahadi, Hershey, & Fisher, 2001). Children prone to negative affect may be vulnerable to rumination because they experience more intense, chronic negative emotion. Nolen-Hoeksema (1991) proposed that highly reactive individuals may develop a ruminative style because they find emotional states to be more “compelling” and thus focus on them more, and because they may notice that their reactions are stronger than others’, questioning these reactions in a brooding manner. This tendency to experience intense negative emotions has been associated with the development of depression and anxiety (Muris & Ollendick, 2005), an association that may be partially explained by rumination (Verstraeten, Vasey, Raes, & Bijttebier, 2009). Recently, it has been suggested that negative affective reactions early in life may have a role in the development of subsequent cognitive-processing styles such as rumination, which become more habitual by adolescence, leading to a vicious cycle of negative affect and rumination (Mezulis et al., 2011).

Effortful control involves a regulatory capacity to modulate emotional reactivity, comprising inhibitory as well as attentional processes (Rothbart et al., 2001). Such capacities are likely involved in rumination (Nolen-Hoeksema et al., 2008) since individuals with low effortful control may have difficulty inhibiting negative thoughts or paying attention to other cues, which may contribute to the development of rumination. Adult studies have demonstrated that trait ruminators have difficulty with cognitive tasks involving attentional control (e.g., Joormann & Gotlib, 2010). There is also evidence that low effortful control in children may be associated with distorted cognitive processes predicting psychopathology (Muris & Ollendick, 2005). Additionally, effortful control may interact with negative affect, as Verstraeten and colleagues (2009) found that negative affect was associated with rumination only among adolescents low in effortful control.

Present Study

The present study aimed to examine prospectively the influences of early family context (i.e., over-controlling parenting and a family interaction style characterized by negative-submissive emotional expressiveness) and two temperamental characteristics of the child (i.e., negative affect and effortful control), both assessed during preschool, on the development of a ruminative style by adolescence (ages 13 and 15). Our central hypothesis is that all four early risk factors, especially in combination, will predict later rumination. Specifically, we expect that children from family environments characterized by over-controlling parenting and negative-submissive expressivity will be more likely to develop a ruminative style, particularly when they have temperaments characterized by high negative affect or low effortful control. To assess the possibility that rumination is simply a proxy for depression, we also measured depressive symptoms. In addition, because adolescent girls ruminate more than boys (e.g., Hilt, McLaughlin, & Nolen-Hoeksema, 2010), we explore potential gender differences.

Method

Participants

Adolescents are participants in the longitudinal Wisconsin Study of Families and Work. Originally, 570 pregnant women and their partners were recruited from clinics in two Midwestern cities for a study on maternity leave (Hyde, Klein, Essex, & Clark, 1995). Mothers were required to be over 18, in the second trimester of pregnancy, living with the child’s

biological father, and either working for pay/profit or a full-time homemaker. Of those eligible, 75.4% agreed to participate. All study procedures were approved by the University of Wisconsin; informed consent was obtained from all mothers and adolescent assent was obtained at ages 13 and 15. Present analyses include the 337 adolescents (51% girls) with complete data on all measures in this study.

At the time of recruitment, 44% of mothers and 52% of fathers had less than a college degree. Mothers' and fathers' average ages were 29.6 ($SD = 4.3$) and 31.8 ($SD = 5.3$), respectively. Most couples were married (96%) and Caucasian (90%); median annual family income was \$47,750 (range = < \$10,000 to > \$200,000). There were no significant differences between the 337 participants and remaining families on maternal age, parental education, marital status, race, or family income. Participating fathers were slightly older than non-participants, $M = 31.8$ versus 30.6, $t(548) = -2.66$, $p < .01$.

Measures

Rumination—At ages 13 and 15, participants completed the RRS (Nolen-Hoeksema & Morrow, 1991), modified for adolescents to report on their responses to feeling “upset” rather than “depressed” (Burwell & Shirk, 2007). For each item, participants rated how often they respond that way on a 4-point scale (1 = *almost never*; 4 = *almost always*). The mean of the 5 brooding items (e.g., “Think ‘Why do I always react this way?’”) was calculated at each assessment, and because the scores were fairly stable ($r = .51$, $p < .001$), the average score was used to assess trait-like rumination. Internal consistency for the sample was good (both α s > .78).

Depressive symptoms—Adolescents, mothers, and teachers reported on adolescent depressive symptoms at ages 13 and 15 (all α s > .87) using adolescent versions of the MacArthur Health and Behavior Questionnaire (Essex et al., 2002). At each assessment, the variance shared among the three reports was represented by a PCA-derived composite score; the two scores were then averaged.

Over-controlling parenting—When children were 4½ years-old, mothers completed a questionnaire based on Block's (1965) Child-Rearing Practices Report, indicating how well each item described how they “are raising or plan to raise” their child on a 7-point scale (1 = *extremely true*; 7 = *extremely untrue*). A 7-item authoritarian/restrictive scale ($\alpha = .62$) was used to index over-controlling parenting (e.g., “I do not allow my child to get angry with me”).

Negative-submissive family expressivity—When children were 4½ years-old, mothers completed the Family Expressiveness Questionnaire (FEQ; Halberstadt, 1986), involving situations that may occur in families, with responses on a 9-point frequency-of-occurrence scale (1 = *not at all frequently in my family*; 9 = *very frequently in my family*). The negative-submissive subscale contains 10 items ($\alpha = .73$) representing family displays of expressions of sadness and guilt (e.g., “Sulking over unfair treatment by a family member,” “Expressing embarrassment over a stupid mistake”). The FEQ subscales have demonstrated validity and internal consistency (Halberstadt, 1986).

Negative affect—Child negative affect was assessed via mother-report on the Children's Behavior Questionnaire (Rothbart et al., 2001) at age 3½ and 4½, computed as the average of 4 subscales: fear (6 items; α s > .71), shyness (6 items; α s > .89), sadness (10 items; α s > .62), and anger (9 items; α s = .78). Mothers rated their child's behavior in the past 6 months using a 7-point scale (1 = *extremely untrue of your child*; 7 = *extremely true of your child*). Scores at age 3½ and 4½ ($r = .71$, $p < .001$) were averaged.

Effortful control—Previous work has suggested that the voluntary attentional aspect of effortful control is particularly relevant for internalizing behaviors such as rumination (Eisenberg, Cumberland, et al., 2001). Thus, we chose a task involving the ability to follow directions and attend to a specific stimulus during a videotaped, home administration of the Preschool Laboratory Temperament Assessment Battery (Gagne, Van Hulle, Aksan, Essex, & Goldsmith, 2011) at age 4½. Children were told to focus their attention on a metal wheel rolling back-and-forth while the experimenter sat quietly for 2 minutes pretending to read. Coders (advanced-undergraduate or graduate-level students with extensive training) scored the percentage of time the child watched the object; the score was then *z*-transformed. For reliability, 10–14% of cases were independently scored by two coders; kappas exceeded .94.

Data Analyses

Means and standard deviations were computed for all variables, and separately by gender; *t*-tests and Cohen's *d* statistics assessed gender differences. Major hypotheses were tested with bivariate Pearson correlations and hierarchical regressions. Of particular interest was whether rumination was predicted by (a) early family context and child temperament, and (b) interactions between the family-context and child-temperament factors, as well as between the two child-temperament factors. A hierarchical regression model was computed, with each independent variable entered in Step 1, including gender, over-controlling parenting, negative-submissive family expressivity, temperamental negative affect, and effortful control. Each variable was centered at its mean except gender which was coded "0" for boys and "1" for girls. Step 2 included four pair-wise multiplicative interactions of each family-context factor with each child-temperament factor, and the pair-wise interaction of the two temperament factors. Where significant interactions were found, effects were probed using Aiken and West's (1991) approach of examining simple slopes 1 SD above and below the mean. To explore potential gender differences, the pair-wise and 3-way interactions of child gender with each of the variables included in Steps 1 and 2 were considered; no significant gender interactions were found. To check that rumination was not simply a proxy for depression symptoms, the regression analyses were run controlling for depression; the pattern of results was nearly identical, so results without the depression-symptom measure are reported.

Results

Descriptive Statistics

As expected, girls reported ruminating significantly more than boys ($M = 2.18$, $SD = .66$ vs. $M = 1.89$, $SD = .48$), $t(336) = 4.54$, $p < .05$ ($d = .50$). Girls also scored significantly lower on effortful control ($M = .82$, $SD = .13$ vs. $M = .87$, $SD = .10$), $t(336) = 4.15$, $p < .05$ ($d = .43$). There were no significant gender differences on over-controlling parenting (overall $M = 3.13$, $SD = .73$), negative-submissive family expressivity ($M = 46.46$, $SD = 11.25$), or temperamental negative affect ($M = 4.09$, $SD = .61$).

Predicting Adolescent Rumination from Early Family Context and Child Temperament

As expected, all four potential risk factors were significantly correlated with rumination. Preschool-aged children who lived in households characterized by over-controlling parenting ($r = .13$), negative-submissive family expressivity ($r = .14$), and who were temperamentally high in negative affect ($r = .11$) and low in effortful control ($r = -.11$) evidenced significantly higher levels of rumination in adolescence (all *p*-values $< .05$).

When family context and child temperament were considered simultaneously (Table 1), the two family context factors remained statistically significant (Step 1). In addition, three of the four family context $\times$ temperament interactions were significant, and the interaction of the two temperament factors was marginally significant¹ (Step 2).

Negative affect interacted with both aspects of family context to predict rumination. For children low in negative affect, there was no association of over-controlling parenting with rumination [$\beta = .05$, $t(333) = .53$, *ns*]; however, for children high in negative affect, risk for rumination increased as over-controlling parenting increased [$\beta = .24$, $t(333) = 3.70$, $p < .001$] such that those who experienced high levels of over-controlling parenting subsequently developed the highest levels of rumination (Figure 1). In contrast, negative-submissive family expressivity influenced rumination only for children low in negative affect (Figure 2). For children high in negative affect, there was no association of negative-submissive family expressivity with rumination [$\beta = .05$, $t(333) = 1.10$, *ns*]; however, for children low in negative affect, risk for rumination increased as negative-submissive family expressivity increased [$\beta = .10$, $t(333) = 2.13$, $p < .05$] such that, although they developed the lowest levels of rumination under conditions of low negative-submissive family expressivity, those who experienced high levels of negative-submissive family expressivity subsequently developed levels of rumination comparable to those with high negative affect.

Effortful control interacted with over-controlling parenting, but not negative-submissive family expressivity, to predict rumination (Fig. 3). For children low in effortful control, there was no association of over-controlling parenting with rumination [$\beta = .02$, $t(333) = .54$, *ns*]; however, for children high in effortful control, risk for rumination increased as over-controlling parenting increased [$\beta = .17$, $t(333) = 3.71$, $p < .001$] such that, although they developed the lowest levels of rumination under conditions of low over-controlling parenting, those who experienced high levels of over-controlling parenting subsequently developed levels of rumination comparable to those of children low in effortful control.

Finally, there was a marginally significant interaction of negative affect and effortful control, which was significant when tested separately as the only interaction term in the model ($\beta = -.105$, $p = .04$) (Figure 4). For children high in effortful control, there was no association of negative affect with rumination [$\beta = -.02$, $t(333) = -.44$, *ns*]; however, for children low in effortful control, risk for rumination increased as negative affect increased [$\beta = .10$, $t(333) = 2.30$, $p < .05$], such that those with high negative affect subsequently developed the highest levels of rumination.

Discussion

Overall, our findings emphasize the importance of early family context and its moderation by child temperament in the development of adolescent rumination. Children raised in families with over-controlling parenting and a style of negative-submissive expressivity were at increased risk for later rumination. Further, children high in negative affect or high in effortful control were especially likely to develop rumination in the context of over-controlling parenting, while children low in negative affect were especially likely to develop rumination in the context of negative-submissive family expressivity. Additionally, children high in negative affect who were also low in effortful control were at greater risk for adolescent rumination. Although girls were more likely than boys to ruminate, we found no gender differences in its associations with these early family context and temperament factors.

Our findings that early family context predicted rumination extend previous work on the development of children's emotion-regulation styles to a specific focus on a ruminative style by adolescence. With the exception of a study of college students showing an association of rumination with retrospective reports of being raised by over-controlling parents (Spasojevic

¹When depression symptoms were included in the model, there was a significant effect ($\beta = .32$, $p < .001$). Significant main effects remained for the two family context measures; and the interaction effects remained the same, with two minor differences (negative-submissive family expressivity $\times$ negative affect, $p = .11$; negative affect $\times$ effortful control, $p = .03$).

& Alloy, 2002), to our knowledge, there are no studies demonstrating the influence of early family context on the development of rumination. Previous research does, however, suggest that over-controlling parenting and negative-submissive family expressivity may increase the risk of rumination through influences on children's emotion-regulation styles. Over-controlling parenting involves attempts to suppress children's expression, and the suppression of thoughts and emotions has been directly linked to rumination (e.g., Nolen-Hoeksema & Morrow, 1991). Further, over-controlling parenting may lead to rumination by depriving children of opportunities to learn effective emotion-regulation strategies (Nolen-Hoeksema et al., 1995; Spasojevic & Alloy, 2002), while negative-submissive family expressivity may lead to rumination through modeling, social referencing, and emotion contagion (Morris et al., 2007). In addition, to the extent that over-controlling parenting increases children's helplessness (Nolen-Hoeksema et al., 1995), and negative-submissive family expressivity models a negative self-referential style (Halberstadt & Eaton, 2002), the family environment may undermine children's confidence in their ability to self-regulate, further contributing to rumination.

Importantly, we found that child temperament moderated these associations of family context with rumination in several ways. First, high negative affect amplified the effect of over-controlling parenting, i.e., being raised by over-controlling parents increased the risk of rumination only for children high in negative affect. Intrusive parenting may escalate children's negative affect, providing fuel for rumination. Over-controlling families also discourage expressions of negative affect, which may result in children's use of internalized, passive coping responses such as rumination to deal with negative affect they are unable to express at home. Further, children who experience punitive or minimizing responses to their negative emotions have low levels of situation-specific emotional understanding (McElwain, Halberstadt, & Volling, 2007), which may contribute to rumination as they brood in attempt to understand those emotions.

Second, in contrast to the above pattern, it is the children with low negative affect who are more likely to develop rumination under conditions of negative-submissive family expressivity. In high negative-submissive families, where sadness, guilt, and embarrassment are commonly expressed, children low in negative affect may be especially vulnerable to rumination via processes such as modeling (Morris et al., 2007) or parent-child co-rumination (Waller & Rose, 2010). Because low-negative-affect children have, by definition, less experience managing their own negative emotions, they may rely on the example of family members in developing their own responses to negative-submissive emotions.

Third, the findings extend previous research establishing the protective effects of effortful control on problem behavior in youth (Eisenberg, Cumberland et al., 2001) to suggest that high effortful control is a protective factor against developing rumination, but only under conditions of low levels of parental over-control. In fact, at high levels of over-control, children high in effortful control developed levels of rumination comparable to children low in effortful control. This finding is surprising, but consistent with an argument made by Alloy and Abramson (2007) suggesting that rumination requires sustained and selective attention, an important component of effortful control. Although speculative, it is possible that high-effortful-control children raised in families with low levels of over-controlling parenting are buffered from developing a ruminative style because they have the capacity to regulate their emotions and are encouraged to try multiple strategies for doing so. However, in the context of over-controlling parenting, they may not be encouraged to regulate their emotions in flexible ways, and instead become fixated on negative emotions that arise, dwelling on them in a ruminative way.

The finding that children high in negative affect and low in effortful control developed high levels of rumination is consistent with previous work demonstrating that rumination mediates the association of this combination of temperament characteristics with adolescent internalizing symptoms (Verstraeten et al., 2009). High negative affect and low effortful control are broad predictors of psychopathology (Muris & Ollendick, 2005), but it may be their interaction that is specifically related to rumination. Adult studies have demonstrated that ruminators have disrupted attentional control, and these deficits seem to be most pronounced in individuals with high negative affect (Joormann & Gotlib, 2010). The present study suggests that a precursor to these processes may be operational early in life and contribute to risk for developing a ruminative style.

Implications and Future Directions

Although interventions may be helpful, preventing rumination from developing is optimal, given that it is associated with maladaptive outcomes in adolescence (Nolen-Hoeksema et al., 2008) and may be difficult to stop once it is in motion (Nolen-Hoeksema et al., 2007). Early prevention work may benefit from targeting children with negative affect, who lack effortful control and come from families characterized by over-controlling parenting and negative-submissive expression. Recently developed interventions may serve as models for reducing rumination by reducing negative affect (e.g., Kovacs et al., 2006). Additionally, family contexts may be modified through programs focusing on parents (e.g., Webster-Stratton & Herman, 2008). Importantly, these interventions focus on the development of coping skills to improve emotion regulation. Although these interventions are in the early stages of research, they suggest avenues for intervening based on family context and temperament.

A major strength of the current study is the longitudinal design that allowed for modeling of developmental risk factors in early childhood for rumination in adolescence. Another strength was our multi-method, multi-informant design which overcomes the concern of shared method variance that may confound studies relying only on self-report. We found that early family context and temperament, assessed via maternal report and observation, explained 16% of the variance in adolescent-reported rumination, which is quite remarkable considering the myriad of developmental factors at play.

One important limitation of the present study is that we only began measuring rumination in early adolescence and because not all constructs were assessed at each time point, alternate causal models could not be tested. Future research would benefit from repeated measures of rumination beginning earlier than assessed here, as questions remain about the developmental patterns of rumination from childhood through adolescence, including when rumination may develop and the consequences of earlier versus later development of a ruminative style.

As this was the first study to prospectively examine early developmental risk factors for rumination, replication in other samples is needed, as is consideration of additional potential risk factors. Developmental theories of rumination are lacking and are needed to guide research on origins of ruminative tendencies.

Acknowledgments

Funding was provided by National Institute of Mental Health grants R01-MH044340, P50-MH052354, P50-MH069315, P50-MH084051, and T32-MH018931 and by the John D. and Catherine T. MacArthur Foundation Research Network on Psychopathology and Development.

The authors thank the study participants who so generously committed their time to the project over the years and the dedicated staff of the Wisconsin Study of Families and Work.

References

- Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage; 1991.
- Alloy, LB.; Abramson, LY. The adolescent surge in depression and emergence of gender differences: A biocognitive vulnerability–stress model in developmental context. In: Walker, E.; Romer, D., editors. Adolescent psychopathology and the developing brain. New York: Oxford University Press; 2007. p. 284–312.
- Block, JH. Unpublished manuscript. Institute for Human Development, University of California; Berkeley: 1965. The Child-Rearing Practices Report (CRPR): A set of Q items for the description of parental socialization attitudes and values.
- Burwell RA, Shirk SR. Subtypes of rumination in adolescence: Associations between brooding, reflection, depressive symptoms, and coping. *Journal of Clinical Child and Adolescent Psychology*. 2007; 36:56–65. [PubMed: 17206881]
- Cox SJ, Mezulis AH, Hyde JS. The influence of child gender role and maternal feedback to child stress on the emergence of the gender difference in depressive rumination in adolescence. *Developmental Psychology*. 2010; 46:842–852. [PubMed: 20604606]
- Eisenberg N, Cumberland A, Spinrad TL, Fabes FA, Shepard SA, Reiser M, Guthrie IK. The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development*. 2001; 72:1112–1134. [PubMed: 11480937]
- Eisenberg N, Gershoff ET, Fabes RA, Shepard SA, Cumberland AJ, Losoya SH, Murphy BC. Mother's emotional expressivity and children's behavior problems and social competence: Mediation through children's regulation. *Developmental Psychology*. 2001; 37:475–490. [PubMed: 11444484]
- Essex MJ, Boyce WT, Goldstein LH, Armstrong JM, Kraemer HC, Kupfer DJ. The MacArthur Assessment Battery Working Group. The confluence of mental, physical, social, and academic difficulties in middle childhood. II: Developing the MacArthur Health and Behavior Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2002; 41:588–603. [PubMed: 12014792]
- Gagne JR, Van Hulle CA, Aksan N, Essex MJ, Goldsmith HH. Deriving childhood temperament measures from emotion-eliciting behavioral episodes: Scale construction and initial validation. *Psychological Assessment*. 2011; 23:339–353.
- Goodvin R, Carlo G, Torquati J. The role of child emotional responsiveness and maternal negative emotion expression in children's coping strategy use. *Social Development*. 2006; 15:591–611.
- Halberstadt A. Family socialization of emotional expression and nonverbal communication styles and skills. *Journal of Personality and Social Psychology*. 1986; 51:827–836.
- Halberstadt A, Eaton KL. A meta-analysis of family expressiveness and children's emotion expressiveness and understanding. *Marriage & Family Review*. 2002; 34:35–62.
- Hankin BL, Abramson LY, Moffitt TE, Silva PA, McGee R, Angell KE. Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology*. 1998; 107:128–140. [PubMed: 9505045]
- Hilt LM, Cha CB, Nolen-Hoeksema S. Nonsuicidal self-injury in young adolescent girls: Moderators of the distress-function relationship. *Journal of Consulting and Clinical Psychology*. 2008; 76:63–71. [PubMed: 18229984]
- Hilt LM, McLaughlin KA, Nolen-Hoeksema S. Examination of the response styles theory in a community sample of young adolescents. *Journal of Abnormal Child Psychology*. 2010; 38:545–556. [PubMed: 20084450]
- Hyde JS, Klein MH, Essex MJ, Clark R. Maternity leave and women's mental health. *Psychology of Women Quarterly*. 1995; 19:257–285.
- Joormann J, Gotlib IH. Emotion regulation in depression: Relation to cognitive inhibition. *Cognition and Emotion*. 2010; 24:281–298. [PubMed: 20300538]
- Kovacs M, Sherrill J, George CJ, Pollack M, Tumuluru RV, Ho V. Contextual emotion-regulation therapy for childhood depression: Description and pilot testing of a new intervention. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2006; 45:892–903. [PubMed: 16865031]

- McElwain NL, Halberstadt AG, Volling BL. Mother- and father-reported reactions to children's negative emotions: Relations to young children's emotional understanding and friendship quality. *Child Development*. 2007; 78:1407–1425. [PubMed: 17883439]
- Mezulis AH, Priess HA, Hyde JS. Rumination mediates the relationship between infant temperament and adolescent depressive symptoms. *Depression Research and Treatment*. 2011; 10.1155/2011/487873
- Morris AS, Silk JS, Steinberg L, Myers SS, Robinson LR. The role of the family context in the development of emotion regulation. *Social Development*. 2007; 16:361–388. [PubMed: 19756175]
- Muris P, Ollendick TH. The role of temperament in the etiology of child psychopathology. *Clinical Child and Family Psychology Review*. 2005; 8:271–289. [PubMed: 16362256]
- Nolen-Hoeksema S. Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*. 1991; 100:569–582. [PubMed: 1757671]
- Nolen-Hoeksema S, Morrow J. A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology*. 1991; 61:115–121. [PubMed: 1890582]
- Nolen-Hoeksema S, Stice E, Wade E, Bohon C. Reciprocal relations between rumination and bulimic, substance abuse and depressive symptoms in female adolescents. *Journal of Abnormal Psychology*. 2007; 116:198–207. [PubMed: 17324030]
- Nolen-Hoeksema S, Wisco B, Lyubomirsky S. Rethinking rumination. *Perspectives on Psychological Science*. 2008; 3:400–424.
- Nolen-Hoeksema S, Wolfson A, Mumme D, Guskin K. Helplessness in children of depressed and nondepressed mothers. *Developmental Psychology*. 1995; 31:377–387.
- Rood L, Roelofs J, Bogels SM, Nolen-Hoeksema S, Schouten E. The influence of emotion-focused rumination and distraction on depressive symptoms in non-clinical youth: A meta analytic review. *Clinical Psychology Review*. 2009; 29:607–616. [PubMed: 19682781]
- Rothbart MK, Ahadi SA, Hershey KL, Fisher P. Investigations of temperament at three to seven years: The Children's Behavior Questionnaire. *Child Development*. 2001; 72:1394–1408. [PubMed: 11699677]
- Spasojevic J, Alloy LB. Who becomes a depressive ruminator? Developmental antecedents of ruminative response style. *Journal of Cognitive Psychotherapy*. 2002; 16:405–419.
- Treynor W, Gonzalez R, Nolen-Hoeksema S. Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*. 2003; 27:247–259.
- Verstraeten K, Vasey MW, Raes F, Bijttebier P. Temperament and risk for depressive symptoms in adolescence: Mediation by rumination and moderation by effortful control. *Journal of Abnormal Child Psychology*. 2009; 37:349–361. [PubMed: 19107592]
- Verstraeten K, Bijttebier P, Vasey MW, Raes F. Specificity of worry and rumination in the development of anxiety and depressive symptoms in children. *British Journal of Clinical Psychology*. 2011; 10.1348/014466510X532715
- Waller EM, Rose AJ. Adjustment trade-offs of co-rumination in mother – adolescent relationships. *Journal of Adolescence*. 2010; 33:487–497. [PubMed: 19616839]
- Webster-Stratton C, Herman KC. The impact of parent behavior-management training on child depressive symptoms. *Journal of Counseling Psychology*. 2008; 55:473–484. [PubMed: 22017554]

Figure 1.

The moderating effect of negative affect on the relationship between over-controlling parenting and rumination. Values for “Low” are 1 *SD* below the mean and “High” are 1 *SD* above the mean.

Figure 2. The moderating effect of negative affect on the relationship between negative-submissive family environment and rumination. Values for “Low” are 1 *SD* below the mean and “High” are 1 *SD* above the mean.

Figure 3. The moderating effect of effortful control on the relationship between over-controlling parenting and rumination. Values for “Low” are 1 *SD* below the mean and “High” are 1 *SD* above the mean.

Figure 4. The moderating effect of effortful control on the relationship between negative affect and rumination. Values for “Low” are 1 *SD* below the mean and “High” are 1 *SD* above the mean.

Table 1

Regression Model Predicting Adolescent Rumination from Early Life Family Context and Temperament

Predictors	R^2	F for increment in R^2	β	t for within set predictors
Step 1	.10	7.69***		
Child Sex			.22	4.15***
Over-controlling Parenting			.16	2.94**
Negative-submissive Family Environment			.11	2.07*
Negative Affect			.07	1.27
Effortful Control			-.06	-1.07
Step 2	.16	4.46*		
Child Sex			.20	3.73***
Over-controlling Parenting			.16	3.17**
Negative-submissive Family Environment			.13	2.39*
Negative Affect			.07	1.37
Effortful Control			-.08	-1.44
Over-controlling Parenting $\times$ Negative Affect			.12	2.13*
Negative-submissive Family Envir. $\times$ Negative Affect			-.11	-2.03*
Over-controlling Parenting $\times$ Effortful Control			.14	2.63**
Negative-submissive Family Envir. $\times$ Effortful Control			.04	.65
Negative Affect $\times$ Effortful Control			-.11	-1.91 [†]

*
 $p < .05$.**
 $p < .01$.***
 $p < .001$.[†]
 $p = .057$.