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Co-rumination and Lifetime History of Depressive Disorders in Children

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Abstract

Co-rumination, the social process of frequently discussing and rehashing problems with peers, is hypothesized to increase risk for depression, particularly for girls. Although there is growing evidence for a relation between co-rumination and depressive symptoms in youth, it remains unclear whether these results generalize to diagnosable episodes of depression. Using a retrospective behavioral high-risk design with 81 children aged 9-14 years, we tested the hypothesis that children currently exhibiting high levels of co-rumination would be more likely to have a history of depressive diagnoses than children with low levels of co-rumination. The results supported this hypothesis. In addition, the link between co-rumination and history of depressive diagnoses was maintained even when we excluded children with current diagnoses and statistically controlled for children's current depressive symptoms, suggesting that the relation is not due simply to current levels of depression.

Having supportive friendships has traditionally been viewed as a protective factor that reduces risk for the development of depression during childhood and adolescence (e.g., see Rose & Rudolph, 2006). Indeed, peer friendships are a primary source of social support during adolescence (e.g., Furman & Buhrmester, 1992). However, Rose (2002) proposed that certain aspects of these friendships may be maladaptive and increase risk for the development of emotional distress. Specifically, Rose reasoned that for youth with a tendency to co-ruminate, the peer relationship may provide an interpersonal means of fostering cognitive vulnerability. Co-rumination is defined as an extensive form of selfdisclosure between same-sex peers that encompasses rehashing the negative causes, implications, and feelings surrounding problems (Rose, 2002). Although all peers may discuss stress in their lives, what distinguishes co-rumination as a potentially maladaptive process is the extent to which the peer relationship is focused on negatively-oriented discussion to the exclusion of more neutral or positive discussions or other activities. Corumination is hypothesized to simultaneously bolster friendship intimacy through self disclosure and reinforce ruminative thoughts through the negative focus of conversations (Rose, 2002). Indeed, Rose (2002) found co-rumination to be positively correlated to both self-disclosure and rumination. Therefore, peer relations based on co-ruminative strategies may not only fail to buffer individuals from more internalized distress, but may actually provide a venue for developing greater risk.

Providing initial support for the maladaptive role of co-rumination, Rose (2002) found that levels of co-rumination were significantly correlated with internalizing symptoms in older children and young adolescents. Focusing specifically on depressive symptoms, research indicates that co-rumination is related to current depressive symptom levels (Rose, Carlson,

& Waller, 2007; Starr & Davila, 2009) and predicts prospective changes in depressive symptoms (Hankin, Stone, & Wright, 2010; Rose et al., 2007) among children and adolescents. Despite the strengths of these studies, a limitation of existing research is the exclusive focus on depressive symptoms. Thus, it remains unclear whether findings for the relation between co-rumination and depressive symptoms will generalize to diagnosable episodes of depressive disorders.

The primary goal of this study, therefore, was to examine the link between co-rumination and depressive disorders in childhood. Given the relatively low point prevalence of depressive disorders in children (for a review, see Avenevoli, Knight, Kessler, & Merikangas, 2008), we focused on children's lifetime histories of depression. Specifically, we utilized a behavioral high-risk design similar to that employed in previous studies of cognitive vulnerability to depression (e.g., Alloy, Lipman, & Abramson, 1992; Alloy et al., 2000). The rationale for this design is that vulnerability factors should remain relatively stable over time and should have been present prior to the onset of a prior depressive episode. Supporting this hypothesis, there is evidence that levels of co-rumination are relatively stable during childhood and early adolescence (6-month retest stability, r = .54, Rose et al., 2007). Also, a past history of depression is one of the single strongest predictors of future depression (e.g., Belsher & Costello, 1988). Therefore, if current constructs correlate with past depressive disorders, they may reflect potential mechanisms of future risk. In this study, we predicted that children currently exhibiting high levels of corumination would be more likely to have a past history of depressive disorders than would children exhibiting low levels of co-rumination.

A secondary goal of this study was to examine the potential role of children's gender. Corumination was originally proposed to account for the gender difference in youth depression. Rose hypothesized co-rumination may address the paradox that girls' closer, more intimate friendships (Rose & Rudolph, 2006) fail to buffer them from higher rates of depression (e.g., Hankin et al., 1998; Petersen, Compas, Brooks-Gunn, Stemmler, & Grant, 1993). Initial findings indicate that girls indeed exhibit higher levels of co-rumination than boys (Rose, 2002) and there is some evidence that co-rumination may be a stronger predictor of depression in girls than in boys (e.g., Rose et al., 2007; but see also Hankin et al., 2010). Therefore, in addition to testing for potential gender differences in co-rumination, we also examined whether children's gender would moderate the association between co-rumination and past history of depressive episodes, such that it would be a stronger predictor for girls than boys.

Method

Participants

Participants in the current study were a subset of those participating in a larger study of the intergenerational transmission of depression (Gibb, Uhrlass, Grassia, Benas, & McGeary, 2009). Specifically, participants in the current study were 81 mother-child pairs who participated in a follow-up assessment approximately 21 months (SD = 5.24 months) after the initial assessment for the larger study. A sample of this size provides adequate power (. 80) to detect medium-sized effects ($r_{effect\ size} = .36$; cf. Cohen, 1988). In this sample, 36 of the mothers (44.4%) had a history of major depressive disorder (MDD), of whom 34 experienced MDD during their child's lifetime. The remaining 45 mothers (55.6%) had no lifetime history of MDD or any other mood disorder. Exclusion criteria for mothers included symptoms of schizophrenia, organic mental disorder, alcohol or substance abuse within the last six months, or history of bipolar disorder. To be included in the study, children had to be between the ages of 8 and 12 at the initial assessment and no more than one child per family could participate. There were no inclusion/exclusion criteria for children based on current or

lifetime diagnoses of depressive, anxiety, or behavioral disorders. Of the 81 children in the current study, 47 (58%) were girls, and the average age of the children at this assessment was 11.35 years (SD= 1.41, range 9-14 years). In terms of race/ethnicity, 79% were Caucasian, 11% were Biracial, 4% were African-American, and the remaining 5% were from other racial/ethnic groups. The median family income was \$60,000 to \$65,000 per year (range = under \$5,000 to over \$115,000 a year).

Measures

Diagnoses and symptoms—The Schedule for Affective Disorders and Schizophrenia-Lifetime Version (SADS-L; Endicott & Spitzer, 1978) was administered during the initial assessment to determine lifetime histories of DSM-IV Axis I disorders in mothers. The SADS-L is a widely used diagnostic interview with substantial evidence to support its reliability and validity (Endicott & Spitzer, 1978). A subset of 20 SADS-L interviews was coded by a second interviewer and kappa coefficients for diagnoses of MDD were excellent ($\kappa = 1.00$).

The Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997) was used to assess for current and lifetime histories of depressive disorders as well as other DSM-IV Axis I disorders in children. The K-SADS-PL was administered to mothers and children at both the initial assessment, and follow-up. A number of studies have supported the reliability and validity of the K-SADS-PL (e.g., Angold, 1989; Kaufman et al., 1997). Specifically, the K-SADS-PL has demonstrated excellent interrater and retest reliability, and criterion validity (e.g., Kaufman et al., 1997; for a review, see Ambrosini, 2000). The current study focused on children's current and past histories of any depressive disorder (i.e., MDD, adjustment disorder with depressed mood, or depressive disorder not otherwise specified). In the present study 19 of the 81 children (10 girls), met criteria for at least one depressive disorder during their lifetimes (8 MDD, 8 adjustment disorder with depressed mood, and 3 depressive disorder not otherwise specified). Of these, 5 children (2 girls) met criteria for a current depressive episode at the follow-up assessment (3 MDD, and 2 adjustment disorder with depressed mood). Interviews at the follow-up were administered by two advanced graduate students. A subset of 10 K-SADS-PL interviews from this study was coded by a second interviewer and kappa coefficients for lifetime depressive disorders was excellent ($\kappa = 1.00$).

Children's current levels of depressive symptoms were assessed using the Children's Depression Inventory (CDI; Kovacs, 1981). The CDI is a 27-item self-report questionnaire that measures the presence of depressive symptoms in youth from 7 to 17 years of age. Each item presents three statements (coded 0-2) reflecting increasing symptom severity. Youth indicate which sentence best describes how they have felt over the past two weeks. The CDI is the most widely used depression rating scale in children and has demonstrated strong internal reliability, retest reliability (e.g., Tram & Cole, 2006) and convergent validity with other measures of depressive symptoms (for a review, see Klein, Dougherty, & Olino, 2005). In the current study, the CDI exhibited good internal consistency (α = .85).

Co-rumination—The Co-rumination Questionnaire (CRQ; Rose, 2002) is a 27-item self-report questionnaire that assesses the extent to which participants co-ruminate with their closest, same-sex friend. Items were designed to assess an extreme form of self disclosure that exclusively focuses on negative events or problems. For example, "If one of us has a problem, we will spend our time together talking about it, no matter what else we could do instead." Youth respond to items using a 5-point Likert-type scale ranging from "Not at all true" (1) to "Really true" (5). Total co-rumination scores are calculated by averaging participants' ratings across the 27 items. Preliminary findings indicate support for the

convergent validity of the construct such that co-rumination has been found to be positively correlated to measures of both rumination and self-disclosure (rs = .46 and .61, respectively; Rose, 2002). The CRQ has demonstrated moderate retest reliability (6-months, r = .54 Rose et al., 2007), and excellent internal consistency in non-clinical samples ($\alpha s = .96-.97$; Byrd-Craven, Geary, Rose, & Ponzi, 2008; Rose, 2002; Rose et al., 2007). In the present study the CRQ exhibited excellent internal consistency ($\alpha = .97$).

Procedure

Participants were recruited from the community via ads placed in local newspapers and on public bus transits. Mothers and their children came to the laboratory and were asked to provide informed consent and assent to participate in a study on the intergenerational transmission of depression. Of the 107 mother-child pairs who participated in the larger project, 81 agreed to participate in the current study, which was conducted approximately 21 months (SD = 5.24 months) after the initial assessment. The 26 mother-child pairs who opted not to participate in the present study did not differ significantly from those participating in this study on any demographic variables or children's depressive symptoms or diagnoses at the initial assessment. However, participating families were significantly less likely to have a history of maternal MDD (χ^2 (1; N = 107) = 5.80, p = .02, $r_{effect size} = .23$). As part of the current assessment, mothers were administered the K-SADS-PL interview by a research assistant. During this time, the child completed questionnaires, including the CRQ and CDI, in a separate room. After completing the K-SADS-PL with the mother, the same interviewer then administered the K-SADS-PL to the child. Families were compensated \$25 for their participation. The current study draws on measures of co-rumination and depressive symptoms obtained during this follow-up assessment, with the exception of children's lifetime history of depression, which incorporated information from diagnostic interviews administered during the initial and the follow-up assessments.

Results

Because children's inclusion in this study was based upon mothers' history of MDD, we first explored whether any of the children's variables differed according to maternal history. We found that children of mothers with a history of MDD, compared to children of mothers with no depression history, reported higher current depressive symptom levels, t(79) = 4.17, p < .001, $r_{effect\ size}$ = .43, and were more likely to have a lifetime history of at least one depressive episode, $(\chi^2 (1, N = 81) = 15.90, p < .001, r_{effect size} = .44)$. Therefore, we statistically controlled for the influence of mother's MDD history (yes vs. no) in all analyses. ¹ We also examined whether children's age or gender were related to any of the study variables. The only significant finding was that children's age was positively correlated with levels of co-rumination, such that older children reported higher levels of co-rumination than younger children, r = .23, p = .04. Of note, there were no significant gender differences in levels of co-rumination, t(79) = 1.34, p = .18, $r_{effect \ size} = .15$, current depressive symptoms, $t(79) = 1.02, p = .31, r_{effect \ size} = .11, \text{ or history of depressive diagnoses}, \chi^2(1, N = 81) =$ 0.30, p = .59, $r_{effect \, size} = .06$. We should also note that children's current levels of depressive symptoms were generally low (M = 4.72, SD = 4.97, Range = 0.21), with only 3 children (1 girl) falling above the clinical cutoff of 19 on the CDI (cf. Kovacs, 1981).

Next, we tested the hypothesis that children's current levels of co-rumination would predict their lifetime histories of depressive disorders. Using children's history of depressive diagnoses (yes vs. no) as the criterion variable, levels of co-rumination as well as mothers'

 $^{^{1}}$ Results for analyses conducted without mother MDD history included as a covariate were almost identical to those reported and in no case did the pattern of significant results differ.

histories of depression were entered as predictor variables in a logistic regression analysis. Consistent with hypothesis, children's current levels of co-rumination significantly predicted their lifetime history of depressive disorders. Higher levels of co-rumination were related to increased risk for lifetime depression, Wald = 4.32, p = .04, OR = 2.07 (95% CI: 1.04-4.12). To determine whether this relation was due simply to children's current depression, we next conducted the analysis excluding children who met criteria for a current depressive diagnosis (n = 5). To further minimize the likelihood that any observed relation would be attributable to current depression, we also statistically controlled for the influence of children's current depressive symptom levels (CDI scores). The relation between corumination and history of depressive disorders remained significant, Wald = 5.26, p = .02, OR = 2.39 (95% CI: 1.14-5.05), suggesting that the association between co-rumination and depressive episodes was not due simply to the presence of current depression.

Finally, we examined whether the relation between co-rumination and depressive diagnoses was moderated by children's gender or age. We also explored whether mother's MDD history served as a potential moderator of this relation. None of these analyses were significant (lowest p = .38).

Discussion

Although researchers have generally focused on the protective role of social support from peers, Rose (2002) hypothesized that negative aspects of peer friendships, specifically the tendency to co-ruminate, may increase risk for depression. To date, research has supported the association between co-rumination and depressive symptoms in youth (Hankin et al., 2010; Rose, 2002; Rose et al., 2007). However, it was not known whether this relation would generalize to diagnosable episodes of depression. The present study employed a retrospective, behavioral high-risk design to determine whether current levels of corumination would predict children's history of depressive episodes. As predicted, children who reported currently engaging in higher levels of co-rumination with peers, compared to those with lower current levels of co-rumination, were significantly more likely to have a history of at least one depressive episode. Importantly, this relation was maintained even when we excluded children meeting current criteria for a depressive disorder and statistically controlled for the potential impact of current depressive symptom levels. The results of this study, therefore, suggest that co-rumination is not merely a correlate of ongoing depression. That is, current levels of co-rumination were related to children's past history of depressive diagnoses among children who were not currently depressed.

We should note, however, that a limitation of the current study's retrospective design is that we cannot determine the direction of effect between co-rumination and prior episodes of depression. Specifically, we are unable to determine whether children's current levels of co-rumination played a causal role in the development of depression, or whether it is a consequence of experiencing depression as a child. Originally co-rumination was hypothesized to be a maladaptive interpersonal process that increases risk for developing depression (Rose, 2002). To play a causal role in the development of depression, co-rumination would necessarily have to precede depression onset. There is evidence from one study that co-rumination predicts prospective changes in youth's depressive symptoms

²Data reported in the current manuscript were part of a larger project examining depression and social phobia in children. Although not a specific focus of the current study, we should note that 10 children in our sample had a lifetime history of social phobia, 4 of whom also met criteria for a depressive diagnoses (2 currently depressed). We should note, however, that children's levels of corumination were not significantly related to their lifetime history of social phobia, Wald = .50, p = .48, OR = 1.29 (95% CI: .63-2.64), and the relation between co-rumination and children's histories of depressive disorders was maintained even after omitting the 10 children who met criteria for social phobia, Wald = 3.85, p = .05, OR = 2.19 (95% CI: 1.01-4.81). Therefore, the current results do not appear to have been due to the presence of comorbid social phobia.

(Hankin et al., 2010). However, future research is needed to determine whether the tendency to co-ruminate increases risk for the onset of depressive diagnoses.

An alternative possibility is that the elevated levels of co-rumination observed among children with a past depressive episode may reflect a consequence or "scar" of depression itself. According to the scar hypothesis (Lewinsohn, Steinmetz, Larson, & Franklin, 1981; Rodhe, Lewinsohn, & Seeley, 1990), individuals acquire distinguishing characteristics as a result of experiencing an episode of depression. In turn these acquired characteristics place them at higher risk for future depression. For instance, one study found that adolescents who had recovered from an episode of depression were distinguishable from other youth in reporting excessive emotional reliance on others (Rohde, Lewinsohn, & Seeley, 1994). Consistent with the scar hypothesis, co-rumination may be a maladaptive form of self disclosure that vulnerable youth are more likely to adopt as a result of having experienced an episode of depression.

We should also highlight two non-significant findings from the current study. Co-rumination was proposed to help explain the gender difference in depression. In the current study, however, the gender difference in co-rumination was not significant, nor did child gender significantly moderate the link between co-rumination and history of depressive disorders. Previous studies have typically found medium sized effects for gender differences in corumination ($r_{effect\ size} = .27$ - .37; Hankin et al., 2010; Rose, 2002; Rose et al., 2007). As the age range of these samples are comparable, it is possible that the null result for gender differences in the current study ($r_{effect\ size} = .15$) may be attributed to the specific populations recruited (i.e., our focus on children of mothers with or without a history of MDD). In terms of gender moderation, Rose and colleagues (2007) found that co-rumination only predicted prospective changes in depressive symptoms for girls but not boys. However, it should be noted that the formal test of gender moderation in their study was not statistically significant. Also, Hankin and colleagues (2010) found that co-rumination predicted prospective increases in depressive symptoms equally for both girls and boys. These findings suggest that the effects of co-rumination may not differ significantly between boys and girls during childhood and adolescence. Therefore it may be premature to limit analyses of co-rumination to female populations or view co-rumination as a female-specific risk factor.

The limitations of this study should also be noted. First, children were chosen for inclusion based on their mothers' lifetime histories of major depression, which may limit the generalizability of our results to other samples. Importantly, we were able to show that the results were maintained even after statistically controlling for the influence of mother and child psychopathology. Second, analyses focused on children's diagnoses of depressive disorders generally, rather than episodes of MDD specifically. This decision was made based on the low prevalence of MDD during childhood (for review, see Avenevoli et al., 2008), as well as evidence indicating that in youth, differences in severity of depression reflect quantitative, not qualitative differences (Angold, Costello, Farmer, Burns, & Erkanli, 1999; González-Tejera et al., 2005; Hankin, Fraley, Lahey, & Waldman, 2005). This said, future studies should seek to determine whether co-rumination predicts past history or future occurrences of MDD specifically. These studies should also examine whether this relation is specific to depression versus other forms of psychopathology. Also, as noted above, the retrospective design did not allow a determination of whether co-rumination was a cause or consequence of children's depressive diagnoses. Multi-wave longitudinal studies are needed to more definitively determine the temporal ordering of influences between co-rumination and depression during childhood and adolescence. Finally, additional research is needed to better understand the dyadic context of co-rumination, specifically the process by which co-

rumination may arise within a friendship pair and how this may impact perceived levels of friendship quality and depression within each child.

Implications for Research, Policy, and Practice

The current results have a number of potentially important implications. First, as noted above, the current findings add to a growing body of research supporting the role of corumination in risk for depression among youth. In terms of clinical implications, a common goal in therapy is to motivate clients to seek out friendships and increase the quality of their social support. Although co-rumination is associated with higher friendship intimacy (Rose 2002; Rose et al., 2007), the current findings add to a growing body of research supporting its link with depression as well. Thus clinicians may consider extending their focus to *how* children cultivate intimacy and support within their peer relationships. To the extent that youth foster friendships via co-rumination the benefits derived from social support may be counteracted by the drawbacks of this maladaptive interaction style.

In summary, the current results indicate that the link between co-rumination and depressive symptoms observed in previous studies (e.g., Hankin et al., 2010; Rose et al., 2007) generalizes to clinical episodes of depression. Importantly, this relation was at least partially independent of children's current diagnoses and symptoms of depression, suggesting that co-rumination is not merely a correlate of concurrent depression. Future research is needed to explore whether co-rumination predicts future onsets of depressive disorders. Additional research is also needed to determine whether co-rumination mediates or moderates the gender difference in depression during childhood and adolescence.

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