



Brooding and reflection as components of rumination in late childhood [☆]

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ABSTRACT

Rumination is an important vulnerability factor for depressive symptoms. Recent work in adults, adolescents and children has proposed a two-factor model, with brooding and reflection as distinct components of rumination. The present study investigates the validity of this model in children. Using a three-wave (baseline, 6- and 12-months) prospective design, associations between rumination subtypes and depressive symptoms were examined in a community sample of 138 children ages 9–13 years. Factor analysis on an extended version of the Children Response Style Questionnaire revealed brooding and reflection as distinct factors. As expected, brooding but not reflection predicted depressive symptoms concurrently. However, brooding did not predict depression prospectively after controlling for baseline symptoms. Reflection was unrelated to depressive symptoms concurrently but in separate interactions with age and sex reflection did predict depression at 1-year. Higher levels of reflection were protective among older but not younger children. Lower levels of reflection were associated with heightened depressive symptoms at 1-year among boys. These results suggest that the protective effects of reflection warrant additional study.

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1. Introduction

According to Nolen-Hoeksema's Response Style Theory of depression (for a review, see Nolen-Hoeksema, 2004), individual differences in the way people cope with sad or depressed feelings may explain differences in vulnerability to depressive moods. Specifically, a ruminative style of responding to sad mood is expected to contribute to the onset, severity and persistence of depressive symptoms. Rumination refers to the tendency to dwell on one's sad and depressed feelings and on their possible causes and implications (Nolen-Hoeksema, 1987, 1991). Results from prospective studies in adults (e.g., Nolen-Hoeksema & Morrow, 1991) and youth samples (e.g., Abela, Brozina, & Haigh, 2002; Schwartz & Koenig, 1996) support the role of rumination in the maintenance and exacerbation of depressive mood (for a review, see Watkins, 2008). Furthermore, rumination has been linked to the onset of

depressive episodes and predicts the severity of depression in clinical samples (Just & Alloy, 1997). Research also shows that the occurrence of rumination tends to increase from late childhood through adolescence (Hampel & Petermann, 2005), that rumination is associated with concurrent depression in older children and adolescents (Abela et al., 2002), and that higher levels of rumination at baseline in 4th through 6th grades are associated with higher levels of depressive symptoms at a 3-year follow-up (Broderrick & Korteland, 2004). These and other findings have led researchers to conclude that rumination is an important cognitive vulnerability factor for depression (Abela & Hankin, 2007; Nolen-Hoeksema, 1998).

Studies in adults and older adolescents have typically examined rumination using the Ruminative Response Scale (RRS; Nolen-Hoeksema, Larson, & Grayson, 1999), which is a 22-item self-report questionnaire derived from the Response Style Questionnaire (RSQ; Nolen-Hoeksema, 1987). Recently, Treynor, Gonzalez, and Nolen-Hoeksema (2003) modified the RRS, removing 12 items with manifest depression content. For the remaining 10 items a principal components analysis yielded a two-factor structure with 'reflection' and 'brooding' as two rumination subtypes. Reflection refers to "purposeful turning inward to engage in cognitive problem-solving to alleviate one's depressive symptoms", whereas brooding involves "a passive comparison of one's current situation with some unachieved standard" (Treynor et al., 2003, p. 256). Interestingly, scores on the Reflection and Brooding subscales were

[☆] Following Allison (2002), we also ran this analysis using multiple imputation (MI) to replace the missing CDI-scores at T3. Specifically, using the SPSS MI program, 20 sets of imputed values were generated based on a model containing all of the variables in the regression model and the regression analysis was run on each of these data sets and the result pooled. These pooled results were identical in pattern to those reported here (i.e., both the Reflection \times Sex and Reflection \times Age interactions were significant).

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found to differentially predict concurrent and future depression scores. Specifically, reflection was positively correlated with concurrent depressive symptoms, but negatively correlated with depressive symptoms at follow-up. Thus, higher levels of reflection were predictive of lower levels of depressive symptoms at follow-up. Brooding, in contrast, was positively associated with both concurrent and follow-up depression scores.

As noted above, *Treynor et al. (2003)* found that higher levels of reflection were predictive of lower levels of depressive symptoms at follow-up, suggesting that reflection may be adaptive. Several other studies have reported findings consistent with this possibility. *Crane, Barnhofer, and Williams (2007)* examined the balance between brooding and reflection among participants with a common history of major depression but varying histories of suicidality. Among participants with no history of suicidality reflection predominated relative to brooding whereas the opposite was true among those with histories of suicidal ideation or suicide attempts. Although a study of adolescents by *Burwell and Shirk (2007)* found that reflection was not significantly related to depressive symptoms, it was positively correlated with primary and secondary control coping, albeit only among girls. It must be noted however that not all studies have found reflection to be adaptive. For example, *O'Connor and Noyce (2008)* found that reflection was unrelated to levels of suicidal ideation and *Miranda and Nolen-Hoeksema (2007)* found higher levels of reflection to predict suicidal ideation at 1-year follow-up. Similarly, *Roelofs, Huibers, Peeters, Arntz, and van Os (2008)* found reflection to be positively associated with depression and *Selby, Connell, and Joiner (in press)* found a positive association with self-injury (*Selby et al., in press*).

In summary, although some studies have failed to find a clear differentiation between brooding and reflection in terms of their association with depression (see e.g., *Kwon & Olson, 2007*), the weight of evidence links brooding to the maladaptive outcomes of rumination. In contrast, evidence suggests that reflection is at least largely benign and may be an adaptive aspect of rumination.

Thus far, two studies have considered brooding and reflection in youth samples. In a prospective study of adolescents, ages 12–15 years, *Burwell and Shirk (2007)* found brooding but not reflection to predict increases in depressive symptoms over time. As noted above, higher levels of reflection were associated with more adaptive coping strategies. *Lopez, Driscoll, and Kistner (2009)* examined the rumination subtypes in children and early adolescents (grades 2–7). Using the Children's Response Styles Scale (CRSS), they showed that the subtypes of rumination are present in children and provide a better fit than a unitary construct of rumination. Furthermore, they found that brooding was concurrently associated with depressive symptoms whereas reflection was not.

It is important to note however, that because not all reflection and brooding items of the adult RSS are represented on the CRSS, the reflection and brooding scales in the *Lopez et al. (2009)* study do not fully match the items of the two rumination subtypes as commonly used in earlier adult and adolescent studies. This limits the comparability of the findings and leaves open questions about the extent to which their subscales fully capture the constructs of brooding and reflection. In this regard it should be noted that the correlation between brooding and depressive symptoms found by *Lopez et al. (2009)* although significant was considerably lower ($r = .17$) than expected based on prior studies (e.g., *Burwell & Shirk, 2007; Treynor et al., 2003*).

Important to mention is that, to date, the *Lopez et al. (2009)* study is the only study that included children. The study's central findings on reflection and brooding as subtypes of rumination in relation to depressive symptoms are, thus, in need of replication. Also of note is that the *Lopez et al. (2009)* findings were limited by their cross-sectional nature. As such, it remains unclear to what

extent these cross-sectional associations will replicate prospectively in children.

The *first aim* of the present study was to examine rumination subtypes in children using an item set that directly parallels the RRS. Towards this end, an extended version of the Children's Response Styles Questionnaire (CRSQ; *Abela, Vanderbilt, & Rochon, 2004*) was constructed. The CRSQ item set was enlarged from 25 to 31 items, adding downward extensions of 3 RRS 'brooding' and 3 RRS 'reflection' items that were not included in the original version of the CRSQ. The factor structure of the revised CRSQ rumination scale was investigated using confirmatory factor analysis. Our *second aim* was to examine the pattern of associations of the resulting subscales with measures of depressive symptoms not only cross-sectionally (cf. the Lopez study) but also prospectively over 6- and 12-month intervals.

Given earlier reports of associations between subtypes of rumination and depression being moderated by sex (e.g., *Burwell & Shirk, 2007*), the present study will also explore the role of sex as a potential moderator. In line with *Lopez et al. (2009)* age was entered as a variable in all analyses too, including a test of its possible moderating effects.

2. Method

2.1. Participants

One hundred and forty-four 5th and 6th graders recruited from seven classes of three Belgian primary public schools were invited to take part in the study. At Time 1 (T1), 95.8% of the invited children ($n = 138$) participated. The age of the youngsters ranged from 9 to 13 years ($M = 10.8$; $SD = 0.69$). For girls ($n = 73$), age ranged from 10 to 12.08 years ($M = 10.9$; $SD = 0.62$), whereas for boys ($n = 65$), age ranged from 9 to 13 ($M = 10.7$; $SD = 0.74$). The sample was almost exclusively Caucasian (98.4%).

Six months (Time 2; T2) and 12 months (Time 3; T3) later, participants were asked to take part in the follow-up study. At T2, of the initial group, 2.2% ($n = 3$) declined to participate, yielding a sample of 135 youngsters. For girls ($n = 72$), age ranged from 10.5–12.6 years ($M = 11.43$; $SD = 0.62$) and for boys ($n = 63$), age ranged from 9.5–13.5 ($M = 11.2$; $SD = 0.76$). At T3, 70.3% of the initial group participated, yielding a sample of 97 youngsters. For girls ($n = 58$), age ranged from 11–13 years ($M = 11.9$; $SD = 0.64$) and for boys ($n = 39$), age ranged from 10–14 years ($M = 11.3$; $SD = 0.72$). Dropout at T3 was largely due to children advancing to another school. There were no significant differences in depression or rumination scores between children who participated three times and children who did not.

2.2. Instruments

The *Children's Response Styles Questionnaire* (CRSQ; *Abela et al., 2004*) is a self-report questionnaire consisting of 25 items to be answered on a 4-point scale ranging from 1 to 4. Three subscales can be derived: Rumination, Distraction and Problem-Solving. In the original version, the Rumination subscale consists of 13 items. For the present study, downward extensions of three RSS 'reflection' items and three RSS 'brooding' items (*Table 1*) were added. Two items were slightly reworded ("Analyze recent events to try to understand why you are depressed" to "think about recent events to try to understand why I feel sad" and "Analyze your personality to try to understand why you are depressed" to "reflect on myself to try to understand why I am depressed") to make the items more understandable for children.

The *Children's Depression Inventory* (CDI; *Kovacs, 2003*) is a 27-item self-report questionnaire that measures cognitive, affective

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