



## Rumination and suicidal ideation: The moderating roles of hope and optimism

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### ABSTRACT

The current study aimed to investigate whether the correlation between rumination and suicidal ideation is moderated by the presence of hope and optimism. It was hypothesized that both hope and optimism would moderate (weaken) the relationship between rumination and suicidal ideation. Two hundred and ninety-eight participants completed self-report measures of hope, optimism, rumination (brooding and reflection), and depression. Results demonstrated that both hope and optimism weakened the relationship between rumination and suicidal ideation, as well as the relationships between both subscales of rumination and suicidal thinking. These results were found when controlling for symptoms of depression. Results suggest that a ruminative thinking style may be most harmful when an absence of hope or optimism is also present.

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### 1. Introduction

Statistics regarding causes of death in the United States indicate that suicide is the tenth leading cause of death in the country (McIntosh & Drapeau, 2012). To assist in the prevention of suicide, researchers have identified risk factors for suicidal behaviors, with hopelessness, suicidal ideation, and rumination emerging as some of the strongest predictors of suicide risk (McLean, Maxwell, Platt, Harris, & Jepson, 2008). The current study aimed to further explore the relationship between rumination, an empirically supported cognitive risk factor for suicide, and suicidal ideation.

Rumination is defined as repetitive thoughts regarding one's current distress, including the reasons for and the consequences of this distress (Nolen-Hoeksema, 1991). Rumination has been found to result in depressive symptoms, impaired motivation and concentration, and reduced problem solving ability (Papageorgiou & Wells, 2004; Watkins, Moulds, & Mackintosh, 2005). Furthermore, rumination is experienced as intrusive, disruptive, and time consuming (Papageorgiou & Wells, 2004). For these reasons, rumination has been conceptualized as a maladaptive coping strategy.

Rumination consists of two components, (1) brooding and (2) reflection. Brooding is repetitively dwelling on negative consequences of distress, whereas reflection involves actively seeking information in order to help better understand one's distress. Treynor, Gonzalez, and Nolen-Hoeksema (2003) found that reflective rumination led to a decrease in depressive symptoms whereas brooding rumination led to increased depressive symptoms. At least one other study (Gooding, Taylor, & Tarrrier, 2012) has found that *both* subscales predicted negative outcomes, although brooding was more strongly related to depressed mood. Reflection only predicted depressed mood for participants who believed reflection was an ineffective coping strategy. With inconsistencies in the literature regarding the perniciousness of these subscales, more research is needed to investigate rumination, brooding, and reflection.

The relationship between rumination, its subscales, and suicidal ideation has been explicitly studied over the last decade. Morrison and O'Connor (2008) reviewed the existing studies and concluded that the larger construct of rumination was positively related to suicidal desire and/or attempts in 10 of the 11 reviewed studies. Interestingly though, the findings were not as consistent for the specific styles of brooding and reflection. Several studies noted that brooding was associated with suicidal ideation (Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008; O'Connor,

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O'Connor, & Marshall, 2007) or attempts (Crane, Barnhofer, & Williams, 2007). However, reflection was either associated with being a non-attempter (Crane et al., 2007) or not associated with suicide at all (O'Connor & Noyce, 2008). More recent research has suggested that psychiatric inpatients with a history of suicide attempts engaged in brooding rumination more often than inpatients with no history of attempts, but no difference was found for reflective rumination (Grassia & Gibb, 2009). This suicide literature both contributes to the work on rumination and depression, and demonstrates the importance of examining both rumination styles in addition to the larger construct.

Despite consistent findings correlating rumination and suicidal behaviors, fewer studies have attempted to explain potential moderators of this association. One potential moderator of this relationship is that of hope. Nolen-Hoeksema (1991) argues that rumination prevents individuals from actively attempting to make changes to ease their distress. Hope Theory posits that hope is composed of three elements – goals, pathways, and agency (Snyder, Rand, & Sigmon, 2005). Thus, all human behavior is guided by goals. To attain their goals, humans must engage in pathways thinking, which allows individuals to determine avenues towards obtaining their goals. Lastly, agency is a component of hope that fosters motivation and perceived capability to reach and achieve goals (Snyder et al., 2005). It may be that rumination is most strongly related to suicide if there is also an absence in hope. Hope has been shown to moderate the relationship between rumination and depression (Geiger & Kwon, 2010) but has not been investigated in relationship to the link between rumination and suicide. In their study of depression, Geiger and Kwon (2010) suggest that when ruminating, hopeful individuals can overcome both the event that preceded the rumination as well as the repetitive thinking because they feel as though they can enact plans to work through the issues that are occupying their thoughts. Thus, hopeful individuals are buffered against the effect that rumination has on levels of depression.

Optimism may be another potential moderator between rumination and suicide, but it has not been explicitly studied. The definition of optimism revolves around the notion of future expectations. Individuals who are considered optimists tend to think of the future in a positive manner and believe that life will be generally favorable (Carver & Scheier, 2005). Furthermore, optimists and pessimists differ in their coping strategies when faced with difficult life situations. When optimists encounter difficulties, they use problem-solving coping (Carver & Scheier, 2005) whereas research demonstrates that those with a pessimistic outlook may engage in self-defeating acts, including suicidal behavior (see Carver & Scheier, 2005 for a review). Although optimism and hope involve thinking about, and expectations for future events, Bryant and Cvengros (2004) argue that these two positive psychological variables are distinct, moderately intercorrelated constructs. In their investigation, a higher-order Confirmatory Factor Analysis (CFA) indicated that hope and optimism analyzed separately (i.e., as two distinct factors) provided better structural fit than the two constructs analyzed together as one factor. The researchers argued that hope may encompass personal striving for specific goals, whereas the construct of optimism refers to the general expectation that future outcomes will be positive.

To date, there is a larger knowledge base of risk factors for suicide than protective factors and resiliency against suicide (Linehan, Goodstein, Nielsen, & Chiles, 1983; Wingate et al., 2006). Investigating suicide through personal and community strengths is a novel yet imperative method to reduce the prevalence of suicide (Wingate et al., 2006). Previous research has demonstrated that hope is not only a robust protective factor against suicide, but is also protective against risk factors for suicide such as hopelessness, suicidal ideation, thwarted belongingness, and perceived burden-

someness (Davidson, Wingate, Rasmussen, & Sligh, 2009; Grewal & Porter, 2007; Range & Penton, 1994). The protective relationship of hope against suicidal thinking, thwarted belongingness, and perceived burdensomeness has been extended to ethnic minority populations such as African Americans and American Indian/Alaskan Natives (Davidson, Wingate, Sligh, & Rasmussen, 2010; Meadows, Kaslow, Thompson, & Jurkovic, 2005; O'Keefe, Tucker, Wingate, & Rasmussen, 2011).

Similarly, the theoretical relationship between optimism/pessimism and suicide has been empirically supported. Individuals with no previous suicidal behavior rated life more positively than individuals with suicidal ideation or recent suicide attempts (Wetzel, 1975). Previous research has also demonstrated a negative relationship between optimism and hopelessness (O'Connor & Cassidy, 2007), suicidal ideation (Hirsch, Conner, & Duberstein, 2007), thwarted belongingness, and perceived burdensomeness (Rasmussen & Wingate, 2011).

Although the rumination literature and positive psychology literature have both successfully linked their respective constructs to suicide, these literatures have remained independent from each other. However, examining the relationship between rumination – a robust predictor of suicide – and positive psychological traits may help elucidate specific moderators of the relationship between the maladaptive coping strategy and the desire for suicide. It is possible that those who ruminate, but are more hopeful or optimistic by nature, may feel less of the effects of the repetitive thinking and thus experience less thoughts of suicide. Even when ruminating, individuals who are naturally more hopeful or optimistic may be buffered against the effects of rumination and thus experience less suicidal ideation. Clarifying these relationships could provide important information about the maintenance of suicidal thinking as well as possible ways to foster resilience in clients. Competent treatment for individuals experiencing suicidal thinking may not only focus on the reduction of ruminative tendencies, but also incorporate cognitive-behavioral strategies aimed at fostering hope and/or optimism in clients.

The current study aimed to investigate the relationship between hope, optimism, suicidal ideation, and rumination. It was hypothesized that hope and optimism would be associated with lower levels of rumination, brooding, and reflection, thus demonstrating a protective relationship. This study also tested whether hope and/or optimism moderates the relationship between rumination and suicidal ideation. It was hypothesized that hope would buffer the effect that rumination has on thoughts of suicide. Thus, elevated levels of rumination would be related to increased suicidal ideation *only* in the presence of low levels of hope. We expected to see this pattern with optimism as well, namely optimism would buffer the relationship between rumination and suicidal ideation.

## 2. Materials and methods

### 2.1. Participants and procedure

Undergraduate students at a large Midwestern university earned course credit for their participation in the current study. Participants were recruited through the university's SONA system. This system allows participants to sign up to participate in available research studies. Participants completed study measures via an online research questionnaire and were provided course credit for participation. All study procedures were approved by the university's institutional review board. The sample consisted of 298 participants, 69.1% of which were female (206) and 30.9% were male (92). Participant age ranged from 18 to 56 years with a mean age of 19.61. Two-hundred and forty participants identified as

Caucasian (80.5%), 20 identified as American Indian (6.7%), 16 identified as African American/Black (5.4%), seven identified as Asian/Asian American (2.3%), eight identified as Hispanic/Latino (2.7%), six identified as biracial (2.0%), and one declined to state his or her ethnicity (0.3%).

## 2.2. Measures

Participants completed the following self-report measures:

### 2.2.1. Demographics questionnaire

This form assesses the gender, age, education level, and ethnicity of participants.

### 2.2.2. Hopelessness Depression Symptom Questionnaire–Suicidality Subscale (HDSQ–SS; Metalsky & Joiner, 1997)

The Hopelessness Depression Symptom Questionnaire–Suicidality Subscale assesses levels of suicidal ideation. The four question measure is part of the Hopelessness Depression Symptom Questionnaire (Metalsky & Joiner, 1997). Instructions ask participants to report their thoughts of suicide over the past two weeks on a 1 to 4 Likert-type scale. Internal consistency for the HDSQ–SS was excellent ( $\alpha = .92$ ) in the current study.

### 2.2.3. Center for Epidemiologic Studies Depression Scale (CES–D, Radloff, 1977)

The CES–D is a 20-item measure that assesses symptoms of depression during the previous two weeks. Individual items are on a Likert-type scale ranging from 0 = *Rarely or none of the time (less than 1 day)* to 3 = *Most or all of the time (5–7 days)*. The internal consistency of the CES–D was excellent ( $\alpha = .91$ ) in the current study.

### 2.2.4. Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003)

The RRS consists of 22 items measuring rumination. The measure is also comprised of two five question subscales: Brooding and Reflection. The Brooding subscale assesses the tendency to focus on one's depressed mood and the consequences of this mood. The Reflection subscale assesses the tendency to attempt to understand why one is feeling depressed. Items are rated on a Likert-type scale from 1 = *Never* to 4 = *Always*. The RRS demonstrated excellent internal consistency in the current study ( $\alpha = .95$ ). The reflection subscale displayed good internal consistency ( $\alpha = .85$ ) and the brooding subscale displayed acceptable internal consistency ( $\alpha = .78$ ).

### 2.2.5. Revised Trait Hope Scale (HS–R2; Shorey & Snyder, 2004)

The HS–R2 is an 18-item self-report measure that assesses levels of hope and its three specific components of goals, agency, and pathways. Each subscale is comprised of six items. Scores are rated on an eight-point Likert-type scale ranging from 1 = *Definitely false* to 8 = *Definitely true*. Internal consistency for the HS–R2 and the goals subscale were good ( $\alpha = .88$  and  $.80$  respectively). The subscales of agency and pathways displayed acceptable internal consistency ( $\alpha = .73$  and  $.76$  respectively).

### 2.2.6. Revised Life Orientation Test (LOT–R; Scheier, Carver, & Bridges, 1994)

The LOT–R assesses levels of dispositional optimism. Ten 5-point Likert-type scale items ranging from 0 = *Strongly Disagree* to 4 = *Strongly Agree* comprise the measure. Four items on the LOT–R are filler questions, thus only six items are scored. The LOT–R demonstrated good internal consistency in the current study ( $\alpha = .80$ ).

## 2.3. Analytical strategy

In order to test the moderation hypotheses, hierarchical regression analyses were conducted. For each hierarchical regression, suicidal ideation served as the criterion variable. Depression and gender were entered in the first step as a control as they have been commonly associated with both suicidal ideation and rumination (Brown, Beck, Steer, & Grisham, 2000; Nolen-Hoeksema, Parker, & Larson, 1994). Step two consisted of the predictor variable (rumination, brooding, or reflection) and the moderator (either hope or optimism). The centered product of these variables was entered in the third block to test the moderation hypotheses (see Aiken & West, 1991). To further explore the significant moderations, the interactions were probed by plotting regression lines. Three points for each variable are plotted in this technique: the mean of the variable and points one standard deviation above and below the mean.

## 3. Results

Means, standard deviations, and correlations of study variables are presented in Table 1. As expected, suicidal ideation was positively associated with depression, rumination, and both brooding and reflective rumination styles. Depression was also positively correlated with rumination and its subscales. Suicidal ideation was negatively related to hope and optimism. Both hope and optimism were negatively associated with depression and rumination as well as both rumination subscales. Hope and optimism were positively correlated to each other. Independent samples *t*-tests indicated gender differences in levels of hope, goals, and optimism. Women endorsed higher levels of hope [ $t(296) = -2.25, p < .05$ ], goals [ $t(296) = -3.55, p < .001$ ], and optimism [ $t(296) = -2.21, p < .05$ ] in comparison to men.

Depression and gender were controlled for in all of the moderation analyses presented, and accounted for 15.6% of the variance of suicidal ideation,  $F(2, 295) = 27.22, p < .001$ .

### 3.1. Rumination and suicidal ideation

Results indicate that hope moderated the relationship between rumination and suicidal ideation. In step three of the regression equation, the interaction term of hope by rumination was a significant predictor of suicidal ideation, accounting for 5.9% of the variance in suicidal ideation above and beyond depression, gender, and the variable's main effects,  $F(5, 292) = 15.94, p < .001, \beta = -.26, t(292) = -4.67, p < .001$ . Fig. 1 illustrates that elevated levels of hope were associated with a weaker relationship between rumination and suicidal ideation as compared to lower levels of hope.

Optimism also moderated the relationship between rumination and suicidal ideation. The interaction of rumination by optimism significantly accounted for 2.9% of the variance of suicidal ideation above and beyond depression, gender, and the variable's main effects,  $F(5, 292) = 10.04, p < .01, \beta = -.18, t(292) = -3.17, p < .01$ . Regression lines indicated that a weakening in the relationship between rumination and suicidal ideation was related to elevated levels of optimism; whereas a stronger relationship between rumination and suicidal ideation emerged when low levels of optimism were endorsed (Fig. 2).

### 3.2. Brooding and suicidal ideation

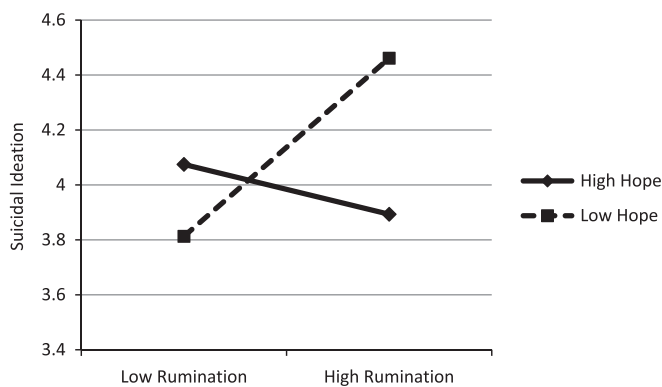
Hope significantly moderated the relationship between brooding and suicidal ideation. The interaction term of hope by brooding entered in step three of the regression equation was a significant

**Table 1**  
Two-tailed correlations, means, and standard deviations of study variables.

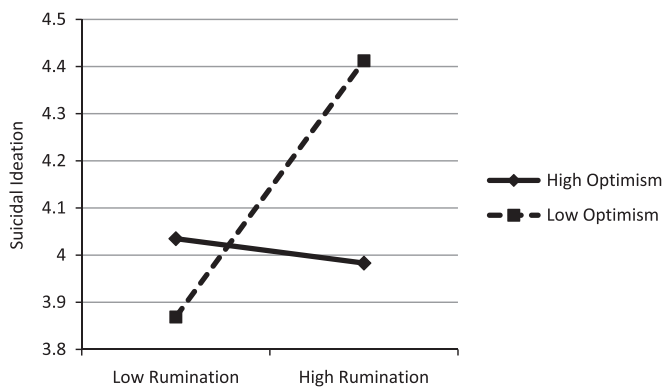
Variable	1	2	3	4	5	6	7	8	9	10
1. Rumination	–									
2. Brooding	.90**	–								
3. Reflection	.86**	.73*	–							
4. Hope	–.39**	–.39*	–.19**	–						
5. Goals	–.25**	–.27**	–.10	.85**	–					
6. Pathways	–.26**	–.29**	–.13*	.79**	.43**	–				
7. Agency	–.48**	–.44**	–.27**	.89**	.68**	.57**	–			
8. Optimism	–.42**	–.45**	–.24*	.61**	.46**	.49**	.61**	–		
9. Depression	.68**	.61**	.50**	–.45**	–.33**	–.29**	–.54**	–.49**	–	
10. Suicidal ideation	.27**	.21**	.21**	–.19**	–.16**	–.11	–.22**	–.18**	.39**	–
<i>M</i>	37.56	9.15	8.06	111.43	36.66	35.38	39.39	16.42	11.88	4.14
<i>SD</i>	12.96	3.38	3.27	15.43	6.41	5.98	5.89	3.83	9.51	.78

\*  $p < .05$ .

\*\*  $p < .01$ .



**Fig. 1.** Hope as a moderator of rumination on suicidal ideation after controlling for depression.



**Fig. 2.** Optimism as a moderator of rumination on suicidal ideation after controlling for depression.

predictor of suicidal ideation, accounting for 2.9% of the variance in suicidal ideation above and beyond depression, gender, and the variable's main effects,  $F(5, 292) = 9.79$ ,  $p < .01$ ,  $\beta = -.17$ ,  $t(292) = -3.13$ ,  $p < .01$ . The relationship between brooding and suicidal ideation was weaker when higher levels of hope were endorsed.

Analyses also indicated that optimism also moderated the relationship between brooding and suicidal ideation. The addition of the brooding by optimism interaction in the third step of the regression equation accounted for 1.9% of the variance in suicidal ideation above and beyond depression, gender, and the variable's main effects,  $F(5, 292) = 12.33$ ,  $p < .05$ ,  $\beta = -.14$ ,  $t(292) = -2.45$ ,  $p < .05$ . Elevated levels of optimism were associated with a weaker relationship between brooding and suicidal ideation.

### 3.3. Reflection and suicidal ideation

The relationship between reflection and suicidal ideation was moderated by levels of hope. The addition of reflection X hope in step three of the regression equation accounted for 1.6% of the variance in suicidal ideation above and beyond depression, gender, and the variable's main effects,  $F(5, 292) = 5.53$ ,  $p < .05$ ,  $\beta = -.13$ ,  $t(292) = -2.35$ ,  $p < .05$ . The relationship between reflection and suicidal ideation was weaker when elevated levels of hope were endorsed.

Similarly, the relationship between reflection and suicidal ideation was moderated by levels of optimism. The reflection by optimism interaction predicted 2.0% of the variance of suicidal ideation above and beyond depression, gender, and the variable's main effects,  $F(5, 292) = 6.55$ ,  $p < .001$ ,  $\beta = -.14$ ,  $t(292) = -2.60$ ,  $p < .05$ . Elevated levels of optimism weakened the relationship between reflection and suicidal ideation.

## 4. Discussion

The current study investigated hope and optimism as potential moderators of the associations of rumination, brooding rumination, and reflective rumination and suicidal ideation. It was hypothesized that hope and optimism would each moderate the relationship between rumination and suicidal ideation such that higher levels of hope or optimism would be associated with a decreased effect of rumination, brooding rumination, and reflective rumination on suicidal ideation. Due to the robust relationship with depression and rumination (e.g. Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), the effect of depression on suicidal ideation was controlled for in each analysis. Overall, results were consistent with hypotheses. Both hope and optimism provided a significant protective effect against the deleterious effects of rumination, brooding rumination, and reflective rumination.

Correlation analyses indicated that rumination, brooding, and reflection were positively associated with suicidal ideation and negatively associated to hope and optimism as hypothesized. The RRS total score demonstrated a slightly stronger correlation to suicidal ideation as compared to brooding and reflection. This result suggests rumination may be more closely related to suicidal ideation than the subscales of brooding and reflection independently. Treynor et al. (2003) suggests that the 12 items not included in the brooding or reflection subscales of the RRS are highly similar to symptoms of depression and are not a distinct cognitive process. These items may have contributed to the higher correlation between rumination and suicidal ideation than the correlation between suicidal ideation and either subscale as those additional 12 items are highly related to depressive symptomatology. This



result was somewhat unexpected given previous research indicating that reflection may be unrelated to suicidal ideation (O'Connor & Noyce, 2008). Due to the unfounded research on reflection, more research is clearly necessary to continue to examine this construct.

Results showed significantly higher levels of suicidal ideation for those who had high rumination and low hope, as opposed to those with high levels of hope. This relationship was found when symptoms of depression were statistically controlled. These results suggest that hope provided a significant protective influence against the effect of rumination in predicting suicidal ideation. These results are consistent with previous research (Geiger & Kwon, 2010), and take those results one step further by providing support for hope as a protector against the most serious of depressive symptoms, suicidal ideation. The negative association of hope and its facets with rumination suggests that individuals who have more goals, are better able to ascertain the pathways to achieve those goals, and are more motivated to achieve those goals may be less likely to ruminate about their problems. They then in turn may be less likely to experience symptoms of depression or suicidal ideation when faced with negative life events.

Results also showed significantly higher suicidal ideation for those with high rumination and low optimism, as opposed to those with high levels of optimism. Thus, optimism also provided a significant protective effect against rumination in predicting suicidal ideation. This adds support to Rasmussen and Wingate (2011), further suggesting that optimism is a protective factor from suicidal thinking. The negative association between optimism and rumination suggests that individuals who have positive expectations for the future may be less likely to ruminate about their problems, and in turn they may be less likely to consider suicide when faced with negative life events.

The findings of the current study should be interpreted in light of the limitations. Although the results of the study support our hypotheses, the effect sizes for the moderation analyses are small (i.e., explaining between one and six percent of the variance of suicidal ideation above and beyond depression, gender, and first-order effects). Also, the sample consisted of undergraduate students with relatively low levels of suicidal ideation. It is possible that the current findings may not generalize to a clinical sample. Further, the current study utilized self-report measures of the constructs of interest. It is possible that objective or interview-based assessments of the constructs of interest would provide a more reliable measurement of these constructs. Additionally, the study was cross-sectional in nature, thus statements about causality and temporal precedence are not possible from the current study.

Future work should attempt to replicate the current findings in a clinical sample to determine the potential clinical utility of understanding the protective role that hope and optimism could play with regard to rumination and suicidality. Further, research utilizing an experimental design could investigate if hope and optimism moderate the relationship between rumination and suicidal ideation when participants are assigned to a rumination versus an attentional control condition.

While the current findings are preliminary in nature, they fit with a larger body of literature that has suggested that hope and optimism provide a buffer against suicidal ideation (Davidson et al., 2009, 2010; Hirsch et al., 2007; Range & Penton, 1994; Rasmussen & Wingate, 2011). As a whole, these findings suggest that these specific strengths (hope and optimism) may be important in understanding an individual's suicide risk and provide a potential area to draw from to ameliorate suicide risk.

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