

Shorter communication

Personality and cognitive processes: Self-criticism and different types of rumination as predictors of suicidal ideation

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Abstract

Self-criticism and rumination have been related to suicidality. In the present study, we investigated the extent to which different types of rumination (brooding and reflection) mediate the relationship between self-criticism and suicidal ideation. Two hundred and thirty-two healthy adults completed a range of psychological inventories at Time 1 and were followed up approximately 3 months later (Time 2). Brooding was more strongly associated with suicidal ideation than reflection. Hierarchical regression analyses confirmed that among those who completed measures at both time points, brooding rumination fully mediated the self-criticism–Time 2 suicidal ideation relationship. Reflection did not mediate the self-criticism–suicidal ideation link. The findings support a growing corpus of research which highlights the utility of personality and cognitive factors in advancing our understanding of the suicidal process. The theoretical and clinical implications are discussed.

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Introduction

Research on personality and cognition has identified a number of factors implicated in the etiology and course of suicidality (see Brezo, Paris, & Turecki, 2006; Ellis, 2006, for reviews). These factors include problem-solving deficits, memory and thinking biases, negative cognitive style, neuroticism, impulsivity and hopelessness (Williams & Pollock, 2002). A better understanding of how these factors relate to suicidality is crucial to the development of treatment interventions. More recently, however, self-criticism and rumination have received attention as predictors of suicidal risk (see Morrison & O'Connor, 2008a, 2008b; O'Connor, 2007, for reviews).

The research linking trait self-criticism to suicidality has been grounded within the broader perfectionism-suicidality literature wherein there is growing consensus that *self-critical evaluative concerns perfectionism*, a higher order factor, defined as “overly critical evaluation of one’s own behaviour, an inability to derive satisfaction from successful performance and chronic concerns about others’ criticism and performance” is a risk factor for psychological distress (Dunkley, Blankstein, Masheb, & Grilo, 2006, p. 65; see also Shafran,

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Cooper, & Fairburn, 2003). Indeed, some have suggested that self-criticism, a key component of *self-critical evaluative concerns perfectionism*, defined as excessive self-evaluative concerns coupled with high standards and the need for recognition (Blatt, 1990, 1995), is the active ingredient in the perfectionism-distress relationship. However, no research to date has investigated potential mechanisms that may link self-criticism to suicidal risk. Therefore, a central aim of the present study was to investigate one potential mechanism that may account for this relationship. The mechanism under consideration here was rumination, defined as “the extent to which individuals repeatedly focus on the causes, meanings, and consequences of their negative mood” (Miranda & Nolen-Hoeksema, 2007, p. 3090). We posit that self-critical dispositional characteristics increase the likelihood that one engages in rumination. Self-criticism provides the psychological substrate on which ruminative cognitions develop and thrive. In short, we aimed to investigate whether there is an indirect effect of self-criticism through rumination to suicidal ideation.

Over the past 15 years, the evidence base concerning the role of rumination in psychopathology has grown considerably; it has been implicated in mood disorders, particularly depression (e.g., Nolen-Hoeksema, McBride, & Larson, 1997) but more recently in the prediction of suicidality (Miranda & Nolen-Hoeksema, 2007; O'Connor, O'Connor, & Marshall, 2007; Smith, Alloy, & Abramson, 2006). For example, Smith et al. (2006) reported that rumination, as assessed by the Ruminative Responses Scale (RRS) of the Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991), predicted the presence and duration of suicidal ideation over 2.5 years. It is not surprising that rumination is involved in the suicidal process given that it interferes with social problem-solving (e.g., Watkins & Baracaia, 2002) which in turn increases suicidal risk (e.g., Williams, Barnhofer, Crane, & Beck, 2005).

Types of rumination: reflection and brooding

In an attempt to specify the active types of rumination, Treynor, Gonzalez, and Nolen-Hoeksema (2003) performed secondary analyses of data from Nolen-Hoeksema, Larson, and Grayson (1999) and identified two distinct aspects of rumination which explained the relationship between rumination and depression (separate from those items which were concerned with ruminating about the symptoms of depression). The first, reflection, is defined as “purposeful turning inward to engage in cognitive problem-solving to alleviate one’s depressive symptoms” (Treynor et al., 2003, p. 256). Whereas the second factor, brooding, reflects “passive comparison of one’s current situation with some unachieved standard” (Treynor et al., 2003, p. 256) or dwelling on the negative consequences of one’s mood (Miranda & Nolen-Hoeksema, 2007). Although there is evidence for a differential relationship between brooding/reflection and depression (e.g., Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Treynor et al., 2003) to our knowledge only three studies have looked at brooding and/or reflection within the context of suicidality. The first, a case-control study (Crane, Barnhofer, & Williams, 2007), compared three groups of participants with a history of depression (i.e., non-suicidal group versus suicidal ideator group versus suicidal attempter group) on their responses on the RRS. All of Crane et al.’s participants were currently well. They reported that suicidal ideators and attempters reported reduced reflection compared to the non-suicidal group but they did not show increased brooding. In addition, the groups also differed in terms of the balance of the two factors. Suicidal attempters endorsed brooding more strongly than reflection whereas the non-suicidal group endorsed reflection more strongly than brooding. Suicidal ideators exhibited an intermediate pattern of rumination. Second, in a short-term follow-up, O'Connor, R.C. et al. (2007, Study 2) reported that brooding predicted suicidal ideation at 2 months, however this study did not measure reflection. Finally, Miranda and Nolen-Hoeksema (2007) examined brooding and reflection as predictors of suicidal ideation in a community sample at baseline and at 1-year follow-up. They found that brooding was more strongly correlated with degree of ideation at baseline than was reflection. However, both brooding and reflection predicted suicidal ideation at the 1-year follow-up after controlling for demographics and baseline ideation.

The present study

Integrating the findings of the three latter studies with those concerning self-criticism and the suicidal literature, in the present study, we explored the relationships between brooding, reflection, self-criticism and

suicidal ideation in a sample of healthy participants at baseline and 3 months later (Time 2). We reasoned that self-criticism provides the psychological substrate on which rumination thrives. Self-criticism and rumination subsequently interfere with social problem-solving which, in turn, decreases the number of perceived solutions to interpersonal problems which leads to an increased sense of entrapment and suicidal risk. Given that brooding is characterised by *self-critical* pondering, we further reasoned that it would have a stronger relationship with trait self-criticism than reflection. We also included a measure of depression in the study, thereby determining whether or not depression accounts for the aforementioned relationships. As the main aim of the present study was to test empirical hypotheses rather than to determine clinical outcome per se, we chose a relatively short follow-up period (i.e., 3 months) to minimise participant attrition between Time 1 and Time 2 (similar to O'Connor, R.C. et al., 2007; Spirito, Valeri, Boegers, & Donaldson, 2003).

In the light of the mixed findings, our principal research question was to determine the extent and direction of the relationship between reflection/brooding and Time 2 suicidal ideation. However, consistent with Miranda and Nolen-Hoeksema (2007), we tentatively hypothesised that brooding would be more strongly related to suicidal ideation (at both time points) than reflection (Hypothesis 1). In addition, as outlined earlier, we hypothesised that rumination would account for (mediate) the relationship between self-criticism and Time 2 suicidal ideation independent of baseline suicidal ideation. Consistent with Hypothesis 1, we posited that brooding would be a stronger mediator of the self-criticism–suicidal ideation relationship than reflection (Hypothesis 2).

Method

Participants and procedure

We recruited 232 healthy adults from a British university and via convenience sampling from the general population. Recruitment included a range of methods: The students were recruited via the university's online experimental management system and through classes. Students received credit for their participation. Snowballing techniques were employed to yield a convenience sample from the general population. There were 170 females and 62 males with an overall mean age of 25.98 years ($SD = 14.36$). The men ($M = 29.9$, $SD = 18.2$) were significantly older than the women ($M = 24.5$, $SD = 12.5$), $t(230) = 2.57$, $p < .05$. At Time 1, all participants completed a range of psychological measures, as outlined below. The order of presentation of these measures was counterbalanced. At Time 2, approximately 3 months later ($M = 11.4$ weeks, $SD = 4.6$), participants were contacted again and asked to complete the suicide ideation subscale of the Suicide Probability Scale (Cull & Gill, 1988). The Suicide Probability Scale was included as it is a recognised predictor of suicide risk (e.g., Larzelere, Smith, Batenhorst, & Kelly, 1996; Witte, Fitzpatrick, Joiner, & Bradley Schmidt, 2005) and it has been shown to be sensitive to changes in suicidality (e.g., Rudd et al., 1996). To maximise follow-up, we made concerted efforts to contact all participants via post, email and telephone.

Baseline measures

Suicidal ideation

Suicidal ideation was assessed using the suicidal ideation subscale of the Suicide Probability Scale (Suicidal ideation-T1; Cull & Gill, 1988). The subscale comprised eight items pertaining to suicidal cognitions, negative affect, and presence of a suicide plan (e.g., "I think of suicide"). Respondents are asked to indicate how often they feel the statement applies to them from none or a little of time (1) to most or all of the time (4). The scale has good reliability and validity (Cull & Gill, 1988). Cronbach's $\alpha = .90$.

Depression

Depression was assessed via the Centre for Epidemiological Studies Depression Scale (CES-D) which is a 20-item measure for use in the general population (Radloff, 1977). Participants are required to rate on a four-point scale from rarely or none of the time (0) to most or all of the time (3) how often they have felt or behaved

like each of the statements during the past week (e.g., “I felt depressed”). Higher scores represent elevated depressive symptomatology. The scale is reliable and valid (Radloff, 1991). Internal consistency was good ($\alpha = .93$).

Self-criticism

Self-criticism was measured via the McGill Revised Depressive Experiences Questionnaire (Santor, Zuroff, & Fielding, 1997). As the focus of the present study was on self-criticism (not dependency), only those items ($n = 30$) which loaded on the self-criticism factor were included in the study (see Santor et al., 1997, for details). Respondents are asked to indicate the extent to which they agree/disagree with statements concerning personal characteristics and traits (e.g., “I tend to be very critical of myself”) from strongly disagree (1) to strongly agree (7). Internal consistency for the scale was very good ($\alpha = .82$).

Rumination

The RRS of the RSQ (Nolen-Hoeksema & Morrow, 1991) was employed to measure rumination. It consists of 22 items which record the extent to which individuals repeatedly focus on the causes, meanings, and consequences of their negative mood. A recent factor analysis (Treynor et al., 2003) has identified two separate subscales. The first, brooding, consists of five items that assess the extent to which individuals passively focus on the reasons for their distress (e.g., “how often do you think about a recent situation, wishing it had gone better?”). Reflective pondering or reflection is the second scale which also consists of five items that assess the degree to which individuals engage in cognitive problem-solving to relieve their distress (e.g., “How often do you analyse recent events to try to understand why you are depressed”). Respondents are asked to indicate how often they think or do each item from almost never (1) to almost always (4). Both subscales are reliable ($\alpha = .82$ and $.85$ for brooding and reflection, respectively).

Follow-up measure

Participants completed the suicide ideation subscale of the Suicide Probability Scale (suicidal ideation-T2; $\alpha = .87$) at Time 2.

Statistical analyses

First, we describe the sample (correlations, means and SDs) and then we present hierarchical regression analyses with those participants who completed measures at Time 1 and Time 2, to probe the key hypotheses. We adhered to Baron and Kenny (1986) and Kenny, Kashy, and Bolger's (1998) guidelines on testing for mediation. In addition, as age and sex differences exist in respect of affect and suicidality (O'Connor & Sheehy, 2000), we controlled for their potential effects in the multivariate analyses.

Results

Of the initial sample, 66% ($n = 153$) completed measures at both time points, at Time 1 (T1) and Time 2 (T2), approximately 3 months later. Our follow-up rate compares favourably to other studies in the field (e.g., Walker, Joiner, & Rudd, 2001; Wingate, Van Orden, Joiner, Williams, & Rudd, 2005). There was no significant sex difference between those who did/did not complete Time 2, $\chi^2(1) = .35$, $p = .55$, but those who did not complete the T2 measures were significantly younger, $t(230) = 2.44$, $p < .05$. With one exception (brooding), the groups did not differ significantly on the T1 variables (i.e., suicidal ideation, depression, self-criticism, reflection; range: $t(230) = .47$ – 1.9 , $p = .64$ – $.06$). Those who completed measures at Time 2 reported significantly lower levels of brooding compared with those who did not do so, $t(230) = 2.07$, $p < .05$. Participants reported significantly lower levels of suicidal ideation at T2 ($M = 9.44$, $SD = 2.63$) compared with T1 ($M = 9.02$, $SD = 2.11$), $t(152) = 2.65$, $p < .01$.

Correlations and hierarchical regression analyses

As the focus of the study is on those who completed measures at both time points, all forthcoming analyses are circumscribed to these individuals ($n = 153$). Zero-order correlations, means and standard deviations for the baseline and outcome variables are presented in Table 1. As expected, suicidal ideation (at T1 and T2) was positively correlated with depression, self-criticism, brooding and reflection. Depression was positively correlated with reflection, brooding and self-criticism. Although brooding and reflection were both correlated with suicidal ideation, the association between brooding and Time 2 suicidal ideation was stronger, $r(153) = .511$, $p < .001$, than that between reflection and Time 2 suicidal ideation, $r(153) = .368$, $p < .001$, $Z_{\text{diff}(150)} = 2.39$, $p < .01$. A similar trend was also evident for their relationships with Time 1 suicidal ideation, albeit the difference failed to meet conventional significance, $Z_{\text{diff}(150)} = 1.41$, $p = .08$; $r(153) = .502$, $p < .001$ and $r(153) = .418$, $p < .001$ for brooding and rumination, respectively. Younger participants reported higher levels of suicidal ideation, depression, reflection, brooding and self-criticism.

Brooding and reflection as predictors of Time 2 suicidal ideation

To further test Hypothesis 1, we conducted a hierarchical regression analysis wherein we examined the relative influence of brooding and reflection in the prediction of suicidal ideation at Time 2 whilst adjusting for age, sex and baseline depression and suicidal ideation. As summarised in Table 2, we entered age, sex, baseline depression and suicidal ideation at step 1, with reflection and brooding entered simultaneously at step 2. Adjusting for the step 1 variables, brooding, $\beta = .250$, $t(152) = 2.82$, $p < .01$, but not reflection, $\beta = .033$, $t(152) = .43$, $p = .67$, independently predicted Time 2 suicidal ideation.

Testing rumination as a mediator of the self-criticism–suicidal ideation relations

Following the procedure outlined by Baron and Kenny (1986) and Kenny et al. (1998), to test for mediation, two hierarchical regressions were performed. In each analysis, brooding and reflection are considered simultaneously, thereby investigating their independent effects. According to Kenny et al. (1998), mediation (i.e., the mediator carries the influence of the IV to the DV) is demonstrated when the following conditions are met: (1) the independent variable (i.e., self-criticism) affects the mediator (i.e., brooding or reflection); (2) the independent variable affects the dependent variable (i.e., T2 suicidal ideation); (3) the mediator affects the dependent variable when the independent variable is controlled for; and (4) full mediation is confirmed when the association between the independent variable and dependent variable is reduced to non-significance after the effect of the mediator is controlled for. If conditions 1–3 are met partial mediation is

Table 1
Correlations, means and SDs for all the study variables for those who completed measures at T1 and T2

	Age	Suicidal-T1	Suicidal-T2	Depression-T1	Reflection	Brooding	Self-criticism
Age	–						
Suicidal-T1	–.184*	–					
Suicidal-T2	–.166*	.681***	–				
Depression-T1	–.188*	.597***	.509***	–			
Reflection	–.208**	.418***	.368***	.578***	–		
Brooding	–.236**	.502***	.511***	.720***	.638***	–	
Self-criticism	–.174*	.453***	.425***	.631***	.499***	.664***	–
Mean (SD)	27.43 (15.81)	9.44 (2.63)	9.02 (2.11)	12.41 (10.55)	8.73 (3.61)	9.32 (3.34)	111.71 (20.52)

Note. Suicidal-T1: suicidal ideation at Time 1, suicidal-T2: suicidal ideation at Time 2, depression-T1: depression at Time 1.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Hierarchical regression analysis predicting Time 2 suicidal ideation from brooding and reflection, adjusting for age, sex, baseline depression and suicidal ideation

Step	Variable	β at step	p -value for β at step	ΔR^2 for step	Total R^2
Step 1	Age	-.042	.488	.513***	.513***
	Sex	-.064	.287		
	Suicidal-T1	.616***	.001		
	Depression-T1	.143	.051		
Step 2	Age	-.016	.788	.033**	.546***
	Sex	-.069	.237		
	Suicidal-T1	.587***	.001		
	Depression-T1	-.033	.714		
	Reflection	.033	.666		
	Brooding	.250**	.005		

Note. Suicidal-T1: suicidal ideation at Time 1, depression-T1: depression at Time 1.

** $p < .01$,

*** $p < .001$.

Table 3

Hierarchical regression analysis testing the mediating effects of brooding and reflection on the relationship between self-criticism and Time 2 suicidal ideation

Step	Variable	β at step	p -value for β at step	ΔR^2 for step	Total R^2
Step 1	Age	-.042	.488	.513***	.513***
	Sex	-.064	.287		
	Suicidal-T1	.616***	.001		
	Depression-T1	.143	.051		
Step 2	Age	-.037	.536	.014*	.527***
	Sex	-.077	.198		
	Suicidal-T1	.597***	.001		
	Depression-T1	.059	.479		
	Self-criticism	.156*	.038		
Step 3	Age	-.017	.778	.022*	.549***
	Sex	-.075	.203		
	Suicidal-T1	.582***	.001		
	Depression-T1	-.053	.565		
	Self-criticism	.077	.335		
	Reflection	.029	.706		
Brooding	.219*	.021			

Note. Suicidal-T1: suicidal ideation at Time 1.

* $p < .05$.

*** $p < .001$.

indicated. We conducted a Sobel test to determine the significance of the indirect effect (see Preacher & Hayes, 2004) whilst controlling for covariates.

To ensure a rigorous test of the self-criticism–rumination–T2 suicidal ideation relationship, we controlled for the effects of sex, age, baseline depression and suicidal ideation in the first step of the hierarchical regression analysis, before investigating Kenny and colleagues' conditions for mediation. Next, self-criticism was entered as a predictor of Time 2 suicidal ideation at step 2, in order to test condition 2, followed by brooding and reflection at step 3, to test conditions 3 and 4. The mediator (i.e., brooding or reflection) was also separately regressed onto self-criticism, in order to test condition 1. The outputs for steps 1–3 are presented in Table 3 whereas the mediator–predictor regression findings are described below.

As is evident in Table 3, after controlling for sex, age, baseline depression and suicidal ideation, self-criticism is a significant predictor of T2 suicidal ideation at step 2, $\beta = .156$, $t(152) = 2.09$, $p < .05$, thereby confirming condition 2. At step 3, brooding is a significant predictor of T2 suicidal ideation, $\beta = .219$, $t(152) = 2.33$, $p < .05$, and the relationship between self-criticism and T2 suicidal ideation is reduced to non-significance, $\beta = .077$, $t(152) = .97$, $p = .34$. In addition, self-criticism independently effects brooding, $\beta = .405$, $t(152) = 6.28$, $p < .001$, therefore conditions 1–4 are met. A Sobel test confirmed a significant reduction in self-criticism's relationship with Time 2 suicidal ideation, $z = 2.04$, $p < .05$. It is also noteworthy that, not only does brooding act as a mediator but that brooding and self-criticism explain an additional 3.6% of variance in suicidal ideation (Cohen's $f^2 = .08$) which represents a small-to-moderate effect size (Cohen, 1992).

Finally, although reflection was correlated with suicidal ideation, it had no effect on suicidal ideation at Time 2 independent of brooding, depression and baseline suicidal ideation ($\beta = .029$, $t(152) = .378$, $p = .706$; see Table 3). In short, it did not mediate the self-criticism–suicidal ideation relationship.

Discussion

The study yielded considerable evidence for the role of brooding and self-criticism in the prediction of suicidal ideation. With respect to the principal research question, to determine the extent and direction of the relationship between reflection/brooding and Time 2 suicidal ideation, the hierarchical regression analysis adjusting for baseline ideation, depression, age and sex was unambiguous: brooding but not reflection independently predicted Time 2 suicidal ideation, such that higher levels of brooding were associated with higher levels of ideation. There was also support for the first hypothesis, that brooding would be more strongly related to suicidal ideation than reflection. The correlational analyses revealed that the relationship between brooding and Time 2 suicidal ideation was significantly stronger than the correlation between reflection and Time 2 ideation. A similar, albeit non-significant, trend was also evident with respect to these relationships with Time 1 ideation. Besides, the findings from the regression analyses further highlighted the dominant brooding-suicidal ideation relationship compared with the same reflection relationship. Finally, the present results also supported the second hypothesis. Not only is brooding a stronger mediator of the self-criticism–Time 2 suicidal ideation relationship but our data suggest that brooding fully mediates this pathway with reflection not accounting at all for the indirect effect of self-criticism on suicidal ideation. This establishes brooding as one key mechanism to account for the relationship between self-criticism and suicidality.

The present findings extend the previous research in a number of key respects. Consistent with Miranda and Nolen-Hoeksema (2007) and O'Connor, R.C. et al. (2007), we have yielded evidence to further highlight the deleterious effect of brooding in the prediction of suicidal ideation. What is more, we have addressed one of the limitations identified by Miranda and Nolen-Hoeksema (2007) in their study. Whereas they employed a categorical measure of suicidal ideation (i.e., presence or absence of suicidal ideation in the previous month), we employed a continuous measure thereby affording the opportunity to look at suicidal ideation as a dimensional construct. Furthermore, we also believe that our findings are not inconsistent with Miranda and Nolen-Hoeksema's conclusion that *both* brooding and reflection are predictive of suicidal ideation. The fact that the present study only yielded correlational evidence of a relationship between reflection and suicidal ideation may suggest that reflection has a markedly weaker effect size than that of brooding. In support of this viewpoint, it is important to highlight that Miranda and Nolen-Hoeksema's study consisted of more than 1100 participants thereby facilitating the identification of relatively small statistical effects.

Contrary to Crane et al.'s (2007) study, we found no evidence for the protective effects of reflection. There are a number of possible explanations for this null finding. First, in the former study, the protective effects of reflection were largely accounted for by the difference between the non-suicidal group and the suicide attempters. As the present study was circumscribed to those who reported low levels of suicide thoughts and was not a case-control study, direct comparison is limited and the divergent findings may be an artefact of the sample composition. Moreover, our study and that of Miranda and Nolen-Hoeksema's was concerned with concurrent and prospective suicidal ideation. Conversely, Crane et al.'s study focused on history of suicidal ideation and behaviour, perhaps the relationship between rumination and suicidality differs as a function of suicidal status. It may also be that the cognitive problem-solving which characterises reflection is more

pertinent in suicidal attempters than ideators. Although Crane and colleagues' study reported no difference in brooding between their three groups, visual inspection of the mean scores suggests a slight trend in the predicted direction—the relatively large SDs in two of the groups may explain, in part, the absence of a significant difference.

The present findings emphasise the importance of identifying personality factors to better understand the course of suicidality. In short, our data suggest that brooding may, in part, account for the relationship between self-criticism and suicidal ideation. Given that brooding is characterised by *self-critical* pondering the strength of its relationship with trait self-criticism is, perhaps, not surprising. It is worth noting, however, that as our study was a prospective, correlational design, future research ought to attempt to experimentally manipulate self-criticism to determine whether there is an associated change in brooding. If so, the potential for suicide prevention is considerable. Nonetheless, the current data reinforce the view that certain personality factors and cognitive processes increase one's vulnerability to suicidal ideation.

The findings are consistent with the Cry of Pain model of suicidal behaviour (O'Connor, 2003; Williams, 2001) which argues that the conjoint effects of stressors which result in feelings of defeat from which there is no apparent escape (i.e., entrapment) are especially potent in the etiology of suicidal behaviour. To this end, our findings suggest that self-criticism and brooding may act to elevate suicide risk by increasing the likelihood that one appraises a stressful situation as resulting in defeat (via high levels of self-criticism) and that this situation is inescapable (i.e., a state of entrapment; via high levels of brooding). The brooding effect is also noteworthy as it *fully* mediated the self-criticism–T2 suicidal ideation relationship, translating into a small-to-moderate effect size (Cohen, 1992). Indeed, following a recent critique of behavioural medicine research, Rutledge and Loh (2004) highlighted the considerable, clinical implications of small statistical effects (e.g., of aspirin). In addition, the mediation effect is worth highlighting as brooding predicts suicidal thinking 3 months following baseline while controlling for initial suicidal ideation, depression, age and sex.

Implications and limitations

There are also a number of clinical implications from this research. First, our data point to a specific cognitive-behavioural pathway (i.e., self-criticism–brooding–suicidal behaviour) on which a treatment intervention could be developed. Second, given that brooding accounted for all of the indirect influence of self-criticism on suicidal ideation, resources should be particularly focussed on brooding. Therefore, if, as is likely, it is more difficult to modify trait self-criticism, interventions which target brooding should neutralise, in part, the negative effects of self-criticism thereby reducing suicide risk.

Although the present study had a number of strengths, three potential limitations require comment. First, those who completed the measures at Time 2 reported significantly lower levels of brooding compared to those who did not. Rather than being a limitation, we would argue that this adds to the brooding effect, as one may posit that if all participants had completed measures at Time 2 the relationship between brooding and suicidal ideation would have been stronger. Second, given that the correlation between brooding and self-criticism is quite high ($r = .66$), future psychometrics research could usefully confirm the extent to which some overlapping items from the two scales are tapping the same construct. Third, although we examined suicidal ideation, it is not clear whether these findings would generalise to suicide attempters or to a clinical sample. Moreover, despite employing a prospective study design, we were unable to disentangle the causal relations between variables. Therefore, future research could usefully address this by conducting experimental studies to determine whether, for example, the experimental reduction of brooding leads to decreased suicidality over time. It would also be useful to determine the extent to which other personality and cognitive factors are implicated in the etiology of suicidality. In addition, given that Smith et al. (2006) found that hopelessness partially mediated the rumination–suicidal ideation relationship, future research should determine the relative influence of rumination and hopelessness in the self-criticism–suicidal ideation relationship. Given the equivocal findings for reflection in the literature, we would urge further research across different timeframes and populations to tease out the extent to which it is adaptive/maladaptive and under which conditions it has its effect. Although we focused on the 3 months follow-up, it would be clinically and empirically useful to extend the follow-up period. For example, does brooding mediate the relationship between self-criticism and suicidal ideation over the longer term; does it predict repetitive self-harm?

Conclusion

This is the first study to demonstrate that brooding mediates the self-criticism–suicidal ideation relationship. Brooding was more strongly related to suicidal ideation than reflection. The findings point to a potential cognitive–behavioural pathway which ought to be targeted in the development of treatment interventions. Prevention efforts to tackle suicidality would benefit from a better understanding of how personality factors and cognitive processes relate to one another as well as to suicidal ideation and behaviour.

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