

**EXAMINING THE ROLE OF POSITIVE AND NEGATIVE  
METACOGNITIVE BELIEFS IN DEPRESSION**

*Running title: Metacognitive beliefs in depression*

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## **ABSTRACT**

Many psychological models have been developed to explain the development and maintenance of depression. The most widely evaluated model is the cognitive model of depression, and it is against this model that emerging models should be compared. Accordingly, this cross-sectional study examined whether metacognitive beliefs, as specified in the metacognitive model of depression, would explain additional variance in depressive symptoms over dysfunctional attitudes; the core feature of the cognitive model. Moreover, mediational relationships between metacognitive beliefs, rumination, and depressive symptoms, predicted by the metacognitive model were also explored, whilst controlling for dysfunctional attitudes. A sample of 715 students completed self-report questionnaires measuring depressive symptoms, rumination, dysfunctional attitudes, and metacognitive beliefs. Regression analyses showed that metacognitive beliefs made a significant statistical contribution to depressive symptoms, after controlling for age, gender, rumination and dysfunctional attitudes. Furthermore, as predicted by the metacognitive model, the relationship between positive metacognitive beliefs and depressive symptoms was fully mediated by rumination, whilst the relationship between negative metacognitive beliefs about uncontrollability and danger and depressive symptoms was partially mediated by rumination. The results provide further empirical support for the metacognitive model of depression and indicate that positive and negative metacognitive beliefs play an integral role in the maintenance of depressive symptoms.

*Keywords:* Depression, rumination, dysfunctional attitudes, metacognitive beliefs, cross-sectional, mediation

## INTRODUCTION

Depression is a debilitating mental health disorder characterized by prolonged and recurrent periods of low mood that pervades nearly all aspects of an individual's life (American Psychiatric Association, 2013). There are many adverse consequences of depression, including impaired social and interpersonal functioning (Petty, Sachs-Ericsson, & Joiner, 2004), reduced physical activity (Allgöwer, Wardle, & Steptoe, 2001), and substantial economic and healthcare costs (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015; Mrazek, Hornberger, Altar, & Detigar, 2014).

Given the serious consequences and concomitants of depression, it is essential that theoretical models, which attempt to elucidate the psychological mechanisms involved in depression, continue to be developed and tested. In comparison to pragmatic approaches, advances in theory are more likely to lead to more efficacious interventions (Albarracín, Gillette, Earl, Durantini, & Moon-Ho, 2005). A rigorous test of an emerging theory would involve evaluating whether predictions made by the theory continue to be supported by empirical data after controlling for the influence of core constructs from a competing theory. In this paper, the aim was to conduct a stringent test of an emerging theory, the metacognitive model of depression (Wells, 2009), whilst controlling for the influence of the most widely supported psychological theory of depression, namely Beck's cognitive model (Beck, 1967, 1976; Beck, Rush, Shaw, & Emery, 1979). The cognitive model states that people vulnerable to depression have depressogenic schemas that are dormant until activated by stressful life events; this is often referred to as the "cognitive vulnerability hypothesis". Schemas are hypothesized to consist of dysfunctional attitudes, which reflect the negative beliefs an individual has about

themselves, the world and the future (e.g. “I am a failure”, “I must be a useful, productive, creative person or life has no purpose”). Maladaptive schemas give rise to negative automatic thoughts and bias information processing, whereby negative information is preferentially encoded in order to fit with pre-existing schema content. Therapy based on the cognitive model specifies that modifying dysfunctional attitudes is key to the successful treatment of depression. Although, there is considerable support for the cognitive model (see reviews by Beck & Dozois, 2011; Butler, Chapman, Forman, & Beck, 2009; Clark & Beck, 2010), there are other psychological models that do not view dysfunctional attitudes as central to either the development or the maintenance of depression.

The metacognitive model of depression (Wells, 2009), derived from a broader transdiagnostic theory of psychopathology; the Self-Regulatory Executive Function Model (S-REF; Wells & Matthews, 1994, 1996), specifies that the identification and modification of dysfunctional attitudes is not required to successfully alleviate depression. Instead, the metacognitive model specifies that beliefs in the cognitive domain, such as dysfunctional attitudes, cannot explain the persistence or development of depression. A person may hold the dysfunctional attitude “I’m a failure” but the mere occurrence of the thought will not lead to depression, rather it is how an individual responds to the thought that determines psychological disorder. In the metacognitive model of depression, biased metacognitions will lead to the selection of a specific way to thinking and responding to negative thoughts and/or feelings termed the Cognitive Attentional Syndrome (CAS). The CAS consists of worry and rumination, heightened self-focused attention, monitoring for signs of potential threat, and counterproductive coping strategies.

Two domains of metacognitive beliefs are of particular importance in the model: (i) positive metacognitive beliefs concerning the usefulness of rumination (e.g. “I need to ruminate about my problems to find the causes of my depression”), and (ii) negative metacognitive beliefs concerning the uncontrollability and harm of rumination (e.g. “I cannot stop myself from ruminating”, “Ruminating about my depression could make me lose control of my mind”) and negative metacognitive beliefs about the interpersonal and social consequences of rumination (e.g. “People will reject me if I ruminate”). Negative beliefs regarding uncontrollability and harm are considered most salient in the development and maintenance of psychological disorders as “they transform cognition from a potential asset to a subjective hazard giving rise to a sense of acute danger, hopelessness and inefficacy” (Wells, 2013, p.189).

Considerable evidence supports metacognitive model of depression. Papageorgiou and Wells (2001a) found all participants diagnosed with recurrent major depressive disorder (MDD), held both positive and negative metacognitive beliefs about rumination. Both positive and negative metacognitive beliefs were positively correlated with time spent ruminating and severity of depressive symptoms in clinical (Papageorgiou & Wells, 2003) and non-clinical samples (Papageorgiou & Wells, 2001b, 2003). Structural equation modelling has found a good statistical fit for the metacognitive model of depression in a depressed sample (Papageorgiou & Wells, 2003) and in non-depressed samples (Papageorgiou & Wells, 2003; Roelofs et al., 2007).

Several longitudinal studies have explored the relationship between metacognitive beliefs and depression. Weber and Exner (2013) demonstrated that positive metacognitive beliefs about rumination predicted severity of rumination and

depressive symptoms over a two month period. Papageorgiou and Wells (2009) found that levels of conviction in negative metacognitive beliefs about the uncontrollability and danger of rumination predicted depressive status (i.e. depressed or non-depressed) three months later, when baseline levels of depression and rumination were controlled. A similar study found that negative metacognitive beliefs about uncontrollability and harm predicted depressive symptoms six months later, when initial levels of depression and the influence of stressful life events were controlled (Yilmaz, Gençöz, & Wells, 2011).

In terms of direct evaluations of the contribution of cognitive and metacognitive beliefs to depression, only one study has so far been conducted. In a cross-sectional cohort study using an analogue sample by Yilmaz, Gençöz, and Wells (2015), metacognitive beliefs about rumination made a statistically greater statistical contribution to depression than dysfunctional attitudes, when controlling for anxiety symptoms. The current study aimed to extend the Yilmaz and colleagues study by controlling for the potential overlap between rumination and beliefs about rumination. Cross-sectional studies face the potential problem of inflated correlations between measured variables due to common method variance (e.g. Lindell & Whitney, 2001). The Positive Beliefs about Rumination Scale (PBRS; Papageorgiou & Wells, 2001b) and the Negative Beliefs about Rumination Scale (NBRS; Papageorgiou, Wells, & Meina, in prep) refer explicitly to rumination, so it is possible that they also index the frequency of rumination rather than only measuring metacognitive beliefs about rumination. The present study also used a different measure of depression to facilitate cross-validation with the Yilmaz, Gençöz, and Wells (2015) study. Specifically, the Inventory of Depressive Symptomatology (IDS-SR; Rush, Gullion, Basco, Jarret, & Trivedi, 1996) rather than the Beck

Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) was used in the present study. The IDS-SR was designed to measure frequency of depressive symptoms, rather than intensity of depressive symptoms as measured by the BDS. The first hypothesis is that metacognitive beliefs will explain additional variance in depressive symptoms, over and above that explained by dysfunctional attitudes, rumination and demographic variables.

Our second aim is to examine the relationships between metacognitive beliefs, rumination, and depressive symptoms as predicted by the metacognitive model of depression. The model states that the relationship between positive metacognitive beliefs and depressive symptoms will be fully mediated by rumination, whereas the relationship between negative metacognitive beliefs – negative metacognitive beliefs about the uncontrollability and harm of rumination and negative metacognitive beliefs about the interpersonal and social consequences of rumination – and depressive symptoms will be partially mediated by rumination. In testing these predicted mediational relationships, we control for the influence of potential confounding variables, specifically dysfunctional attitudes, age, gender and the other metacognitive beliefs not being directly tested.

## **METHOD**

### **PARTICIPANTS AND PROCEDURE**

Seven hundred and fifteen students (460 women, 255 men) completed a set of self-report questionnaires online (a further 303 participants started the study but did not complete the study). Participants were informed that they would be entered into

prize draw (first prize of £50, two second prizes of £25) if they completed all the questionnaires. Participant ages ranged from 17 to 51, with a mean of 21.3 years (SD = 4.1). Five hundred and eleven (72%) participants identified themselves as White British/Irish or other, 115 (16%) as Chinese, 40 (6%) as Asian sub-continent (Indian, Pakistani, other), 18 (2%) as mixed-race, 6 (1%) as Black British/African or other, and 11 (2%) choose to not to respond. The composition of the sample reflects the ethnic distribution of students attending the University, but includes a higher proportion of Chinese participants relative to the ethnic distribution in the UK.

## MEASURES

*Inventory of Depressive Symptomatology-Self-Report (IDS-SR; Rush, Gullion, Basco, Jarrett, & Trivedi, 1996).* This 30-item measure assesses the severity of depressive symptoms of MDD as defined by the fourth edition Diagnostic and Statistical Manual for Mental Disorders (DSM-IV; American Psychiatric Association, 1994). Wording of items reflects the DSM-IV focus on the frequency rather than intensity of symptoms. Each item consists of four statements about a depressive symptom. Statements are arranged in ascending order of severity using a 4-point rating scale. Respondents are required to indicate which statement best describes their experience over the past week. Scores can range from 0 to 84, with higher scores indicating greater depressive symptoms. There is good support for its validity and use (Rush et al., 2006; Rush et al., 1996; Rush et al., 2005). Internal consistency of the IDS-SR, using Cronbach's alpha, in this study was excellent ( $\alpha = 0.92$ ).



*Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991).* The RRS is 22-item measure that assesses individuals' tendency to ruminate in response to depressed mood (e.g. "Think about how you don't feel up to doing anything"). Statements are arranged in ascending order of severity using a 4-point rating scale, from "Almost never" to "Almost always". Respondents are required to indicate which statement best describes what they do (and not what they think they should do) in response to feeling sad, down or depressed. Scores can range from 22 to 88 with higher scores indicating a greater tendency to ruminate. The RRS is a reliable and valid measure of rumination (Luminet, 2004). Internal consistency in this study was excellent ( $\alpha = 0.93$ ).

*Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978).* This is a 40-item measure that assesses the intensity of dysfunctional attitudes related to depression (e.g. "If I do not do well all the time, people will not respect me"). Respondents are asked to indicate their level of agreement with statements relating to how they think most of the time. Statements are scored on a 7-point scale from 1 ("Disagree totally") to 7 ("Agree totally"). Scores range from 40 to 280 with higher scores indicative of more dysfunctional attitudes. The DAS has good reliability and validity (Cane, Olinger, Gotlib, & Kuiper, 1986). Internal consistency of the DAS in this study was good ( $\alpha = 0.89$ ).

*Positive Beliefs about Rumination Scale (PBRs; Papageorgiou & Wells, 2001b).* The PBRs is a 9-item measure that assesses positive beliefs about rumination (e.g. "In order to understand my feelings of depression I need to ruminate about my problems"). Items are scored on a 4-point scale from 1 ("Do not agree") to 4 ("Agree very much"). Total scores range from 9 to 36 with higher scores indicating greater conviction in positives beliefs about rumination. The PBRs has good support

for its reliability and validity (Papageorgiou & Wells, 2001b; Roelofs, Huibers, Peeters, Arntz, van Os, 2010). Internal consistency of the PBRs in this study was excellent ( $\alpha = 0.92$ ).

*Negative Beliefs about Rumination Scale (Papageorgiou, Wells, & Meina, in prep).* The NBRs is a 13-item measure assessing negative beliefs about rumination. There are two subscales: the first (NBRs1) contains eight items that measure metacognitive beliefs about the uncontrollability (e.g. “Ruminating about my problems is uncontrollable”) and harm (e.g. “Ruminating can make me harm myself”) of ruminating, while the second subscale (NBRs2) contains five items that measure beliefs about the social and interpersonal consequences of ruminating (e.g. “Ruminating will turn me into a failure”). Items are scored on a 4-point scale from 1 (“Do not agree”) to 4 (“Agree very much”). Total scores for NBRs1 and NBRs2 can range from 8 to 32 and 5 to 20 respectively, with higher scores indicating greater conviction in negative metacognitive beliefs about rumination. Support for the construct validity of the scale has been reported (Roelofs et al., 2010). Internal consistency in this study was good for both the NBRs1 ( $\alpha = 0.84$ ) and the NBRs2 ( $\alpha = 0.85$ ).

## OVERVIEW OF DATA ANALYSIS

Pearson’s correlation coefficients were used to examine the intercorrelations between depressive symptoms, rumination, dysfunctional attitudes and positive metacognitive beliefs, negative metacognitive beliefs about uncontrollability and harm of rumination, and negative metacognitive beliefs about the interpersonal and social consequences of rumination. T-tests explored if there were gender differences

between any of the study variables. As skewness was evident in some of the scale distributions, we also performed non-parametric versions of the above tests and compared these to the parametric results, reporting any deviations.

To test the first prediction that metacognitive beliefs would explain additional variance in depressive symptoms, as measured by the IDS-SR, after controlling for demographic variables, rumination and dysfunctional attitudes (cognitive beliefs), a hierarchical multiple linear regression was conducted. Predictor variables were entered in the following order: Step 1; age and gender, Step 2; rumination (RRS), Step 3; dysfunctional attitudes (DAS), and Step 4; metacognitive beliefs (PBRs, NBRs1, and NBRs2). Steps 3 and 4 were then reversed to test if dysfunctional attitudes explained additional variance in depressive symptoms after controlling for metacognitive beliefs. Bootstrapping techniques were used to ensure findings were robust.

To test the hypothesized relationships between metacognitive beliefs (PBRs, NBRs1, & NBRs2), rumination, and depressive symptoms, we conducted three mediation analyses. In all mediational analyses, we controlled for age, gender, dysfunctional attitudes and the metacognitive beliefs not directly tested e.g. when testing whether rumination fully mediates the relationship between PBRs and the IDS-SR, we controlled for NBRs1 and NBRs2. A custom dialog was installed using the Hayes (2013) PROCESS macro to conduct the mediational analyses. We report bootstrapped bias-corrected and accelerated (BCa) estimates and 95% confidence intervals for the indirect effect. BCa estimates adjust for potential bias and skew in the bootstrap distribution to produce more reliable parameter estimation. Here, we use 5,000 bootstrap samples based upon Preacher and Hayes (2004, 2008) recommendation. All data analyses were conducted with SPSS version 22.0.0.1.

## RESULTS

### DESCRIPTIVE STATISTICS AND CORRELATIONAL ANALYSES

The means, standard deviations and Pearson's correlations between depressive symptoms, dysfunctional attitudes, metacognitive beliefs, and rumination scores are presented in Table 1. There were significant positive correlations between the six variables, ranging from 0.10 to 0.66. It is noteworthy that the metacognitive beliefs and the dysfunctional attitudes were significantly correlated with rumination which highlights the importance of controlling for rumination when examining the specific contribution made by dysfunctional attitudes and metacognitive beliefs in predicting depressive symptoms. Only one gender difference was observed in scores on the study measures, with males scored significantly higher ( $M = 7.16, SD = 3.15$ ) than females ( $M = 6.52, SD = 2.53$ ) on the negative metacognitive beliefs about the personal and social consequences of rumination subscale (NBRS2;  $t = 2.93, p = .003$ ). Age did not significantly correlate with any of the study variables. Given the tendency toward non-normality in some of the study variables, these analyses were re-run using the equivalent non-parametric tests; no differences in the pattern of results emerged.

### ASSOCIATION OF METACOGNITIVE BELIES AND DEPRESSIVE SYMPTOMS

Results of the regression analyses are shown in Table 2. There was no evidence of multicollinearity; variance inflation factors were all less than 3 and all

correlations between study variables were less than .7. Autocorrelation was not a problem, as indicated by a Durbin-Watson test statistic of 2.06. After controlling for age and gender, rumination explained an additional 44% of variance in depressive symptoms on step 2. Dysfunctional attitudes explained a further 5% of variance in step 3, and on the final step (Step 4) metacognitive beliefs explained a further 5% of the variance in depressive symptoms.

When the order of steps 3 and 4 were reversed, metacognitive beliefs explained an additional 8% of variance at step 3 ( $R^2_{\text{change}} = .08$ ,  $F_{\text{change}} [3, 708] = 37.59$ ,  $p < .001$ ) and dysfunctional attitudes explained an additional 2% of the variance at Step 4 ( $R^2_{\text{change}} = .02$ ,  $F_{\text{change}} [1, 707] = 36.79$ ,  $p < .001$ ). The final model accounted for 54% of the variance and both dysfunctional attitudes (DAS) and negative metacognitive beliefs about uncontrollability and harm (NBR1) made significant individual contributions, whereas positive metacognitive beliefs about rumination (PBR) and negative metacognitive beliefs about the interpersonal and social consequences of rumination (NBR2) were not significant predictors of depressive symptoms. As a post-hoc test, we examined the relative contribution of the two independent belief domains (NBR1, DAS) to the final model. The NBR1 made a significantly larger contribution than the DAS, indicated by a test of equality of regression coefficients ( $F(1,713) = 155.16$ ,  $p < .001$ ). Regression diagnostics revealed five extreme multivariate outliers so the regression analysis was re-run with extreme outliers removed; no differences in the pattern of results were observed.

MEDIATION OF THE RELATIONSHIP BETWEEN METACOGNITIVE BELIEFS AND DEPRESSION BY RUMINATION

Results of the mediation analyses are shown in Figures 1, 2 and 3. For positive metacognitive beliefs about rumination, full mediation occurred, i.e. a significant indirect effect ( $ab = .19$ , BCa 95% CIs = .13-.25) mediated by rumination, on depressive symptoms, but no direct effect, whilst controlling for age, gender, dysfunctional attitudes, and both sets of negative metacognitive beliefs (NBR1 and NBR2).

For negative metacognitive beliefs about the uncontrollability and harm of rumination (NBR1) there was a significant indirect effect ( $ab = .44$ , BCa 95% CIs = .35-.55), mediated by rumination, on depressive symptoms, but the direct effect remained significant indicating partial mediation. We controlled for age, gender, dysfunctional attitudes, positive beliefs about rumination, and negative beliefs about rumination concerning the social and interpersonal consequences. Finally, no mediational relationship was found between negative beliefs about the interpersonal and social consequences of rumination (NBR2) and depressive symptoms, via rumination.

## **DISCUSSION**

This study provides further support for the metacognitive model of depression and demonstrated that metacognitive beliefs explained additional variance in depressive symptoms after controlling for demographic variables, rumination and dysfunctional attitudes. In the mediational analyses, the hypothesized relationships between metacognitive beliefs, rumination, and depressive symptoms were largely supported. Specifically, the relationship between positive beliefs about rumination and depressive symptoms was fully mediated by rumination, while the

relationship between negative beliefs about uncontrollability and harm and depressive symptoms was partially mediated by rumination. However, no mediation was found between negative metacognitive beliefs about the interpersonal and social consequences of rumination.

The results from the hierarchical linear regression cross-validate those obtained by Yilmaz, Gençöz, and Wells (2015), such that the block of metacognitive beliefs was able explain additional variance in depressive symptoms after controlling for dysfunctional attitudes. However, in this study we examined the individual contributions of both domains of negative metacognitive beliefs (negative beliefs about uncontrollability and harm, negative beliefs about the interpersonal and social consequences of rumination) that feature in the metacognitive model of depression, whereas Yilmaz, Gençöz, and Wells, (2015) entered the negative metacognitive beliefs as a unitary construct. Our analysis revealed that only negative beliefs about the uncontrollability and harm made a significant contribution to the final model. As negative beliefs about interpersonal and social consequences of rumination was not a predictor of depressive symptoms and there was no mediational relationship between these beliefs and depressive symptoms via rumination, this suggests that targeting these beliefs in therapy may not be necessary, or that these beliefs may only be relevant for a subsample of patients with depression.

Although the associations in this study appear relatively robust, there are several limitations to this study. Firstly, because the study was cross-sectional, causality cannot be assumed. The use of a student sample is a second limitation, as the results may not generalize to a clinical sample. Finally, though we controlled for rumination, we did not control for potential comorbid anxiety within the sample. Statistically controlling for variance associated with both anxiety and rumination

would permit an even more stringent test of the explanatory power of both dysfunctional attitudes and metacognitive beliefs.

Overall, the results here provide further support for metacognitive model of depression and suggest that modifying positive and negative metacognitive beliefs – and not beliefs in the cognitive domain – may be the most important targets when treating depression. Vanderhasselt and Raedt (2012), for example, found results that have also supported this contention. They found the relationship between rumination and dysfunctional attitudes was fully mediated by depressive symptoms and suggested that clinical interventions need to reduce rumination, coupled with modification of dysfunctional attitudes. Moreover, several studies have demonstrated that clinically meaningful improvements in depressive symptoms is possible by just targeting rumination and maladaptive metacognitive beliefs, indicating modification of dysfunctional attitudes may not be necessary for successful treatment outcomes (Wells, Fisher, Myers, Wheatley, Patel, & Brewin, 2009; Wells, Fisher, Myers, Wheatley, Patel, & Brewin, 2012; Dammen, Papageorgiou, & Wells, 2015).

Prospective and experimental studies are now required to test whether beliefs in the cognitive or metacognitive domains are more important in the development of depression. For example, observational studies using a prospective design could examine which belief domains at Time 1 later predict depressive symptoms at Time 2, whilst the influence of metacognitive beliefs and dysfunctional attitudes could also be investigated as mechanisms of change within the context of a randomized controlled trial comparing metacognitive therapy against schema-based therapies.



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**Table 1. Descriptive statistics and Pearson's *r* correlations between study variables.**

	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b><i>M</i></b>	<b><i>SD</i></b>
1. IDS-SR	.66***	.51***	.24***	.61***	.49***	19.76	12.82
2. RRS	-	.48***	.39***	.61***	.45***	47.08	13.13
3. DAS		-	.25***	.42***	.53***	137.00	27.45
4. PBRs			-	.20***	.10**	20.81	6.82
5. NBRs1				-	.65***	14.37	5.31
6. NBRs2					-	6.75	2.78

*Note.*

IDS-SR = Inventory of Depressive Symptomatology – Self-Report; RRS = Rumination Response Scale; DAS = Dysfunctional Attitude Scale; PBRs = Positive Beliefs about Rumination Scale; NBRs1 = Negative Beliefs about Rumination Scale – Uncontrollability and Harm Subscale; NBRs2 = Negative Beliefs about Rumination Scale – Interpersonal and Social Consequences Subscale.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

**Table 2. Statistics for each step of the regression, predicting depressive symptoms (IDS-SR).**

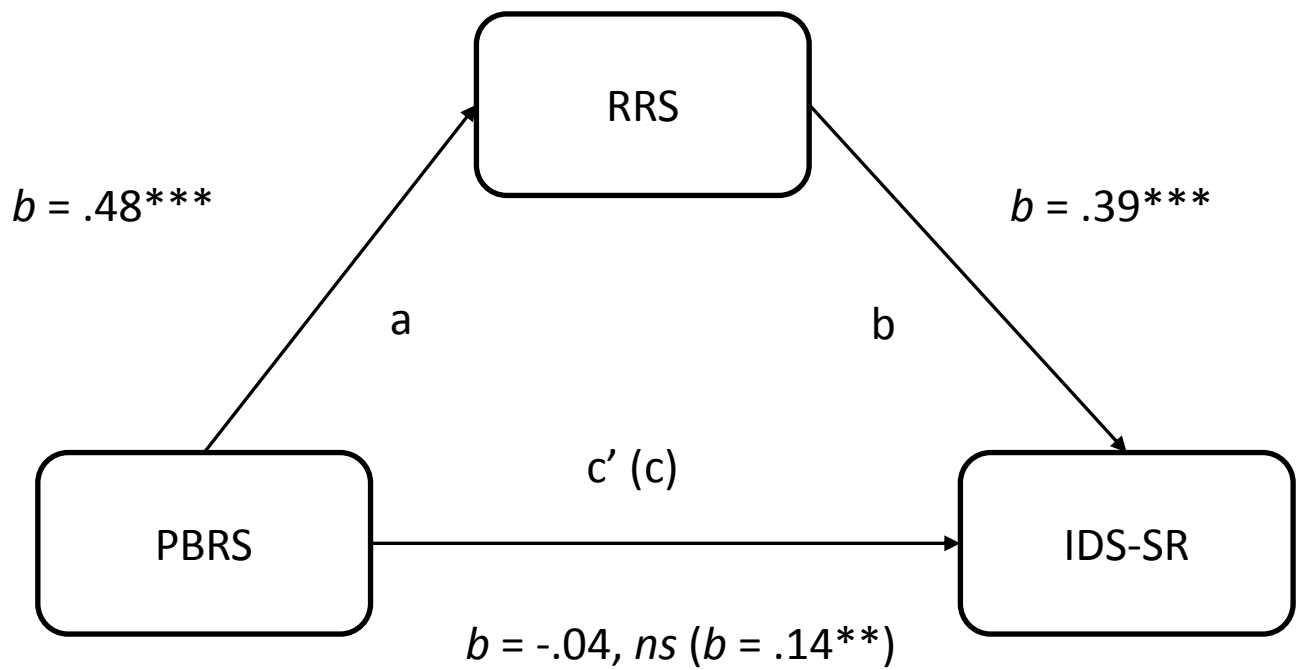
Variable	$\Delta R^2$	$\Delta F$	$p$	$b$	95% BCa CIs	$\beta$	$p$
<i>Step 1</i>	.00	1.07	.344				
Constant				16.83	11.48, 22.01		< .001
Age				0.10	-0.13, 0.34	.03	.397
Gender				1.24	-0.77, 3.12	.05	.218
<i>Step 2</i>	.44	557.18	< .001				
Constant				-14.04	-18.09, -9.69		< .001
Age				0.15	-0.03, 0.32	.05	.101
Gender				0.37	-1.12, 1.85	.01	.623
RRS				0.65	0.59, 0.70	.66	< .001
<i>Step 3</i>	.05	70.23	< .001				
Constant				-24.84	-29.70, -19.46		< .001
Age				0.14	-0.03, 0.31	.04	.098
Gender				0.66	-0.79, 2.10	.03	.357
RRS				0.53	0.47, 0.59	.54	< .001
DAS				0.12	0.09, 0.15	.26	< .001
<i>Step 4</i>	.05	25.88	< .001				
Constant				-24.50	-29.30, -19.46		< .001
Age				0.15	-0.06, 0.31	.05	.060
Gender				1.07	-0.29, 2.45	.04	.122
RRS				0.39	0.32, 0.46	.40	< .001
DAS				0.09	0.06, 0.12	.19	< .001
PBRS				-0.04	-0.14, 0.07	-.02	.443
NBRS1				0.62	0.40, 0.83	.26	< .001
NBRS2				0.23	-0.17, 0.65	.05	.171

Multiple  $R = .74$ ,  $p < .001$ ; Adjusted  $R^2 = .54$

*Note.*

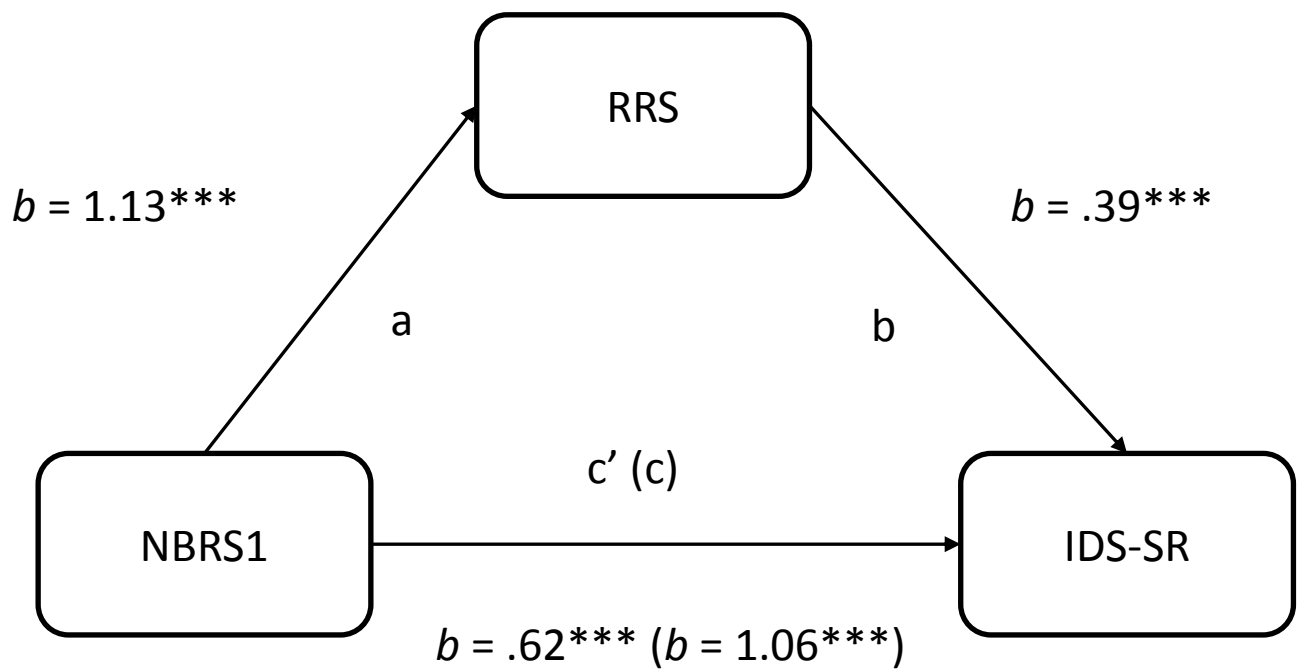
IDS-SR = Inventory of Depressive Symptomatology – Self-Report; RRS = Rumination Response Scale; DAS = Dysfunctional Attitude Scale; PBRs = Positive Beliefs about Rumination Scale; NBRs1 = Negative Beliefs about Rumination Scale – Uncontrollability and Harm Subscale; NBRs2 = Negative Beliefs about Rumination Scale – Interpersonal and Social Consequences Subscale.

**Fig. 1. Mediation of positive metacognitive beliefs on depressive symptoms, via rumination.**



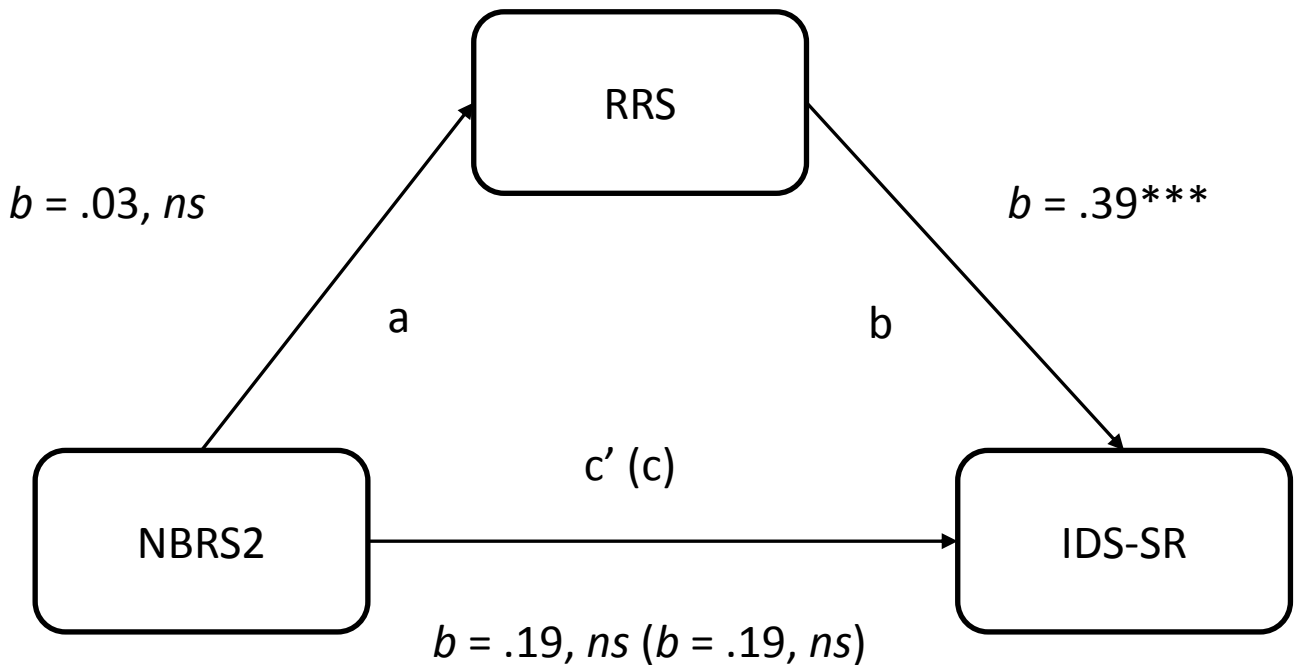
Analyses controlled for: age, gender, DAS, NBR1, and NBR2.

**Fig. 2. Mediation of negative metacognitive beliefs about uncontrollability and harm of rumination on depressive symptoms, via rumination.**



Analyses controlled for: age, gender, DAS, PBRS, and NBR2.

**Fig. 3. Mediation of negative metacognitive beliefs about the interpersonal and social consequences of rumination on depressive symptoms, via rumination.**



Analyses controlled for: age, gender, DAS, PBRS, and NBR1.

Notes for Fig. 1, Fig. 2, and Fig. 3.

$N = 715$  (5,000 bootstraps)

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , *ns* = non-significant

IDS-SR = Inventory of Depressive Symptomology – Self-Report; RRS = Rumination

Response Scale; PBRS = Positive Beliefs about Rumination; NBR1 = Negative Beliefs

about Rumination Scale – Uncontrollability and Harm Subscale; NBR2 = Negative Beliefs

about Rumination Scale – Interpersonal and Social Consequences Subscale; DAS =

Dysfunctional Attitude Scale.