

Psychometric Properties of the Metacognition Scales about Rumination in Clinical and Non-clinical Turkish Samples

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SUMMARY

Aim: The aim of this study is to examine the reliability and validity of the Turkish adaptations of the Positive Beliefs about Rumination Scale (PBRS) and the Negative Beliefs about Rumination Scale (NBRS) in clinical and non-clinical samples.

Method: While the non-clinical sample of the study consisted of 455 participants, the clinical sample was composed of 60 major depressive disorder (MDD), 30 panic disorder (PD) and 30 social anxiety disorder (SAD) cases.

Results: The results of the factor analyses confirm the construct validity and original factor structure of the scales. Findings obtained from internal consistency and test-retest analyses indicated good reliability for the scales. Supporting the convergent validity of the scales, the correlations between metacognitions about rumination and depressive symptoms, rumination, metacognitions about worry, pathological worry, and anxiety symptoms were found to be positive and significant in the non-clinical sample. Hierarchical regression analyses demonstrated that both scales have predictive validity for depressive symptoms after controlling for anxiety symptoms. As for extreme group comparisons, it supported the criterion-related validity of the scales. In discriminant clinical validity examinations, although both scales were able to differentiate MDD, PD, and SAD groups from healthy controls, they were unable to differentiate the depressive group from the other anxiety disorder groups.

Conclusion: A comprehensive psychometric evaluation of the scales demonstrated that both PBRS and NBRS are reliable and valid assessment devices that can be used for research purposes both in clinical and non-clinical groups in Turkey.

Keywords: Depression, rumination, metacognition, Positive Beliefs about Rumination Scale, Negative Beliefs about Rumination Scale

Ruminative thought, a type of intrusive thought perceived as unintentional and uncontrollable, is accepted as the key cognitive characteristic of depressive mood (Nolen-Hoeksema 1991, Wenzlaff 2005). Rumination, in general, represents a mental activity process including repetitive preoccupation with the same thought, emotion or experience (Martin & Tesser 1989, Moberly & Watkins 2008, Watkins 2008). Rumination is differentiated from other types of intrusive thoughts based on its past-oriented and self-focused content (Fisher & Wells 2009, Papageorgiou & Wells 1999, 2004). Although rumination has been conceptualized in various different ways, according to the most commonly accepted

definition, it is characterized by repetitive thoughts arising as a reaction to the depressive mood and takes the form of “Why do I feel this way?” and “What does thinking in this way tell about me?” In addition, it focuses on symptoms of depression as well as possible causes and consequences of these symptoms (depressive rumination; Nolen-Hoeksema 1991). From another point of view, rumination is regarded as a reaction to the event(s) experienced before the onset of depressive mood and takes the form of “Why did this happen to me?” (stress-reactive rumination; Robinson & Alloy 2003). Several studies have indicated that both forms of rumination are associated with depressive symptoms and lead to prolonged duration of

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depressive mood (Nolen-Hoeksema & Morrow 1993, Nolen-Hoeksema et al. 1994, Robinson & Alloy 2003).

According to the metacognitive theory of psychological disorders (Wells & Matthews 1994, Wells 2000, 2009), negative emotions and thoughts are usually common and transitory experiences that can be observed in most people. However, a specific thought pattern called cognitive attentional syndrome (CAS) causes maintenance and recurrence of negative emotions and thoughts in vulnerable people. In other words, the ruminating person gets caught in a repetitive form of thoughts and feelings due to the focus of his/her attention on a symptom or consequences of that symptom. CAS is characterized by rumination/worry, self-focused attention, impaired cognitive functioning, attentional biases and maladaptive coping strategies that impede learning through corrective experiences. A similar frame of reference is, in fact, described as a generic factor underlying vulnerability to a broad range of psychological disorders (Wells 2000).

In Well's opinion, faulty metacognitions are responsible for the activation of CAS. Metacognition refers to people's beliefs about their cognitions and to strategies used to control cognition (Wells 2000, 2009). Individuals' beliefs and appraisals about their cognitions is called "metacognitive knowledge", while thinking processes such as monitoring and controlling one's own cognitions are called "metacognitive regulation strategies". With regard to the self-regulatory executive functions model, which provides the basis for metacognitive theory (Wells & Matthews 1994), individuals react to their thoughts and determine their coping styles for these thoughts with the help of metacognitive knowledge and strategies. Two types of metacognitions, positive and negative, play a role in this process. Positive metacognitions involve beliefs concerning the usefulness of rumination, worry, attentional bias and maladaptive coping styles. Negative metacognitions are acquired following positive metacognitions when time span is taken into consideration. They involve beliefs focusing on the processes activated due to positive metacognitions (such as ruminative thoughts) that may not be controlled and have some impairing effects over time.

According to the metacognitive model of depression (Papageorgiou & Wells 2003, Wells 2009), individuals' difficulties on an emotional level and sustained depressive mood result, in fact, from their reactions to personal experiences. In the model, it is emphasized that metacognitive beliefs about ruminations may have positive as well as negative consequences. While positive beliefs about rumination increase the need to ruminate as a reaction to depressive mood, continuing ruminations activate negative metacognitions about the uncontrollability of ruminations. The negative beliefs about ruminations mediate the relationship between ruminations

and depressive symptoms, leading to the exacerbation of depressive symptoms.

The Positive Beliefs about Rumination Scale (PBRS; Papageorgiou & Wells 2001a) and the Negative Beliefs about Rumination Scale (NBRS; Papageorgiou & Wells 2001b) are the two main assessment devices used in the literature for the investigation of metacognitions relevant to depression. In non-clinical groups, it was shown that positive metacognitions about rumination are positively associated with the level of rumination and the severity of depressive symptoms (Papageorgiou & Wells 2001a, 2003), and this finding has been confirmed by several studies of depressed patients (Papageorgiou & Wells 2001b, 2003, Watkins & Moulds 2005). In addition, negative beliefs about rumination were reported as significantly and positively correlated with the level of rumination and severity of depressive symptoms in both clinical and non-clinical samples (Papageorgiou & Wells 2003).

Several metacognitive models have been developed for different psychiatric situations, and different measures that have been developed in accordance with these models exist. There are specific metacognitions underlying each psychological disorder. That is, as the main cognitive component unique to a particular psychological disorder changes, the metacognitive knowledge in relation to that cognition changes as well. To illustrate, positive and negative metacognitive knowledge dimensions assessed by Metacognitions Questionnaire-30 (MCQ-30, Wells & Cartwright-Hatton 2004) are accepted as pertaining to worry, and these dimensions have more profound importance for studies of anxiety. The main reason why dimensions of MCQ-30 have been found to be correlated with depressive symptoms in various studies (eg. Papageorgiou & Wells 1999, Yılmaz 2007, Yılmaz et al. 2008) may be due to the fact that depressed individuals often experience worry. This might result from the comorbidity of depression and anxiety symptoms, as well as from the worry reaction induced by CAS and related to the depressive mood itself. Therefore, in theoretical, empirical, and applied studies conducted with regard to depressive symptoms, metacognitions related to depression should be examined. Although studies examining metacognitions in depression using PBRS and NBRS have been gradually increasing in the relevant literature, these scales have not been adapted into Turkish yet. In accordance with these explanations, the aim of the current study is to investigate the reliability and validity of the positive and negative beliefs about rumination scales in clinical and non-clinical Turkish samples, and to make a preliminary examination of the relationship patterns between depression-related metacognitions and depressive symptoms specific to Turkish culture.

METHOD

Participants

The non-clinical sample (NCS) of the study consisted of 455 participants who were not receiving any type of psychological help (psychotherapy, psychiatric medication, etc.) from a professional (psychologist, psychiatrists, psychological counselor) during the course of the study. The mean age of the sample was 25.78 ($SD = 7.78$). This group was composed of 328 (72.1%) university students and 127 (27.9%) non-student participants. The clinical sample (CS) of the study was comprised of 60 Major Depressive Disorder (MDD; 34 women, 26 men), 30 Panic Disorder (PD; 18 women, 12 men), and 30 Social Anxiety Disorder (SAD; 16 women, 14 men) cases, which meant that 60 Anxiety Disorder (AD; 34 women, 26 men) diagnosed cases were involved in total. The mean age of the MDD group was 30.25 ($SD = 8.89$) and the mean age of the AD group was 27.35 ($SD = 8.9$). The case groups were recruited from people who came to the Psychiatry Outpatient Clinic of Bakırköy Mental Disorders and Neurology Hospital between May 2012 and February 2013. The volunteers for research were assessed by the third and fourth authors, both of whom are psychiatrists, according to the DSM-IV-TR diagnostic criteria. Cases included in the study were screened using The Structured Clinical Interview for DSM-IV (SCID), and they did not meet the criteria for any other Axis-I disorder. Screening for Axis-II disorders was not carried out, but gross personality traits were clinically assessed and excluded by the authors. In order to generate an analysis unit that could be qualitatively comparable with these clinical groups, a healthy control group (HCG), in which individuals did not meet the criteria for any Axis-I disorders, was established. The same screening methods were used by the same clinicians. Additionally, the HCG was balanced with the other groups in terms of age and gender (14 women, 16 men; mean age = 28.37, $SD = 7.38$). In addition to the above groups, 109 university students (64 women (58.7%) and 45 men (41.3%); mean age = 24.37, $SD = 5.5$) were re-tested with these scales 4-5 weeks after the initial test for the purpose of test-retest assessment.

Instruments

Positive Beliefs about Rumination Scale (PBRs): PBRs (Papageorgiou & Wells 2001a) is a 9-item measure that assesses positive metacognitive beliefs about the benefits of rumination. Participants evaluate to what extent they agree with each item with a 4-point Likert scale ranging between (1) Do not agree and (4) Agree very much. The findings of explanatory factor analysis conducted on university students showed that the scale comprises one dimension accounting for 49% of the variance. Internal consistency and test-retest reliability coefficients were reported as 0.89 and 0.85, respectively. It was concluded that the positive correlation ($r = 0.43$) between positive beliefs about rumination and positive beliefs about worry refers to the concurrent validity of the

scale; the positive correlations with ruminations ($r = 0.53$) as assessed with the short version of the Ruminative Response Scale (RRS; Treynor et al. 2003) and depressive symptoms ($r = 0.45$) as evaluated with the Beck Depression Inventory (BDI) indicates convergent validity of the scale. The significantly higher correlation with the RRS than with the Penn State Worry Questionnaire (PSWQ; Meyer et al. 1990) refers to the discriminant validity of the scale. Additionally, discriminant clinical validity of the scale was examined on recurrent MDD, PD with agoraphobia and SAD cases that did not meet criteria for any other Axis-I disorder and on a non-clinical control group. As proposed, it was reported that MDD cases received significantly higher scores on the scale than other case groups (Papageorgiou & Wells 2001a).

Negative Beliefs about Rumination Scale (NBRS): NBRS (Papageorgiou & Wells 2001b) is a 13-item scale evaluating negative beliefs focused on disadvantages of rumination. It consists of two sub-dimensions. One of the dimensions incorporates eight items assessing metacognitive beliefs about the uncontrollability and danger of ruminations (NBRS1); the other one is a 5-item scale examining metacognitive beliefs concerning the negative interpersonal and social consequences of rumination (NBRS2). Participants determine to what extent they agree on each item with a 4-point Likert scale ranging between (1) Do not agree and (4) Agree very much. As a result of exploratory factor analysis, a two-factor solution accounting for 66.4% variance was obtained and NBRS1's and NBRS2's coefficients for internal consistency were reported as 0.80 and 0.83, respectively; coefficients for test-retest reliability were indicated as 0.66 and 0.68, respectively (Luminet 2004). Validity studies of the scale produced positive correlations with negative beliefs about worry, proving the concurrent validity of both NBRS1 and NBRS2 subscales ($r = 0.66$ and 0.38 , respectively). Furthermore, both subscales were significantly correlated with RRS ($r = 0.51$ and 0.39 , respectively) and BDI ($r = 0.46$ and 0.35 , respectively), supporting the convergent validity of the scale. The information about discriminant validity of the scale was based on the evidence that the relevant subscales showed significantly higher correlations with the RRS than that of the PSWQ. Moreover, it was pointed out that scores obtained from these two factors significantly distinguished depression cases from PD, SAD and non-clinical control groups (Luminet 2004).

Ruminative Response Scale-Short Form (RRS-SF): RRS-SF is a 10-item scale with a 4-point Likert-type scale (Treynor et al. 2003). It was formed from the 21-item long version of the scale assessing to what extent individuals use a ruminative coping style (Nolen-Hoeksema & Morrow 1991), by excluding items subjected to criticisms of being overlapped with depressive symptoms. It has been reported that the Turkish version of the RRS-SF has good reliability (Cronbach $\alpha = 0.85$) and validity (with BDI, $r = 0.60$) (Erdur-Baker & Bugay 2012).

Metacognitions Questionnaire-30 (MCQ-30): The MCQ-30 (Wells & Cartwright-Hatton 2004) is designed to assess metacognitive beliefs related to worry and a range of metacognitive thought processes, and is a 4-point Likert-type scale composed of 30 items. It consists of five dimensions which are (1) Positive beliefs about worry, (2) Negative beliefs about worry, (3) Cognitive confidence, (4) Need to control thoughts, and (5) Cognitive self-consciousness. Research investigating psychometric properties of the Turkish version of MCQ-30 indicated that the questionnaire is a reliable and valid assessment device (Yılmaz et al. 2008). In accordance with the original version, the Turkish version of the MCQ-30 comprises a five-factor structure and the Cronbach's alpha coefficient, split-half reliability, and test-retest reliability were reported as 0.87, 0.90 and 0.80, respectively. Significant and positive correlations of the MCQ-30 total score with pathological worry, obsessive-compulsive symptoms, trait anxiety, and anxiety and depression symptoms support the convergent validity of the scale.

Penn State Worry Questionnaire (PSWQ): PSWQ (Meyer et al. 1990) is a 16-item 5-point Likert-type trait measure designed to capture frequency, intensity and controllability of general worry that is not specific to any subject, without referring to the content of specific topics. Psychometric evaluation for the Turkish version of the scale supports that it is a reliable (Cronbach $\alpha = 0.91$, test-retest = 0.88) and valid assessment device correlating positively with symptoms of anxiety and depression (Yılmaz et al. 2008).

State-Trait Anxiety Inventory, Trait-Anxiety Form (STAI-T): STAI-T (Spielberger et al. 1983) is a 20-item scale used to assess anxiety proneness. Respondents indicate how they generally feel on a 4-point Likert-type scale. STAI-T was adapted into Turkish by Öner and Lecompte (1985), and psychometric evaluations conducted on university students and psychiatric patients indicated that it is a valid and reliable measurement device.

Beck Anxiety Inventory (BAI): This scale is a 21-item inventory used for assessing the severity of anxiety symptoms experienced during the past week (Beck et al. 1988). The Turkish adaptation study of the scale was conducted by Ulusoy and his colleagues (1996) and adequate psychometric properties for the scale were reported.

Beck Depression Inventory (BDI): BDI is a 21-item scale developed to assess the severity of behavioral, cognitive and somatic symptoms of depression (Beck et al. 1979). Psychometric evaluations conducted on clinical groups and students (Hisli 1988, 1989) indicated that Turkish version of the BDI has satisfactory psychometric properties.

Procedure

After obtaining necessary permissions to adapt and use the scales for research purposes in Turkey, the PBRS and NBRS

were translated into Turkish via two-way translation (translation-back translation) procedure (Brislin et al. 1973). Firstly, Turkish items translated by the first author were given, together with the original items, to three judges who are experts in clinical psychology and psychiatric disciplines, and they were asked to either correct the offered translation or make their own translations for each item. Finally, the first two authors reviewed these suggestions and decided on the final forms of the Turkish versions of the PBRS and NBRS. These forms were then translated back into English by a specialized psychologist familiar with Western culture. The back-translated versions were very close to the original scales. The data collection process was carried out in the form of group sessions for student participants and in the form of individual sessions for non-student adult participants and clinical groups. Before administration of the tests, instructions were given to all participants and they were asked for their informed written consent. The total administration time for the instruments was approximately 30 minutes.

RESULTS

Factor Structure

Positive Beliefs about Rumination Scale: Exploratory factor analysis using Principle Components Analysis was performed to examine the construct validity of the scale only in the non-clinical sample because of its large sample size. The KMO coefficient was high ($0.93 > 0.6$; Tabachnick & Fidell 2013) and the result of the Bartlett test was significant ($\chi^2 = 2477.368$, $SD = 36$, $p < .001$), indicating adequacy of the sample and validity of the factor analysis, respectively. The preliminary analysis conducted without forcing any component revealed that, consistent with its original form, the scale comprises only one principle component with eigenvalue greater than 1 (Table 1).

Negative Beliefs about Rumination Scale: It was found that the value of KMO coefficient ($0.84 > 0.6$) was adequate and the Bartlett test result was significant ($\chi^2 = 1800.791$, $SD = 78$, $p < .001$) for the NBRS as well. Three basic components with eigenvalues greater than 1 were found in the preliminary analysis executed without forcing any component, but when the values of these eigenvalues (4.51, 1.53 and 1.18) and their scree-plot were examined, it was observed that the last two components were very close to each other. Considering both the original form of the scale and the findings obtained from the analyses with two- and three-factor solution, the two-factor solution was preferred. In the Principle Component Analysis with two-factor solution, factors were subjected to a varimax orthogonal rotation and the lower limit for a salient item loading was set at 0.40. The first factor, named NBRS1: uncontrollability and danger of rumination (1, 2, 3, 6, 9, 11), explained 34.66 % of the total variance; and the

Table 1. Means and standard deviations of the scales for the total sample, women, and men; correlation coefficients with age, Principle Component Analysis results

	Total N = 455		Women N = 260		Men N = 186		t	Age	Explained variance % (eigenvalue)	Range of factor loadings (item #)
	Mean	SD	Mean	SD	Mean	SD				
PBRS	22.27	6.44	22.09	6.45	22.58	6.48	3.05*	-0.79	60.65 (5.46)	0.71-0.85 (9)
NBRS	22.85	6.65	22.82	6.49	22.79	6.83	.82	-0.05	46.46	
NBRS1	11.99	3.97	12.03	3.99	11.85	3.93	1.18	0.47	34.66 (4.51)	0.45-0.80 (6)
NBRS2	10.85	3.59	10.78	3.45	10.93	3.76	.22	-0.43	11.8 (1.53)	0.48-0.65 (7)

NBRS1: Uncontrollability and danger, NBRS2: Interpersonal and social consequences
*p < .005

second factor, NBRS2: Interpersonal and social consequences of rumination (4, 5, 7, 8, 10, 12, 13), explained 11.8% of the total variance. All items but 7 and 13 loaded on their relevant factors as in the original form of the scale (Table 1).

Reliability

The reliability of Turkish versions of the NBRS and PBRS in clinical and non-clinical samples was examined via internal consistency, item-total correlation and test-retest coefficients (Table 2). Internal consistency analyses were evaluated with regard to criteria proposed by Nunnally (1978) (Cronbach alpha ≥ 0.70 “acceptable”, ≥ 0.80 “good”, ≥ 0.90 “excellent”), and it was seen that the Turkish versions of the NBRS and PBRS have good and excellent levels of reliability in all three participant groups. The reliability values for the dimensions of NBRS indicated that coefficients were acceptable in NCS, good in MDD group, and good for NBRS1 but below the acceptable level for NBRS2 in AD group. Providing support to the reliability of the scales, the item-total correlation coefficients for the PBRS, NBRS, NBRS1, and NBRS2 were all at acceptable level (≥ 0.20) according to Kline’s criteria (1986), in NCS and MDD groups. On the other hand, items 10 and 12 involved in NBRS and NBRS2 were below the acceptable level and marginally acceptable, respectively, in AD group, and item 12 was marginally acceptable in NCS. However, examinations indicated that when these weak items were removed from the scale, the alpha coefficient did not change. In addition, item-total correlation coefficients of item10 and

item 12 were strong in the depression group ($r = 0.48$ and 0.46 , respectively). Based on these reasons, these items were not excluded from the scale.

One hundred and nine students were retested with a 4 to 5-week interval, and test-retest coefficients supported the reliability of the Turkish version of PBRS and NBRS (Table 2). Although correlation coefficients between measurement times were acceptable for the total scale scores and the NBRS2 factor, it was below the acceptable level for the NBRS1.

The Relationships between Metacognition Scales and Depressive Symptoms: Convergent and Predictive Validity

Convergent Validity: Supporting the convergent validity of the scales in the non-clinical sample, PBRS and NBRS showed positive and significant correlations with depressive symptoms, rumination, metacognitions about worry and thinking processes (except cognitive confidence for the PBRS), pathological worry and anxiety symptoms (Table 3). It is worth noting that PBRS had positive and significant correlations only with rumination level, total metacognitive score, cognitive self-consciousness, and anxiety symptoms in the depression group. In this group, NBRS was positively and significantly associated with all study variables except for cognitive distrust and cognitive self-consciousness. In the anxiety disorders group, both of the scales demonstrated significant relationships in the expected direction with all study variables

Table 2. Internal consistencies (Cronbach α), item-total and test-retest correlation coefficients of the scales

	Internal Consistency			Item-total Correlation Coefficient Range			Test-retest
	NCS	MDD	ADG	NCS	MDD	ADG	
PBRS	0.92	0.91	0.93	0.63-0.80	0.45-0.79	0.51-0.83	0.70
NBRS total	0.83	0.89	0.85	0.20-0.58	0.46-0.74	0.16-0.69	0.73
Uncontrollability and danger	0.78	0.85	0.83	0.39-0.63	0.55-0.73	0.30-0.77	0.61
Interpersonal and social consequences	0.74	0.82	0.64	0.31-0.54	0.40-0.70	0.14-0.46	0.74

NCS: Non-clinical Sample, MDD: Major Depressive Disorder, ADG: Anxiety Disorders Group

Table 3. The relationship among PBRS, NBRS, NBRS1 (uncontrollability and danger), NBRS2 (interpersonal and social consequences) and study variables in the study samples

	NCS (N = 455)				MDD (N = 60)				ADG (N = 60)			
	PBRS	NBRS	NBRS1	NBRS2	PBRS	NBRS	NBRS1	NBRS2	PBRS	NBRS	NBRS1	NBRS2
BDI	0.26**	0.59**	0.61**	0.42**	0.22	0.47**	0.39**	0.46**	0.36**	0.75**	0.69**	0.69**
RRS	0.42**	0.50**	0.53**	0.33**	0.49**	0.62**	0.64**	0.49**	0.48**	0.57**	0.61**	0.41**
MCQ-30	0.42**	0.53**	0.57**	0.36**	0.35**	0.41**	0.36**	0.38**	0.70**	0.56**	0.62**	0.38**
MCQ1	0.39**	0.20**	0.26**	0.10*	0.12	0.50**	0.47**	0.44*	0.34**	0.73**	0.72**	0.61**
MCQ2	0.27**	0.58**	0.63**	0.38**	0.17	0.51**	0.48**	0.44**	0.39**	0.65**	0.66**	0.52**
MCQ3	0.04	0.30**	0.31**	0.22**	0.12	-0.04	0.06	-0.13	0.07	-0.06	-0.03	-0.09
MCQ4	0.30**	0.44**	0.41**	0.37**	0.19	0.47**	0.32*	0.53**	0.64**	0.50**	0.55**	0.36**
MCQ5	0.36**	0.11*	0.13**	0.06	0.46**	0.23	0.23	0.19	0.78**	0.43**	0.56**	0.19
PSWQ	0.29**	0.47**	0.57**	0.24**	0.15	0.40**	0.39**	0.34**	0.37**	0.52**	0.54**	0.39**
STAI-T	0.31**	0.56**	0.61**	0.36**	0.12	0.50**	0.47**	0.44**	0.32**	0.73**	0.72**	0.61**
BAI	0.30**	0.45**	0.48**	0.31**	0.33*	0.40**	0.32*	0.40**	0.27*	0.53**	0.51**	0.46**

NCS: Non-clinical Sample, MDD: Major Depressive Disorder, ADG: Anxiety Disorders Group, BDI: Beck Depression Inventory, RRS: Rumination Response Scale, Short Form, MCQ-30: Metacognition Questionnaire-30, MCQ1: Positive beliefs about worry, MCQ2: Negative beliefs about worry, MCQ3: Cognitive confidence, MCQ4: Need to control thoughts, MCQ5: Cognitive self-consciousness, PSWQ: Penn State Worry Questionnaire, STAI-T: State-Trait Anxiety Inventory, Trait-Anxiety Form, BAI: Beck Anxiety Inventory
*p < .05, **p < .01

except cognitive confidence. The relationships among NBRS subscales and relevant variables are presented in Table 3.

Predictive Validity: In order to examine the predictive validity of the scales on depressive symptoms, a two-step hierarchical regression analysis was conducted on the non-clinical sample. In the first step, gender, age, status (student/non-student) and anxiety level, and in the second step, PBRS, NBRS1 and NBRS2 were entered into the equation using stepwise method. Results showed that in the first step, anxiety level ($\beta = 0.55, t = 13.57, R^2_{\text{Change}} = 0.30, p < .001$) and status ($\beta = -0.08, t = 2.04, R^2_{\text{Change}} = 0.01, p < .05$); in the second step, NBRS1 ($\beta = 0.45, t = 11.27, R^2_{\text{Change}} = 0.16, p < .001$) and NBRS2 ($\beta = .12, t = 2.91, R^2_{\text{Change}} = 0.01, p < .005$) predicted severity of depressive symptoms. Since positive beliefs about rumination score was not a significant predictor of depressive symptoms, this analysis was repeated by excluding anxiety from the equation. As a result, it was observed that in the first step, age ($\beta = -0.13, t = -2.66, R^2_{\text{Change}} = 0.02, p < .01$), and in the second step not only NBRS1 ($\beta = 0.61, t = 16.12, R^2_{\text{Change}} = 0.37, p < .001$) and NBRS2 ($\beta = 0.14, t = 3.15, R^2_{\text{Change}} = 0.01, p < .005$) but

also PBRS ($\beta = 0.10, t = 2.65, R^2_{\text{Change}} = 0.01, p < .01$) significantly predicted the severity of depressive symptoms.

Comparisons between Groups: Criterion-related Validity and Discriminant Clinical Validity

Criterion-related Validity: Criterion-related validity of scales was examined in the non-clinical sample. Participants were divided into two extreme groups in terms of their depression levels, and Analysis of Variance (ANOVA) for the total scores and Multivariate Analysis of Variance (MANOVA) for NBRS subscales were performed to examine whether PBRS and NBRS would significantly distinguish these groups with high and low symptoms. For this purpose, depending on the BDI scores, participants were divided into low and high depressive symptom groups, using highest (over 16 points) and lowest (below 5 points) quartiles. Providing support for the criterion-related validity of the scales, individuals with higher levels of depressive symptoms had stronger positive and negative beliefs about rumination than those having lower levels of depressive symptoms (Table 4).

Table 4. Results of the extreme group comparisons

Variables	Depressive Symptoms				Significance Tests	
	Low (N = 121)		High (N = 121)		Multivariate F	Univariate F
	Mean	SD	Mean	SD		
PBRS	20.42	6.92	24.93	6.23	-	F (1, 240) = 28.37*
NBRS	19.40	4.95	27.65	7.33	-	F (1, 240) = 105.45*
NBRS Factors	-	-	-	-	F (2, 240) = 66.62*	-
1. Uncontrollability and danger	9.79	3.00	15.16	4.13	-	F (1, 240) = 133.74*
2. Interpersonal and Social Consequences	9.60	2.71	12.49	4.2	-	F (1, 240) = 40.36*

*p < .001

Table 5. Comparisons among sample groups

	1. MDD (N = 60)		2. PD (N = 30)		3. SAD (N = 30)		4. HCG (N = 30)		Significance	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F	Post-hoc group differences
PBRs	22.65	7.25	21.07	6.99	21.97	6.6	18.07	4.33	(3, 146) = 3.37*	1 > 4
NBRs	27.87	8.81	26	8.5	26.9	6.47	18.87	5.02	(3, 146) = 9.73**	1, 2, 3 > 4
RRS	25.73	5.25	25.1	7.67	26.87	5.24	17.07	4.66	(3, 146) = 19.48**	1, 2, 3 > 4
BDI	25.20	9.20	18.87	11.03	20.07	8.82	6.77	6.01	(3, 146) = 28.10**	1 > 2, 4 and 2, 3 > 4
BAI	25.72	12.97	34.07	13.07	26.33	13.3	9.03	8.54	(3, 146) = 22.12**	1, 3 > 4 and 2 > 1, 4

MDD: Major Depressive Disorder, PD: Panic Disorder, SAD: Social Anxiety Disorder, HCG: Healthy Control Group, RRS: Rumination Response Scale, Short Form, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory

*p < .05, **p < .001

Discriminant Clinical Validity: In order to test whether these scales would differentiate the MDD group from the other groups, and the clinical groups from the non-clinical group, scores of these three clinical groups and the healthy control group were analyzed using ANOVA. As in the original study, the Scheffe test, which does not require an equal number of observations between groups, was used for post-hoc comparisons.

Findings showed that there were no significant differences between MDD, PD and SAD in terms of positive beliefs about rumination (Table 5). However, positive beliefs observed in the MDD group were significantly higher than in the healthy control group. Positive beliefs scores of PD and SAD groups did not significantly differ from the scores of HCG. Whereas there were no significant differences among MDD, PD and SAD groups in terms of NBRs scores, these three clinical groups reported significantly more negative beliefs about rumination than the healthy control group. Groups were also compared in terms of their scores obtained from the symptom scales. Results indicated that, while the rumination levels of clinical groups were not significantly different from each other, healthy control groups ruminated significantly less frequently than clinical groups. While the MDD group did not have higher scores on the symptoms of depression and anxiety than the SAD group, all clinical groups reported significantly higher symptoms than the control group.

DISCUSSION

The aim of the present study was to investigate psychometric properties of the Turkish versions of the PBRs and NBRs, which are two metacognition instruments commonly used in depression research. Construct validity of the scales was examined in a non-clinical sample via explanatory factor analysis. Findings indicated that factor structures of the scales were very similar to their original form. More specifically, while the Turkish PBRs was comprised of one dimension, the NBRs consisted of two dimensions called NBRs1: Uncontrollability and danger of rumination; and NBRs2: Interpersonal and

social consequences of rumination. In the NBRs, two items (Item 7: Ruminating about my depression could make me kill myself, and Item 13: Ruminating can make me harm myself) showed a higher correlation with NBRs2 instead of grouping under its expected dimension NBRs1. In support of our finding, results of a confirmatory factor analysis obtained from a study in which the scale was adapted into the Dutch language demonstrated that, in clinically depressed cases, the same items (item 7 and 13) had a common variance that was not shared by the remaining items (Roelofs et al. 2010). When the content of these items was examined, it could be stated that both items reflect self-harm behaviors, and they may not be perceived as having interpersonal and social consequences in Turkish culture. In addition, the internal consistency coefficients for the MDD group (Table 2) were compared with the original NBRs1 and NBRs2 values (0.80 and 0.83, respectively), and it was seen that grouping these two items to the other factor did not decrease the reliability coefficients for the relevant factors. In future research, the factor structure of both scales, but especially that of the NBRs, should be studied through confirmatory factor analysis in clinical samples.

Internal consistency findings indicated that the reliability of the PBRs was very good, while it was good for the NBRs in both clinical and non-clinical samples. The reliability coefficients for NBRs factors ranged from good to acceptable among the present study groups. The reliability of interpersonal and social consequences factor remained below the acceptable level in the AD group. Furthermore, item 10 (“Ruminating means I’m a bad person”) and item 12 (“Only weak people ruminate”), which were involved in the total NBRs and interpersonal and social consequences dimension, did not work well in the AD group, but showed a marginally acceptable correlation in the non-clinical group. Findings revealed that removing these items from the scale did not make a significant contribution to the reliability coefficients. When these items were examined semantically, it can be asserted that “bad person” and “weak person” descriptions reflect depressive labels. Thus, one can expect that these items might have stronger correlations with the other items in the scale for

depressive cases. As a result, the Turkish version of the NBRS was shown to have higher reliability values in MDD group, which supports the fact that the scale was developed for clinical depression cases.

When the test-retest reliability of the scales in the non-clinical sample was examined, it was seen that the coefficients were adequate for the PBRS, NBRS and NBRS2 factors. The test-retest reliability of the NBRS1 factor was marginally acceptable, which is observed in the original study conducted on a clinical group, as well. Based on this finding, it can be asserted that beliefs with regard to uncontrollability and danger of rumination are relatively more susceptible to being affected by the changes in a person's affect state and stress factors. On the other hand, consistency of such beliefs over time may vary between clinical and non-clinical groups. For this reason, test-retest values of these scales should be investigated in Turkish clinical groups as well.

Providing support for the convergent validity of the scales, PBRS and NBRS scores were found to be associated with depressive symptoms, rumination, metacognitions about worry, and anxiety symptoms in the non-clinical sample. However, PBRS was correlated only with rumination, total metacognition score, cognitive consciousness, and anxiety symptoms in the depression group. Findings for the NBRS in the clinical depression group indicated that negative beliefs about rumination revealed positive and significant correlations with all variables except for cognitive confidence and cognitive consciousness, supporting the convergent validity of this scale in the MDD group. The convergent validity of the scales was also confirmed in the anxiety disorders group, with significant and positive correlations with all study variables except cognitive confidence.

In depressive cases, beliefs about rumination as a coping strategy were not found to be associated with trait anxiety, worry level and metacognitions about worry. This is a relatively expected finding when we consider that this type of positive metacognition is suggested in relation to depression. Although the relationship between PBRS and depressive symptoms was confirmed in the non-clinical sample, the expected correlation in the MDD group was not observed, supporting the hypothesis that positive beliefs about rumination acts as a predisposing factor to depression. On the other hand, a direct correlation between these two variables for the clinical depression group was not reported, and the rumination level mediated the relationship between positive beliefs about rumination and depressive symptoms in the original study (Papageorgiou & Wells 2001a). In other words, in terms of clinical depression, it can be asserted that positive beliefs about rumination result in depressive symptoms by means of ruminations. Therefore, in future research to be carried out in Turkey, the mediator role of rumination and structural differences observed in metacognitive models

of depression for clinical and non-clinical groups should be investigated. This finding may also represent that convergent validity of the scale should be reconsidered in larger samples using different assessment tools for symptoms of depression.

Moreover, studies conducted in different cultures have pointed out that positive beliefs about rumination may act as a helpful coping strategy for depressive symptoms. To illustrate, in a study that took place in the Japanese culture (Takano & Tanno 2010), it appeared that depressive symptoms increase only if positive beliefs about rumination triggers self-rumination, but decrease if it triggers self-reflection. Based on this finding, it can be asserted that the relationship between positive beliefs about rumination and depressive symptoms may differ depending on the form of rumination. Similarly, in a qualitative study (Rafique 2010) conducted to investigate the metacognitive model of depression in Pakistani women who live in England, it was concluded that the relationship between positive beliefs and depressive symptoms could not be universally endorsed. In this study, some women, especially those who have negative beliefs about rumination, expressed that they did not have positive beliefs. Rafique explained this phenomenon with the difficulty in explaining the cognitive discrepancy arising from holding two contradictory beliefs, both positive and negative, at the same time. It was also predicted that the difficulty in reconciling this conflict might even be greater for an individual who believes that life is dominated by fate. Accordingly, having positive beliefs about rumination can be evaluated by the individual as conflicting with his/her religious beliefs and thus may act as a source of guilt. Additionally, it was asserted that, in Eastern cultures, positive metacognitions might not be available to conscious awareness through means of explicit scale items. Instead, these types of metacognitions might be revealed by more implicit statements and experiences. In further studies, the relationship between positive beliefs about rumination and depressive symptoms might be examined within the scope of these explanations that especially correspond to our culture.

Two different regression analyses in which anxiety symptoms were controlled for and not controlled for were executed for testing the predictive validity in the non-clinical group. After controlling for anxiety symptoms, the positive beliefs about rumination variable was not found to be associated with depressive symptoms, whereas the negative belief score was a significant and strong predictor of depressive symptoms. In the second analysis in which anxiety was not controlled for, both variables significantly predicted depressive symptoms. In the most general sense, these findings indicated that negative beliefs about rumination are stronger and direct metacognitive predictors for depressive symptoms in comparison to positive beliefs. The confounding role of anxiety symptoms on the predictive power of positive beliefs may indicate a possible interaction effect between positive beliefs and anxiety in their associations with depressive symptoms. In other

words, positive beliefs about rumination would be associated with depressive symptoms only if individuals have high levels of anxiety. Consistent with the metacognitive model, this might explain why ruminators who believe that rumination is helpful develop negative beliefs about the dangerousness of rumination after a rumination period. Whether there is a significant interaction effect between positive beliefs about rumination and anxiety symptoms appears to be a research question to be considered in future studies.

Within the context of discriminant validity, criterion-related validity analysis performed in the non-clinical sample proved that both PBRS and NBRS were able to discriminate individuals with high levels of depressive symptoms from those with low symptom levels. In addition to supporting the discriminant validity of the scale, the scale showed higher correlations with rumination than worry in a student sample in the original PBRS study. In this study, a similar result was obtained from a sample comprised of student and non-student participants. In particular, while the correlation of PBRS with rumination was significant, its correlation with worry was not significant in the MDD group.

The question of whether positive and negative beliefs about rumination differentiate clinical groups from each other was examined using ANOVA. According to the findings, the PBRS differentiated only the depressive group from the control group, but it was unable to differentiate anxiety groups from healthy controls. As for NBRS, it was able to differentiate all psychiatric groups from healthy controls. However, both of the scales were unable to differentiate the depressive group from the anxiety disorders. Therefore, it can be stated that discriminant validity of the PBRS and NBRS was only partially confirmed. In general, these findings may point out that the Turkish versions of the PBRS and NBRS are able to distinguish clinical groups from normal control groups, but they do not have a psychometric sensitivity for differentiating MDD from SAD and PD. On the other hand, even though there was no overlap between diagnoses, we found no significant difference between the MDD and SAD groups in terms of depression and anxiety scores, as is frequently the case in the clinical practice. Thus, this may have prevented us from observing the discriminant validity of the scales. However, although the difference between depression and anxiety symptoms of MDD and PD patients was significant as expected, we also found no differences between these groups in terms of their PBRS and NBRS scores. In conclusion, the discriminant clinical validity of these scales should be reconsidered in larger and demographically more balanced diagnostic groups by using research designs employing exact methods such as inter-rater reliability for eliminating comorbidity.

The fact that there were no significant differences between the rumination levels of the clinical groups involved in this study may be that, just as worry is typically seen in anxiety

disorders, it might also emerge in depression because of the fear about the persistence of depressive symptoms; ruminative thinking, which is a cognitive characteristic unique to depressive individuals, can also be observed in individuals experiencing an anxiety disorder. For instance, in the cognitive model of social phobia, Clark and Wells (1995) stated that when individuals who have social anxiety attend social events, they ruminate about their performance, and this rumination process is basically responsible for persistence of the disorder. Likewise, individuals with social phobia focus their attention to social threat cues, which may lead to ruminations about existing self-directed threats in the environment (Buckner et al. 2010). Studies endorsing that rumination and worry were associated with both depression and anxiety provide support for this explanation (Cox et al. 2001, Nolen-Hoeksema 2000, Segerstrom et al. 2000). In addition to these, CAS, which is defined in metacognitive model of MDD, consists of not only rumination but also worry. At this point, rather than having worry or rumination, differences in metacognitions about worry and rumination might be more important.

To conclude, when all findings are considered together, it is seen that the PBRS and NBRS can be used in Turkey as valid and reliable assessment tools in practical and theoretical studies pursued in clinical and non-clinical groups. Moreover, beyond the validity and reliability of the scales, important support in relation to the cultural validity of the hypotheses asserted in the metacognitive model of depression was obtained. Thus, findings indicate that metacognitive factors should be taken into account in the process of clinical assessment and psychotherapeutic interventions for depressive symptoms. Moreover, findings are indicative of the cross-cultural validity of the metacognitive model of depression. On the other hand, the present study has some limitations. First, it was carried out in clinical groups in which the number of participants was relatively limited. Second, the group of anxiety disorders did not represent symptoms such as obsessive-compulsive and generalized anxiety, which can be important in terms of making distinctions between disorders. Third, SAD cases also had high depression scores. Fourth, clinical groups were not systematically evaluated in terms of Axis-II disorders. Finally, the non-clinical group was not subjected to a structured diagnosis screen. Therefore, findings obtained from this study should be interpreted within the scope of these limitations. In future studies, a larger sample size, diversity and purer categorization of diagnostic groups might be considered. Furthermore, studies focusing on the examination of the structural metacognitive model of depression and the role of metacognitions on the development and maintenance of depressive symptoms would contribute to the current literature. The present study may function as a basis for metacognitive research to be conducted on depression by providing researchers with the predominant measurement devices to be used in practical and academic studies in Turkey.

AUTHOR NOTES

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