RESEARCH ARTICLE

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Investigation of the Metacognitive Model of Depression in a Turkish Sample of Major Depressive Disorder

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SUMMARY

Objective: The aim of this study was to test the metacognitive model of depression in individuals diagnosed with major depressive disorder (MDD) and to investigate the relative contributions of cognitions and metacognitions about rumination to the explanation of depressive symptoms.

Method: The participants of the study consisted of 180 MDD patients not meeting the diagnostic criteria for other psychiatric disorders. The obtained data were analyzed through structural equation modelling (SEM) and hierarchical regression analyses.

Results: SEM results showed that positive beliefs about rumination increased the rumination level, and the higher levels of rumination significantly predicted the increase in depressive symptoms partly through the mediating effect of negative metacognitive beliefs about rumination regarding interpersonal and social consequences. However, negative metacognitive beliefs about the uncontrollability and danger of rumination were not found to be associated with symptoms of depression in the participants of this study. The power of dysfunctional attitudes for predicting depression was lost when hierarchical regression analysis was carried out by controlling the metacognitions about negative interpersonal and social consequences of rumination.

Conclusion: The results are consistent with the metacognitive model of depression, which was originally developed for better understanding of MDD, and point to the usefulness of considering positive and negative metacognitions about rumination in the processes of clinical evaluation and intervention for MDD.

Keywords: Major depressive disorder, depression, rumination, metacognition, metacognitive theory, cognition, cognitive behavioral theory, dysfunctional attitudes

INTRODUCTION

The metacognitive approach to psychopathology (Wells 2000, 2009) has shifted the emphasis on cognitions in the cognitive behavioral therapy toward metacognitions that include knowledge, interpretation, monitoring, and control of one's own cognition. Metacognitions, varying according to the type of psychopathology, are approached in two main categories as the positive and the negative and accepted as transdiagnostic predisposing factors leading to Cognitive Attentional Syndrome (CAS) (Wells and Matthews 1994) that is responsible for the development of all psychopathologies and persistence of the symptoms. CAS is characterized by being trapped in repetitive thinking processes such as rumination or worry, allocation of attention resources to internal and external cues of threats consistent with the experienced psychological distress, and using coping responses that backfire such as avoidance or control.

To illustrate, although depressive affect and depressive thinking style are the common daily experiences of many individuals, not everyone with these experiences is diagnosed with MDD, or meets the diagnostic criteria for this disorder for long periods of time (Wells 2000, 2009). Whereas the cognitive theory investigates the pathogenesis of MDD by focusing on the thought contents such as the negative schemas of the self, others, and the future, dysfunctional rules and assumptions and negative automatic thoughts with depressive themes (Beck 1967, 1976), the metacognitive theory emphasizes the state of being stuck in depressive thinking itself and the negative and positive significance of this situation for the individual (Wells 2000, 2009).

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The metacognitive model of depression (Papageorgiou and Wells 2003, Wells 2009) which is the subject of this study, proposes that when individuals experience an internal trigger such as a depressed feeling or thought, positive metacognitive beliefs such as "*If I understand why I think in this way, I feel better*" would arise and, in turn, activate the chain of ruminative thinking. This implies the symptoms pointing to depression should be monitored, and increases the rumination level thereby leading to emergence of negative metacognitions such as "*This much thinking will harm me*". Notably, both the given examples are on the negative and positive cognitions about the rumination (cognition), which constitute the metacognitions about rumination. The steps in the model are consecutively effective in augmenting the depressive feelings, thoughts and behaviours. Since its proposal, the basic components of the metacognitive model of depression have been validated by many cross sectional (Cano-Lopez et al. 2020, Kannis-Dymand et al. 2020, Roelofs et al. 2007, 2010, Solem et al. 2016) and longitudinal (Kraft et al. 2019, Papageorgiou and Wells 2009) studies with clinical and non-clinical participants. The model was also shown to be valid for a non-clinical sample in Turkey (Yılmaz 2016).

Besides the studies testing the outlined structural model, the assumptions of the metacognitive theory in relation to MDD are also being investigated in studies comparing cognition and metacognition. Accordingly, there are cross-sectional (Huntley and Fisher 2016, Yılmaz et al. 2015a) and longitudinal (Faissner et al. 2018, Hjemdal et al. 2013) studies on clinical and non-clinical participants, focusing on whether metacognitions make significant contribution to explain depressive symptoms after controlling for the effects of depressive cognitions. Despite the differing findings depending on how cognitions and metacognitions were evaluated and the paucity of specifity for metacognitions about ruminations (Huntley and Fisher 2016, Yılmaz et al. 2015a), the results of these studies have predominantly demonstrated that metacognitions explain the symptoms of depression beyond depressive cognitions. It is noteworthy that there are not any studies in the relevant literature comparing the effects of cognition and metacognition on depressive symptomatology in clinical participants by involving metacognitions specific to ruminations.

Given this background, our study has two main objectives. Considering that the metacognitive model of depression has not yet been investigated in Turkey using a clinical sample diagnosed with MDD, the first objective of this study was to test the mechanisms proposed in the model on a large group of MDD participants. The hypothesis to be tested in this respect was that the metacognitive model of depression as a whole would be verified in a group of Turkish participants diagnosed with MDD. The second objective of the study was to investigate the relative contributions of cognitions and metacognitions to the depressive symptoms of MDD participants. In consistence with the propositions of the metacognitive theory, the hypothesis for this aim was that even after controlling for the dysfunctional beliefs, metacognitions about ruminations would still significantly predict depressive symptoms; but that after controlling for the metacognitions, the predictive power of the dysfunctional beliefs on depression would decrease or disappear. With respect to this purpose, the present study is unique in that the cognitions and metacognitions were compared using metacognitions about rumnation, rather than using metacognitive beliefs specific to anxiety or general metacognitive structures in participants with MDD.

METHOD

Participants and Procedure

This study was conducted on 180 adult participants meeting the diagnostic criteria for MDD according to DSM-IV-TR (American Psychiatric Association 2001). Participants were recruited among the individuals seeking help from the outpatient psychiatry clinics in Zonguldak Atatürk State Hospital, Zonguldak Bülent Ecevit University Hospital, and University of Health Sciences Bursa Yüksek İhtisas Training and Research Hospital between May 2014 and February 2016. The approval for the study was obtained from the Dokuz Eylül University Ethics Committee within the scope of the TUBITAK project numbered 112K375, as well as from the relevant hospital administrations. In compliance with the application for ethical approval, the MDD diagnoses were confirmed by the researchers who were psychiatry specialists by using the Structured Clinical Interview for DSM-IV Axis I Disorders – the SCID-I-TR (Çorapçıoğlu et al. 1999) and excluding the cases meeting the diagnostic criteria for any disorder other than MDD. Personality disorders were excluded on the basis of clinical expertise without using any structured diagnostic tools. The exclusion criteria comprised having comorbid psychotic symptoms, depression due to other medical conditions, lacking the intellectual capacity to complete the psychometric instruments, pregnancy, breastfeeding, being under 18 years of age and having a history of psychotherapy. The participants were verbally informed about the study and their written consents were obtained. The data collection instruments were completed in a single session with randomized order.

Data Collection Instrıments

The Ruminative Responses Scale, Short Form (RRS-SF) (Treynor et al. 2003): The RRS-SF is a 10-item scale used to assess the level of ruminative thinking in depressive mood. Each item is scored between (1) *almost never* and (4) *almost always* on a 4-point scale, with the scores obtainable from the scale ranging from 10 to 40. Higher scores reflect

increased rumination. The internal consistency coefficient of the original RRS-SF was 0.85. The RRS-SF adapted to the Turkish language by Erdur-Baker and Bugay (2012) was shown to have good reliability (α=0.85) and convergent validity with good correlation with the Beck Depression Inventory (r=0.60).

The Positive Beliefs about Rumination Scale (PBRS) (Papageorgiou and Wells 2001a): The PBRS assesses positive beliefs that focus on the benefits and advantages of ruminative thinking such as understanding emotions, finding the causes for depressive symptoms, and preventing future mistakes. It is a 9-item scale evaluated on a 4-point rating scale between (1) *do not agree* and (4) *agree very much*. The scores obtainable from the scale range from 9 to 36, and higher scores indicate higher levels of positive metacognitive beliefs about rumination. The internal consistency coefficient of the original scale was reported as 0.89. The Turkish language adaptation study of the PBRS was conducted on clinical and non-clinical samples (Yılmaz et al. 2015b), and internal consistency of the scale was found to be 0.92 and 0.91 for the non-clinical and MDD participants, respectively. Significant correlations of the scale with the levels of rumination and depressive symptoms (r=0.42 and 0.26, respectively) support the convergent validity of the Turkish language version of the PBRS.

The Negative Beliefs about Rumination Scale (NBRS) (Papageorgiou and Wells 2001b): The NBRS was developed for evaluating the negative beliefs that rumination is uncontrollable, dangerous or can result in unwanted social situations. It has two sub-dimensions concerning "the uncontrollability and danger" (NBRS1), and "the interpersonal and social consequences" (NBRS2) of rumination. The 13 items in the scale are evaluated on a 4-point scale ranging between (1) *do not agree* and (4) *agree very much*. Total scores of the scale can range from 13 to 52 with high scores indicating strong negative metacognitive beliefs about rumination. Internal consistency coefficients of the original scale were reported as 0.80 for NBRS1, and 0.83 for NBRS2 (Luminet 2004). Results of the explanatory factor analysis on the Turkish language of the NBRS (Yılmaz et al. 2015b) indicated that the scale comprises two factors in agreement with its original version. The internal consistency coefficients for the total NBRS, NBRS1 and NBRS2 were 0.83, 0.78, and 0.74, respectively in non-clinical participants, and 0.89, 0.85, and 0.82, respectively in participants diagnosed with MDD. Significant and positive correlations of the NBRS were reported with rumination (r=0.50) and depressive symptoms (r=0.59) which support the convergent validity of the Turkish language version of the scale.

The Dysfunctional Attitudes Scale (DAS) (Weissman and Beck, 1978): The DAS consists of 40 items scored on a 7-point scale evaluating the degree to which dysfunctional beliefs related to depression possessed by individuals. Increased scores correspond to a more depressogenic cognitive style. In various studies, the internal consistency coefficient of the original scale was found to vary between 0.87 and 0.92. It was adapted to the Turkish language by Hisli-Şahin and Şahin (1992), and the reliability coefficient of the DAS obtained with university students was 0.79. The correlation coefficients with the Beck Depression Inventory and the Automatic Thoughts Questionnaire were 0.19 and 0.29, respectively.

The Beck Depression Inventory (BDI) (Beck et al. 1979): The BDI is a 21-item scale designed to assess the severity of depressive symptoms experienced during the previous week. The rating regarding a depressive symptom in each item varies between 0 and 3, and scores between 0 and 63 can be obtained from the scale. High scores indicate depressive symptom severity. The psychometric properties of the scale, which was adapted to Turkish by Hisli (1988, 1989) were found to be adequate on clinical groups and student samples.

Statistical Analyses

The SPSS 24.0 (IBM Corp 2016) was used for the statistical evaluation of the data. Before proceeding to the main analyses, the data were tested for meeting the assumptions of univariate and multivariate normality, and the results were satisfactory. Also, the descriptive characteristics of the variables were investigated and correlations between the variables were computed. The metacognitive model of depression was examined through structural equation modeling (SEM) analysis, using the SPSS 24 AMOS program. Each variable which was examined for its direct or indirect effects following the sequence in the original structural model, acted as a dependent (predicted) variable for the preceeding variable(s), and as an independent (predictor) variable for the subsequent variable(s). According to the criteria stipulated by Byrne (2010) for concluding the tested model has a reasonable fit to the data, the chi-square value should be non-significant or the χ^2/df ratio should be <5; the RMSA value should be <0.08; the GFI, AGFI and TLI values should be >0.90, and the CFI value should be >0.95. Also, the non-significant chi-square value or a χ^2/df ratio of ≤2, a RMSA value of ≤0.05, the GFI, AGFI and TLI values of ≤0.95, and a CFI value of ≤0.97 indicate the perfect fit of the model to the data. The significance of the indirect effects in the model was tested through the Bootstrapping method with 5000 resampling from which a 95% Confidence Interval (CI) was estimated. Considering the rule of thumb that at least 20 participants are needed for each path in the tested model (Kline 2005), the number of the participants of the present study was sufficient for carrying out the SEM analysis. To assess the relative effects of the cognitions and metacognitions in explaining depressive symptoms, two hierarchical regression analyses

were conducted, in which depression (BDI) was regressed on cognitions (DAS) and metacognitions about rumination (PBRS, NBRS1, and NBRS2).

RESULTS

Descriptive and Correlational Analyses

The 180 participants of the study comprised 117 (65%) females and 63 (35%) males with a group mean age of 32.48±11.5 (range 18-64) years, mean education duration of 10.41±3.82 (range 4-18) years, and disease duration varying between 1 and 60 months (*X*=5.3±6.96). Accordingly, 31.1% (*n*=56) of the participants were recently diagnosed with MDD, 62.8% (*n*=113) were within the first year of the disease, whereas disease duration of 6.1% (*n*=11) of the participants was more than 1 year.

The Cronbach's α reliability coefficients, the mean and standard deviation values of the data collection instruments are presented in Table 1. Since the sample consisted predominantly of female participants, the independent samples *t*-test was used to examine whether there were significant differences across gender on the main variables. As can be seen in Table 1, the dysfunctional belief scores of the male participants were significantly higher than that of the female participants, but statistically significant differences were not observed between males and females in terms of the other variables. The results of the Pearson Correlation Analyses carried out to observe intercorrelations among the study variables are also presented in Table 1. Except for the correlation between the positive beliefs about rumination and negative beliefs regarding the interpersonal and social consequences of rumination, all other correlations among variables were statistically significant and positive as expected.

The Fit of Metacognitive Model of Depression to the Data

In the first SEM analysis conducted to test the hypothesized model, the goodness of fit indices (χ^2 [4, N=180]=59.56, p<0.001, χ^2/df=14.89, GFI=0.899, AGFI=0.621, TLI=0.374, CFI=0.75, RMSEA=0.279) indicated that the model did not have a good fit to the data. The modification indexes recommended for improving the fit of the model to the data involved the linking the error terms between *negative beliefs-1* and *negative beliefs-2*. Since these two variables are the subdimensions of the same psychometric instrument, the recommendation was found to be theoretically consistent and the analysis was repeated by associating the relevant error terms. The modified model provided perfect fit to the data, and the goodness of fit indices were found to be (χ^2 [3, N=180]=1.23, p=0.75, χ^2/df=0.41, GFI=0.997, AGFI=0.986, TLI=1.03, CFI=1.00, RMSEA=0.00). However, the association between *negative beliefs-1* and *depressive symptoms* in this model was not found to be significant. Therefore, the SEM analysis was repeated by removing the link between the relevant variables. As shown in Figure 1, this final model also had a perfect fit to the data (χ^2 [4, N=180]=1.42, p=0.84, χ^2/

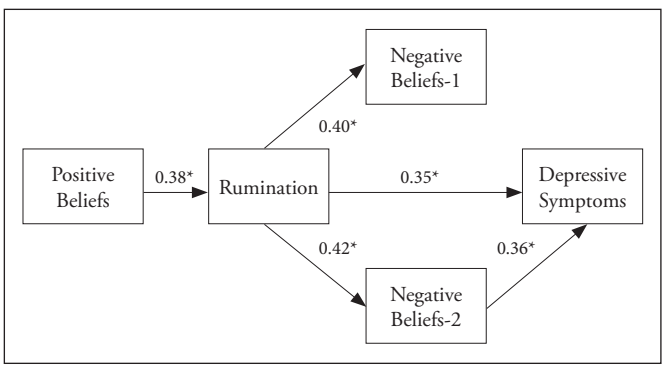

Figure 1. Metacognitive Model of Depression in Cases with Major Depressive Disorder
*p<.001

Table 1. Descriptive statistics of variables, between group differences on gender, and the correlations between the variables (*N*=180)

Variables	Cronbach's α	Total *(N=180)*	Gender		Correlation Coefficients *r*						
			Male *(n=63)*	Female *(n=117)*							
		Mean±SD	Mean±SD	Mean±SD	t	1	2	3	4	5	6
1. RRS	.79	27.81±5.16	27.78±4.85	27.83±5.35	-.06	-	.38**	.40**	.42**	.40**	.50**
2. PBRS	.86	22.17±6.4	24.67±5.36	23.9±6.9	.83		-	.18*	.12	.24**	.18*
3. NBRS1	.80	16.41±4.53	16.48±4.3	16.37±4.67	.15			-	.61**	.34**	.38**
4. NBRS2	.83	14.68±5.27	14.75±5.05	14.64±5.4	.13				-	.39**	.50**
5. DAS	.86	154.3±30.59	160.92±30.7	150.74±30.06	2.15*					-	.36**
6. BDI	.83	31.14±9.83	30.78±10.63	31.34±9.41	-.37						-

RRS = Ruminative Responses Scale, PBRS = Positive Beliefs about Rumination, NBRS1 = Negative Beliefs about Uncontrollability and Danger of Rumination, NBRS2 = Negative Beliefs about Interpersonal and Social Consequences of Rumination, DAS= Dysfunctional Attitudes Scale, BDI= Beck Depression Inventory. *p<.05, **p<.01

sd= 0.35, GFI=0.997, AGFI=0.988, TLI=1.029, CFI=1.00, RMSEA=0.00). According to the standardized regression coefficients of the direct relationships, the increase in *positive beliefs* predicted significantly the increase in the *rumination* level (β=0.38, p<0.001), this increase in *rumination* levels predicted significantly the increase in *negative beliefs-1* and *negative beliefs-2* (β=0.40, *p*<0.001 and β=0.42, *p*<0.001, respectively), and finally the increase in *negative beliefs-2* predicted significantly the increase in the level of *depressive symptoms* (β=0.36, *p*<0.001).

The statistical significance of the indirect effects between the variables forming the model was investsigated by the bootstrapping method. Accordingly, the indirect effects of *positive beliefs* on *negative beliefs-1* (β=0.15, Standard Error (SE)=0.04, *p*<0.001, 95% CI=0.10-0.22), on *negative beliefs-2* (β=0.16, SE=0.04, *p*<0.001, 95%CI=0.10-0.24), and on *depressive symptoms* (β=0.19, SE=0.04, *p*<0.001, 95% CI=0.13-0.26) and the indirect effect of *rumination* on *depressive symptoms* (β=0.15, SE=0.04, *p*<0.001, 95% CI=0.09-0.22) were found to be significant. According to these significant indirect relationships, *rumination* and *negative beliefs-2* mediate the relationship between *positive beliefs* and *depressive symptoms*. Significant indirect effects also demonstrated that the *rumination* level predicts depressive symptoms both directly and partly through *negative beliefs-2*. In addition, the rumination level mediated the relationship between *positive beliefs* and *negative beliefs-1*, as well as the relationship between *positive beliefs* and *negative beliefs-2*.

Table 2. Hierarchical regression analyses on dysfunctional beliefs and metacognitions about rumination as predictors of depressive symptoms

Variables	ΔR^2	ΔF	β	*t*
Regression 1				
Step 1: Control Variables	.25	29.19**		
Gender			.03	.39
RRS			.50	7.63**
Step 2: Cognitions	.03	8.11*		
DAS			.20	2.85*
Step 3: Metacognitions	.08	7.11**		
PBRS			-.01	-.13
NBRS1			.02	.31
NBRS2			.31	3.88**
Regression 2				
Step 1: Control Variables	.25	29.19**		
Gender			.03	.39
RRS			.50	7.63**
Step 2: Metacognitions	.11	9.47**		
PBRS			.00	.05
NBRS1			.03	.42
NBRS2			.34	4.28**
Step 3: Cognitions	.01	2.50		
DAS			.11	1.58

Gender = 0: Male, 1: Female, RRS = Ruminative Responses Scale, PBRS = Positive Beliefs about Rumination, NBRS1 = Negative Beliefs about Uncontrollability and Danger of Rumination, NBRS2 = Negative Beliefs about Interpersonal and Social Consequences of Rumination, DAS= Dysfunctional Attitudes Scale.
**p<.005, **p<.001.*

The Comparative Roles of Cognitions and Metacognitions in Predicting Depressive Symptoms

Two complementary hierarchical regression analyses were carried out. Since descriptive statistics had shown that dysfunctional beliefs were significantly higher in the male participants, the gender was entered in the first block of the analysis as a control variable. In addition, given the strong relationship of rumination with depressive symptoms, it was also controlled by placing in the first block of the analysis in order to examine the explanatory power of the dysfunctional beliefs and metacognitions independently from rumination. The total score of dysfunctional beliefs (DAS) was entered in the second step of the first regression analysis, followed by the positive and negative metacognitions about rumination (PBRS, NBRS1, and NBRS2) as a block on the third step. In the second regression analysis, the order of the second and third steps was reversed. In this way, it is possible to find out the predictive power of cognitions on depressive symptoms when metacognitions were controlled and vice versa.

As can be followed on Table 2, in the first analysis with depressive symptoms (BDI) as the criterion variable, the contribution of gender and rumination to the explained variance was significant (R^2=.25, *F* [2, 117]=29.19, *p*<.001), which was derived from the rumination levels of the participants (β=.50, *t*=7.63, *p*<.001). With the addition of dysfunctional beliefs in the second step, the explained variance in depression increased significantly by 3% (R^2=.28, *F* [3, 176]=22.95, *p*<.001). After controlling for these variables, the contribution of metacognitions about rumination to the explanation of depressive symptoms increased by 8% in the last step (R^2=.36, *F* [6, 173]=16.41, *p*<.001), and it was seen that metacognitive variable making a further significant contribution to the model was the negative beliefs about the interpersonal and social consequences of rumination (β=.31, *t*=3.88, *p*<.001). In the subsequent regression analysis, with the reversed order of the second and third steps and the entry of the controlled variables in the first step, there was a significant increase of 11% in the explained varience by the entry of the metacognitive variables in the second step (R^2=.35, *F* [5, 174]=19.03, *p*<.001). Within set examinations indicated that only the individual contribution of metacognitions about negative interpersonal and social consequences of rumination (β=.34, *t*=4.28, *p*<.001) was significant on this step (β=.34, *t*=4.28, *p*<.001). The final model was significant when all

variables were included (R^2=0.36, F [6, 173]=16.41, p<.001), but it was seen that the dysfunctional belief variable entered into the model on the last step did not make a significant contribution to the explained variance and was not a significant predictor of the depressive symptoms (β=.11, t=1.58, p=.12).

DISCUSSION

Providing support to the first hypothesis, the results obtained in this study showed that the metacognitive model of depression is structurally verified to a large extent in a sample of Turkish population diagnosed with MDD. The findings indicating that metacognitions concerning the benefits and advantages of rumination predicted the increase in rumination levels, and the increased rumination experience significantly explained the increase in depressive symptoms through the metacognitions about negative interpersonal consequences of rumination are consistent with previous studies conducted on clinical (Roelofs et al. 2010) and nonclinical (Cano-Lopez et al. 2020, Papageorgiou and Wells 2003) participants. On the other hand, the finding that metacognitions about uncontrollability and danger of rumination did not have the mediator role in the verified model is not in agreement with the previous results obtained in individuals with MDD (Papageorgiou and Wells 2003) and in nonclinical individuals (Huntley and Fisher 2016, Papageorgiou and Wells 2009, Roelofs et al. 2007, Yılmaz, 2016). When the previous studies are examined, it is noteworthy to emphasize that the mediator role of metacognitions about uncontrollability and danger of rumination was mainly detected in nonclinical participants. In a few previous investigations testing the metacognitive model of depression on clinical samples, either the cases with the primary diagnosis of MDD were recruited without differentiating comorbidities (Roelofs et al. 2010), or depression cases was determined by using self report diagnostic assessment scales (Papageorgiou and Wells 2003). Considering that the analysis unit of the present study is the MDD cases without clinically significant anxiety symptoms, a reason for these different findings might be that the theme of "uncontrollability and danger of rumination" become evident in clinical pictures of anxiety with accompanying depressive symptoms. Therefore, it is important for the clinical practice that future studies on the metacognitive model of depression should comparatively focus on depression and anxiety cases with and without comorbid features.

The investigation of relative contribution of metacognitions about rumination and dysfunctional beliefs to the explanation of depressive symptoms provided support for the second hypothesis of the study in terms of the negative metacognitions about interpersonal and social consequences of rumination. In a limited number of studies evaluating cognition and metacognition perspectives together, metacognitions not specific to depression were addressed (e.g., Faissner et al. 2018, Hjemdal et al. 2013), nonclinical participants were used (e.g., Huntley and Fisher 2016, Yılmaz et al. 2015a), or the relative contributions of cognitions and metacognitions were ignored (e.g., Huntley and Fisher 2016). Therefore, to the best of our knowledge, the present study is the first to compare cognitions with metacognitions specific to rumination in a clinical group of participants diagnosed with MDD. Dysfunctional beliefs have been shown as important predictors of depressive symptoms in a number of previous studies (Adler et al. 2015, Brouwer et al. 2019, Dykman and Johll 1998). Thus, the present finding that dysfunctional beliefs did not explain depressive symptoms after controlling for metacognitions about interpersonal and social consequences of rumination, and yet metacognitions still explained a significant proportion of variance in depressive symptoms beyond dysfunctional beliefs, should be interpreted with caution. Although this result appears to support the propositions of the metacognitive approach for changing our focus from cognitions to metacognitions and to our interpretation styles of thought contents, it is necessary to replicate such studies by using depressive thought contents other than dysfunctional beliefs and the results should be evaluated in order to understand whether they arise from the nature of the measurement tools or sample characteristics.

It is necessary to consider the reasons why the significant findings of this study consistently point out metacognitions about the interpersonal and social consequences of rumination. The explanations may in part be due the sensitivity of depressive individuals to decreases in social reinforcements (e.g., Youngren and Lewinsohn 1980), rejection in interpersonal interactions, and threats to social acceptance (e.g., Fossati et al. 2019). Such negative interpersonal experiences may reinforce and maintain depressive affect by increasing self-focused attention and the tendency to ruminative thinking. It is possible, in the cultural context, that the metacognitive structures regarding social consequences predominate the negative beliefs about the uncontrollability and danger in Turkey because of the collectivist cultural characteristics (Kağıtçıbaşı 1996). Moreover, the use of different methods in assessing rumination and depressive symptoms and adaptation of the psychometric scales to different languages are also tenable reasons to explain the differences between studies.

The prominent limitation of this study is its cross-sectional design. The applicability of the obtained results in clinical practice can be possible if supported by longitudinal studies with prospective follow up of MDD participants with respect to the metacognitive model to clarify the relative importance of the cognitions and metacognitions on the development and maintenance of the depressive symptoms.

Another limitation is restricting the scope of the investigation to only MDD cases without comparative inclusion of other diagnostic groups and controls which prevents accepting the results as specific to MDD. Inclusion of diagnostic groups other than MDD in future studies would be valuable for determining the transdiagnostic and psychopathology specific functions of metacognitions. The heterogeneity created with respect to differences in the disease durations of the participants, the chronicity of the symptoms and the history of psychopharmacological treatments can also be cited as limitations. Also, diagnosis of personality disorders based on clinical acumen and not on standardised diagnostic tools. These limitations would necessitate ensuring the repetition of the future investigations for comparative assessment of the metacognitive model of depression in a group including recently diagnosed and chronic MDD cases, after a complete exclusion of personality disorders with objective methods.

Despite these limitations, this study provides evidence for the metacognitive model of depression in a group of Turkish individuals with clinically significant depressive symptoms, indicating that specialists should also consider the metacognitive perspective in their practice and research. In clinical assessment and intervention processes, considering the beliefs about the meaning and function of rumination as factors contributing to the exacerbation of ruminative thinking, as wells as the negative expectations about rumination especially in terms of interpersonal and social consequences, may help understanding the aetiology of MDD and increase the effectiveness of treatment.

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