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## Automatic thoughts, cognitive distortions, dysfunctional attitudes, core beliefs, and ruminative response styles in unipolar major depressive disorder and bipolar disorder: a comparative study

Nurgul YESILYAPRAK <sup>a</sup>, Sedat BATMAZ <sup>b</sup>, Mesut YILDIZ <sup>c</sup>, Emrah SONGUR <sup>d</sup> and Esmâ AKPINAR ASLAN <sup>b</sup>

<sup>a</sup>Psychiatry Clinic, Karaman State Hospital, Karaman, Turkey; <sup>b</sup>Department of Psychiatry, School of Medicine, Tokat Gaziosmanpaşa University, Tokat, Turkey; <sup>c</sup>Department of Psychiatry, School of Medicine, Marmara University, Istanbul, Turkey; <sup>d</sup>Psychiatry Clinic, Keçioren Training and Research Hospital, Health Sciences University, Ankara, Turkey

### ABSTRACT

**OBJECTIVES:** We aimed to compare patients with bipolar disorder and major depressive disorder, who were either in an acute depressive episode or in remission, and a healthy control group on their cognitions related to depression and mania/hypomania, and on their response styles.

**METHODS:** A total of 300 participants who presented to our outpatient psychiatry department were included in the study (100 participants with unipolar depression (DG), 100 with bipolar disorder, and 100 with no previous or current psychiatric disorder (CG)). The participants completed the Cognition Checklist (CCL), the Cognition Checklist for Mania (CCL-M-R), the Cognitive Distortions Questionnaire (CDQ), the Dysfunctional Attitude Scale (DAS), the Hypomanic Attitudes and Positive Predictions Inventory (HAPPI), the Brief Core Schemas Scale (BCSS), Ruminative Response Scale (RRS), and the Responses to Positive Affect Questionnaire (RPAQ). The groups were compared with each other by one-way analysis of variance, independent samples t-test, and chi-square tests.

**RESULTS:** The DG scored higher than the other groups on the CCL, the frequency and intensity subscales of the CDQ, the DAS, and the negative-self and negative-others subscales of the BCSS, the RRS, and on the dampening subscale of the RPAQ. The clinical groups scored higher than the CG on the scores of the relationships subscale of the CCL-M-R, the total score of the CDQ, and the HAPPI. The CG scored higher than the clinical groups on the positive-self subscale of the BCSS, and on the emotion focused positive rumination subscale.

**CONCLUSIONS:** These findings are important in the differential diagnosis of mood disorders, and for their treatment with cognitive behavioural psychotherapy.

### ARTICLE HISTORY

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### KEYWORDS

Automatic thought; belief; bipolar disorder; cognitive distortion; depression; rumination

## Introduction

Cognitive theory proposes that dysfunctional cognitions and responses to events associated with negative life events may cause vulnerability to unipolar depression [1–4]. This negative thinking style is thought to be a risk for bipolar disorder as well. It is also thought that these negative life events stimulate a period of excitement, and this kind of cognitive style may also result in hypomanic/manic episodes [5].

Hollon et al. reported that dysfunctional intermediate beliefs and negative automatic thoughts in the Depression Group (DG) and the Bipolar Disorder Group (BG) were at higher levels compared to the Control Group (CG), but that there was no significant difference between the DG and the BG during their depressive episodes or remission stages [6]. However, Batmaz et al. stated in their study in which they compared the DG, the BG, and the CG during their depressive episodes with regard to their content of

cognition, that the DG, the BG, and the CG had higher scores in terms of their negative automatic thoughts, respectively [7]. Beck et al. found that the scale (CCL-M-R) was valid and reliable when studied with unipolar depression, schizoaffective, and bipolar I disorder patients who had recently manic, mixed or depressive episodes. Moreover, total scale scores and subscale scores of myself, activity and relationships were found to be higher in the group which recently had a manic episode compared to the BG which had a depressive and/or mixed episode [8]. Yet, automatic thoughts have not been evaluated in great detail, e.g. in terms of both depression and mania-related automatic thoughts, to compare unipolar and bipolar mood disorders.

Covin et al. reported that the Cognitive Distortions Scale (CDS) was a valid and reliable measurement tool for measuring cognitive distortions [9]. Ozdel et al. stated that the clinical (depressive) group was more

**CONTACT** Sedat BATMAZ  [sedat.batmaz@gmail.com](mailto:sedat.batmaz@gmail.com)

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negative compared to the non-clinical group in terms of CDS total scores, and its interpersonal and personal achievement subscale scores [10]. Batmaz et al. reported the Turkish version of the Cognitive Distortions Questionnaire (CD-Quest) has good concurrent validity, correlating meaningfully with another measure of cognitive distortions as well as measures of mood symptoms and negatively prejudiced thinking. They showed that 14 of the 15 items on the scale were able to make a distinction between depressed and non-depressed groups, and all 15 items of the scale were able to segregate anxious from nonanxious groups [11]. Simona et al. reported the CD-Quest showed well convergent validity, discriminant validity, known-groups validity, and treatment sensitivity in adults with social anxiety disorder (SAD). They reported the CD-Quest also has good internal consistency, and both confirmatory and exploratory factor analyses supported the unitary factor structure [12]. Cognitive distortions have so far not been compared between patients with unipolar depression and bipolar disorder.

Silverman et al. reported that dysfunctional intermediate beliefs were similarly high in the DG and the BG in the depressive stage, but lower in the euthymic BG than in the euthymic DG [13]. Lam et al. stated that in the euthymic BG, there was a significant elevation in goal attainment intermediate beliefs compared to the euthymic DG [14]. Scott and Pope reported in their study including a BG in remission, a DG in remission, a BG in a depressive episode, and a BG in a hypomanic episode that there was no significant difference between the DG in remission and the BG in remission in terms of their dysfunctional intermediate beliefs. However, dysfunctional intermediate beliefs of the hypomanic and depressed BG patients were higher than the BG in the remission stage [15]. Additionally, Scott et al. determined that intermediate beliefs related to the need for approval and perfectionism were higher in the BG in remission compared to the CG [16]. Alatiq et al. found in their study comparing a BG in remission and a DG in remission with a CG that intermediate beliefs related to hypomania in the BG were higher than in the DG. Apart from this result, there was no significant difference between the BG in remission and the DG in remission in terms of their dysfunctional intermediate beliefs related to depression [17]. Perich et al. reported that dysfunctional intermediate beliefs related to dependency and achievement in the BG in remission were higher than the DG in remission [18]. Winters and Neale noted that the BG had more pessimistic attributional style in their remission stage [19]. Lam et al. stated that the BG in euthymic stage got higher scores on the subscale of goal attainment compared to the euthymic DG [14]. Batmaz et al. reported that intermediate beliefs related to the need for approval were higher in the BG in the depressive episode than the DG in the depressive episode, and

that both clinical groups had intermediate beliefs related to perfectionism [7]. Lex et al. reported that there was no difference in the cognitive content in the BG in remission compared to the CG [20]. There are not much data of studies comparing the depression-related dysfunctional attitudes in patients with unipolar depression and bipolar disorder.

When the studies related to hypomanic attitudes and positive predictions were examined, Alatiq et al. noted that the BG in remission got higher scores than the DG in remission on the Hypomanic Attitudes and Positive Predictions Inventory (HAPPI) [17]. Mackali et al. compared the BG and the CG in remission, and stated that the BG had higher depressive and hypomanic attitudes compared to the CG. It was reported that both depressive and hypomanic attitudes decreased during the remission stage, whereas increased during the acute mood episodes, and that there was no significant difference about the type of the episode [21]. In a study comparing the BG and the CG according to the HAPPI-short form, Mansell and Jones reported that the BG got higher scores than the CG in all scale scores and forward coded items, lower scores in the reverse coded items, and that there was no significant difference between the two groups in the filling items [22]. However, there are not many studies focusing on the differences of mania-related dysfunctional attitudes encountered in unipolar depression and bipolar disorder.

In a study conducted on a healthy student group and a psychosis group examining the relationship between the Brief Core Schemas Scale (BCSS) and symptoms of self-esteem, paranoia and grandiosity, Fowler et al. stated that the BCSS was more independent on the mood symptoms compared to the Rosenberg Self-Esteem Scale (RSES), and it was reported that chronic psychotic patients had negative evaluations both about themselves and others. However, their self-esteem and positive evaluations about themselves and others were similar with the healthy group [23]. Lapsekili and Ak found that the only significantly different schema between unipolar and bipolar groups was "mistrust/abuse" [24], using the Young Schema Inventory (YSQ-SF3) [25]. Yet, there still is a great need for studies comparing the core beliefs of patients with unipolar depression and bipolar disorder.

When examined in terms of ruminations, as a response to dysphoric mood, rumination has been reported to be associated with the onset and maintenance of depressive symptoms. The DG and the BG have not yet been compared in this aspect. In a study comparing the BG, the DG and the control group in the depressive stage using the Ruminative Response Scale (RRS), it was reported that the type I and II BG and the DG in the depressive stage had higher ruminative response levels than the control group, and that there was no significant difference between the clinical

groups [26]. Another study comparing ruminative responses in bipolar disorder in the depressive stage, unipolar depression and anxiety disorders, the levels of brooding and reflection in the BG in the depressive stage were found to be higher than in the DG [27]. However, reactions to positive emotions in mood disorders were less noticeable. Feldmann et al. found that the Responses to Positive Affect Questionnaire (RPAQ) was valid and reliable in measuring the response to positive emotions in the non-clinical group [28]. The Turkish validity study of the RPAQ was conducted in a non-clinical sample, and it showed that both positive rumination and positive mood reduction directly affected the levels of anxiety [29]. Olofsson et al. emphasized that there was a significant relationship between depression, hypomania, anxiety, recurrent negative thoughts, and positive and negative emotions, so much so that higher scores on the subscales of the self-focused positive rumination and the emotion-focused positive rumination were associated with positive affect [30]. In sum, the literature review has demonstrated that there were not many reports on either negatively or positively focused rumination to compare unipolar depression with bipolar disorder.

In this study, we aimed to compare patients with bipolar disorder and major depressive disorder in the Turkish society who were either in an acute depressive episode or in remission, and a healthy control group in terms of their cognitions related to depression as in previous studies, and also their cognitions related to mania/hypomania. We also aimed to compare the group differences on their thinking styles. We hypothesized that unipolar depression and bipolar disorder patients would differ from each other in terms of their negative cognitions such as negative automatic thoughts, core beliefs, intermediate beliefs, cognitive distortions, and their cognitive processes such as ruminations, and that unipolar depression and bipolar disorder patients would demonstrate negative cognitions and rumination more frequently than healthy controls.

## Material and method

### Participants

A total of 300 participants who presented to the outpatient clinics of the Department of Psychiatry at Tokat Gaziosmanpasa University School of Medicine (Tokat, Turkey) between December 2015 and August 2016 were included in the study, and 100 of these participants were diagnosed with unipolar depression (DG) who were either in acute episode or in remission, 100 of them with bipolar disorder type I (BD I) or bipolar disorder type II (BD II) who were either in an acute depressive episode or in remission, and 100 of them were participants with no previous or current psychiatric disorder diagnosis, i.e. healthy CG.

In the BG, 21 of the patients (21%) were in an acute depressive episode, and 79 of them (79%) were in remission; in the DG, 62 patients (62%) were in an acute depressive episode, and 38 of them were (38%) in remission. The mean age of the groups was  $40.13 \pm 11.36$  years for the BG,  $34.94 \pm 11.93$  years for the DG, and  $39.99 \pm 10.77$  years for the CG. When examined in terms of gender, it was seen that the BG consisted of 57% females; the DG consisted of 76% females; and the CG consisted of 52% females. The first episode of the patients in the DG was depression in 71% of the participants, the remaining participants' first episode was dysthymia. For the BG, the first mood episode was euphoric mania in 43% of the participants, followed by depression (36%), hypomania (13%), mixed mania (4%) and dysthymia (4%).

The inclusion criteria for the study were as follows: (i) between 18 and 65 years of age, (ii) absence of any major psychiatric disorder for the CG, (iii) to be in remission or in a major depressive episode at the time of enrolment for the clinical groups, (iv) volunteering to participate in the survey, and (v) being able to give informed consent.

The exclusion criteria for the study were as follows: (i) age under 18 and over 65, (ii) diagnoses of schizophrenia or psychotic disorders, mental retardation, organic mental disorders, substance-related disorders, (iii) having an active suicidal thought or plan, (iv) having received ECT in the previous 6 months, (v) the presence of severe or uncontrolled medical illness, (vi) women who are pregnant or currently breast feeding.

All participants were interviewed face-to-face, and a series of scales were given to each of these three groups. All participants gave written informed consent before study participation, and the study protocol was approved the Clinical Research Ethics Committee of Tokat Gaziosmanpasa University (Approval date: January 5, 2016 – Approval number: 15-KAEK-224).

### Instruments of Assessment

*Demographic and Clinical Data Collection Form:* This form was developed by the researchers, and included data on the demographic and clinical characteristics of the patients, e.g. items about the clinical features of the mood episodes such as the type of the first episode of the disorder, age at onset of the disorder, the level of remission between the episodes, the total number of mood episodes, the number of previous suicide attempts, and history of psychotropic drug use.

*Young Mania Rating Scale (YMRS):* This is an 11-item scale which was developed by Young et al. [31], and it is rated by clinicians to measure the severity of manic symptoms. The validity and reliability analysis of the Turkish version of the scale was conducted by Karadag et al. [32].

*Hypomania Symptom Checklist-32 (HCL-32)*: It is a self-report scale which is used for questioning hypomanic symptoms, and it consists of 8 sections. The scoring of the scale is the sum of the scores obtained from the 32 items in the third question [33]. The validity and reliability analysis of the Turkish version of the scale was conducted by Vahip et al. [34].

*Bipolar Depression Rating Scale (BDRS)*: This is a Likert-type scale that was developed to measure the severity of depressive symptoms in bipolar disorder, and it is administered by an interviewer. The total score of the scale varies between 0 and 60. The sensitivity of this scale to the characteristic features of depressive symptoms in bipolar disorder such as atypical and mixed symptoms differentiates it from the classical depression rating scales [35]. The validity and reliability analysis of the Turkish version of the scale was conducted by Batmaz et al. [36].

*Montgomery-Asberg Depression Rating Scale (MADRS)*: It was determined that MADRS, which measures the change in the level and severity of the core signs of depression, measured the change in the studies evaluating the effect of medication on depressive symptoms more sensitively compared to other depression rating scales [37]. The validity and reliability analysis of the Turkish version of the scale was conducted by Ozer et al. [38].

*Hamilton Anxiety Rating Scale (HAM-A)*: Developed by Hamilton, this scale is used to measure the anxiety level and symptom distribution, and the change of the severity of anxiety in patients. Administered by a clinician, the scale consists of 14 items that question both mental and physical symptoms [39]. The validity and reliability analysis of the Turkish version of the scale was conducted by Yazıcı et al. [40].

*Cognition Checklist (CCL)*: This is a 5-point self-report scale that is used to measure the presence of negative automatic thoughts with 26-item. It has two subscales. The depression subscale (CCL-D) is characterized by hopelessness, general pessimistic view about the world and future, and negative self-judgement. The anxiety subscale (CCL-A) is characterized by physical and psychological threats and dangers related to the future [41]. The validity and reliability analysis of the Turkish version of the scale was conducted by Batmaz et al. [42].

*Cognition Checklist for Mania – Revised (CCL-M-R)*: It measures the severity of cognitions related to mania and maladaptive beliefs [8]. It consists of four sub-subscales, i.e. exaggerated beliefs about self-esteem (Myself), grandiose beliefs in interpersonal relations (Relationships), fallacies about the need for excitement in the presence of high-risk situations (Pleasure/Excitement), and unrealistic beliefs about having a high energy level to engage in target-focused activity (Activity). The validity and reliability analysis of the Turkish version of the scale was conducted by Batmaz et al. [43].

*Cognitive Distortions Questionnaire (CDQ)*: This is a self-report scale that is used to evaluate the frequency and intensity of 15-types of cognitive distortions. It has three different scores: frequency, intensity, and total (composite) score [44]. The validity and reliability analysis of the Turkish version of the scale was conducted by Batmaz et al. [11].

*Dysfunctional Attitude Scale (DAS)*: It is a 40-item scale that is used to determine the dysfunctional beliefs, thoughts and attitudes [45]. In its Turkish version, there were four different subscales unlike the original form: perfectionistic attitude, need for approval, autonomous attitude, and tentativeness. The validity and reliability analysis of the Turkish version of the scale was conducted by Savasır and Sahin [46]. A revised and abbreviated form of the scale was developed by Batmaz and Ozdel [47]. In the current study, this revised form was used.

*Hypomanic Attitudes and Positive Predictions Inventory – Short Form (HAPPI)*: This scale was developed by Mansell to evaluate the distinctive cognitions leading to mood swings in bipolar disorder [48]. Its short form was developed by Mansell and Jones [22]. HAPPI-SF is a 10-point Likert-type scale that consists of 30 items. The validity and reliability analysis of the Turkish version of the scale was conducted by Mackali et al. [21].

*Brief Core Schemas Scale (BCSS)*: This is a 24-item scale that evaluates one's beliefs about himself and others. Four scores are obtained: negative-self, positive-self, negative-others, and positive-others. In the original version A, the individual responds in a dichotomous "Yes/No" format to define if he/she has any of the beliefs. The version B (which was used in this study) is a Likert-type scale from 0 to 4 [23]. The validity and reliability analysis of the Turkish version of the scale was conducted by Batmaz et al. [49].

*Ruminative Response Scale (RRS)*: This is a 10-item and 4-point Likert-type scale which was developed by Treynor et al. [50]. It consists of "brooding" and "reflection" subscales. The validity and reliability analysis of the Turkish version of the scale was conducted by Erdur-Baker and Bugay [51].

*Responses to Positive Affect Questionnaire (RPAQ)*: This is a 17-item scale which was developed by Feldman, Joorman and Johnson [28] to measure the decrease in positive rumination (both self-focused and emotion-focused), and positive emotions that are used to regulate emotions. It consists of three factors: "Self-Focused Positive Rumination" covers the recurrent thoughts about positive personal attributes, "Reduce in Positive Affect" covers the thought processes aimed at reducing positive emotions, and "Emotion-Focused Positive Rumination" covers the recurrent thoughts on positive emotional experiences. The validity and reliability analysis of the Turkish version of the scale was conducted by Yuksel [29].

## Statistical analysis

Prior to the start of the study, a sample size calculation was conducted to determine the necessary number of participants, which allowed for a 5% type I error, had a statistical power of 80%, and could detect the difference between the groups with a medium effect size. The groups were compared with each other by one-way analysis of variance (ANOVA), independent samples *t*-test, and chi-square tests in terms of their sociodemographic and clinical data. Tukey multiple comparison tests (post-hoc tests) were performed on the groups following the ANOVA in terms of the scale scores obtained. To determine the effect size, eta squared and Cohen's *d* were calculated. Bonferroni corrections were made where necessary in multiple comparisons. All analyses were two-tailed. Statistically,  $p < 0.05$  values were considered significant.

## Results

### Group comparisons according to demographic and clinical variables

There was a statistically significant difference in terms of the mean ages of the groups. The average age of the DG was lower than the other groups. The female sex rate in the DG was higher than in the other groups. In the CG, the rate of bachelor's degree/master's degree graduates was higher than the other groups, whereas the rate of the primary school graduates was lower. In terms of socioeconomic level; the rate of the middle-low income group was higher in the BG, whereas the high-income group was higher in the

CG. The rate of the social support in DG was lower than in the other groups. The rate of the comorbid psychiatric disorder was higher in the DG. All three groups were similar in terms of the comorbid medical disease. The rate of the abuse/trauma history, and substance-use were higher in the BG. There was no statistically significant difference between the medication adherence of DG and BG (Tables 1 and 2).

### Group comparisons according to the severity of psychopathology

The DG scored higher than the BG on the BDRS total and depression subscale scores, the MADRS total scores, the HAM-A total and subscale scores, but on the scores of the mixed subscale of the BDRS and the total score of the YMRS, the clinical groups' scores did not differ from each other. The means of subscale scores of the clinical groups in terms of the HCL-32 – Active Elated were higher than the CG. The means of subscale score for the HCL-32 – Irritability – Risk Taking were higher in the BG, followed by the DG and the CG, respectively (Table 3).

### Group comparisons according to the content of cognitions

The DG scored higher than the other groups on their mean scores of the CCL and its subscales, the frequency and intensity subscales of the CDQ, the DAS total and subscale scores, and the negative-self and negative-others subscales of the BCSS. The clinical groups scored higher than the CG on the scores of the

**Table 1.** Demographic and clinical data of the participants.

		CG	DG	BG	$F/\chi^2$	<i>p</i>
Patient type	Outpatient	N/A	90 (90)	80 (80)	305.88	<0.001
Age (years)		39.99 (10.77)	34.94 (11.93)	40.13 (11.36)	6.76	0.001
Sex	Female	52 (52)	76 (76)	57 (57)	13.56	0.001
Level of education	Literate	2 (2)	0 (0)	3 (3)	79.66	<0.001
	Primary school	16 (16)	38 (38)	47 (47)		
	High school	20 (20)	34 (34)	21 (21)		
	College/University	30 (30)	28 (28)	27 (27)		
	Master's degree/PhD	32 (32)	0 (0)	2 (2)		
Marital status	Single	26 (26)	30 (30)	28 (28)	4.76	0.57
	Married/Cohabiting	72 (72)	64 (64)	68 (68)		
	Widowed	2 (2)	2 (2)	2 (2)		
	Divorced/Separated	0 (0)	4 (4)	2 (2)		
Socioeconomic status	Low	2 (2)	5 (5)	6 (6)	49.30	<0.001
	Lower intermediate	34 (34)	43 (43)	54 (54)		
	Upper intermediate	40 (40)	48 (48)	39 (39)		
	High	24 (24)	2 (2)	1 (1)		
Perceived level of social support	Sufficient	89 (89)	71 (71)	82 (82)	11.44	0.02
	Insufficient	11 (11)	26 (26)	16 (16)		
	None	0 (0)	3 (3)	2 (2)		
Comorbid diagnoses	None	60 (60)	31 (31)	51 (51)	45.51	<0.001
	Medical	37 (37)	33 (33)	38 (38)		
	Psychiatric	3 (3)	27 (27)	8 (8)		
	Medical + Psychiatric	0 (0)	9 (9)	3 (3)		
Self-reported history of abuse/trauma	Present	3 (3)	8 (8)	20 (20)	18.44	0.001
Smoking, alcohol or substance-use	Present	23 (23)	30 (30)	39 (39)	6.05	0.049
Self-reported adherence to treatment	Good	N/A	75 (75)	70 (70)	0.63	0.43

Note. Results are presented as mean (standard deviation) or frequency (percentage). CG, control group; DG, depression group; BG, bipolar disorder group; N/A, not applicable.

**Table 2.** Comparisons according to disorder history in the clinical groups.

	DG	BG	<i>t</i>	<i>p</i>
Age at onset (years)	29.72 (10.34)	27.18 (9.77)	1.78	0.076
Total number of mood episodes	1.82 (1.77)	6.18 (6.06)	-6.87	<0.001
Total number of suicide attempts	0.45 (0.94)	0.38 (0.15)	0.53	0.60
Duration of untreated disorder (years)	1.25 (3.66)	2.73 (5.02)	-1.86	0.06

Note. Results are presented as mean (standard deviation). DG, depression group; BG, bipolar disorder group.

relationships subscale of the CCL-M-R, the total score of the CDQ, and the total score of the HAPPI. The CG scored higher than the clinical groups on the positive self subscale of the BCSS. On the other scales, no differences were observed between the groups (Table 4).

### Group comparisons according to response style

The DG scored higher than the other groups on the mean scores of the RRS total and subscale scores, and on the dampening subscale of the RPAQ. The CG scored higher than the clinical groups on the emotion-focused positive rumination subscale. There were no other significant differences between the groups in terms of the other response styles (Table 5).

## Discussion

In this study, we aimed to compare unipolar depression and bipolar disorder patients who were in an acute depressive episode or in remission with a CG in the Turkish society in terms of their cognitions related to depression and mania/hypomania, and their response styles.

The findings of the study showed differences in some of the investigated parameters. Therefore, our hypotheses were confirmed to some extent. The clinical groups scored higher than the CG on most of the depression-related cognitions, but did not differ significantly from the CG on most of the mania-related

cognitions. The clinical groups also did not differ from each other on most of the mania-related cognitions, but on the depression-related cognitions the DG generally scored higher than the BG. In terms of depressive ruminative responses, the clinical groups scored higher than the CG, and the DG scored higher than the BG. For manic ruminative responses, the clinical groups generally failed to differ from the CG, and there were no differences between the clinical groups. In both conditions, dampening of positive affect was an exception.

### Cognitive content

In their study which examined the psychometric properties of the CDS in clinical (depressive) and non-clinical (healthy) samples, Ozdel et al. found that the CDS total scores and the subscale scores of interpersonal and personal achievements were statistically higher at the significant level in the depressive patients compared to the healthy group [10]. In our study, the clinical groups were more negative in terms of the total mean scores of the CDQ, whereas the DG was more negative than the BG in terms of the frequency and intensity of the cognitive distortions. Findings in our study are consistent with a limited number of previous study findings. However, our study has the feature of being the first in this manner, since there is no study in the literature which compares the BG and DG in terms of their cognitive distortions.

Hollon et al. reported that dysfunctional beliefs and negative automatic thoughts in the DG and the BG were at higher levels compared to the CG, but that there were no significant differences between the DG and the BG in depression or remission stages [6]. However, Batmaz et al. stated in their study in which they compared the DG, the BG during their depressive episodes and the CG with regard to the content of cognition, that the DG, the BG, and the CG had respectively higher scores in terms of negative automatic thoughts

**Table 3.** Group comparisons according to psychopathology severity.

	CG	DG	BG	post-hoc comparisons (Tukey)	<i>p</i>
BDRS Total	2.60 (1.82)	14.21 (9.63)	7.14 (7.26)	DG > BG > CG	<0.001
BDRS Depression	2.09 (1.68)	12.47 (8.70)	5.64 (6.23)	DG > BG > CG	<0.001
BDRS Somatic depression	1.46 (1.49)	8.03 (5.48)	3.74 (4.23)	DG > BG > CG	<0.001
BDRS Psychological depression	0.63 (0.66)	4.34 (3.62)	1.88 (2.54)	DG > BG > CG	<0.001
BDRS Mixed features	0.51 (0.66)	1.73 (1.48)	1.46 (1.84)	DG = BG > CG	<0.001
MADRS Total	2.40 (1.98)	15.68 (11.26)	6.94 (7.70)	DG > BG > CG	<0.001
YMRS Total	0.75 (0.82)	1.99 (1.51)	1.64 (2.32)	DG = BG > CG	<0.001
HCL-32 Total	47.22 (5.14)	48.02 (5.24)	46.95 (6.11)	DG = BG = CG	0.36
HCL-32 Active/Elated	20.18 (3.37)	22.28 (4.07)	21.85 (4.38)	DG = BG > CG	<0.001
HCL-32 Irritability/Risk taking	14.09 (2.37)	15.20 (3.28)	16.08 (1.85)	BG > DG > CG	<0.001
HAM-A Total	2.41 (1.61)	8.77 (6.15)	4.48 (4.73)	DG > BG > CG	<0.001
HAM-A Psychic anxiety	1.57 (1.17)	5.00 (3.33)	2.77 (3.06)	DG > BG > CG	<0.001
HAM-A Somatic anxiety	0.84 (0.86)	3.77 (3.49)	1.66 (2.14)	DG > BG > CG	<0.001

Note. Results are presented as mean (standard deviation). CG, control group; DG, depression group; BG, bipolar disorder group; BDRS, Bipolar Depression Rating Scale; MADRS, Montgomery-Asberg Depression Rating Scale; YMRS, Young Mania Rating Scale; HCL-32, Hypomania Checklist 32; HAM-A, Hamilton Anxiety Rating Scale.

**Table 4.** Group comparisons according to cognitive content.

	CG	DG	BG	post-hoc comparisons (Tukey)	<i>p</i>
CCL Depression	6.50 (8.90)	16.50 (13.18)	12.47 (12.21)	DG > BG > CG	<0.001
CCL Anxiety	7.56 (9.35)	13.89 (12.07)	9.03 (12.14)	DG > BG = CG	<0.001
CCL Total	14.14 (16.27)	29.57 (21.42)	21.27 (22.24)	DG > BG > CG	<0.001
CCL-M-R Myself	7.99 (4.56)	6.59 (3.93)	7.80 (4.75)	DG = BG = CG	0.05
CCL-M-R Relationships	5.41 (2.75)	7.80 (3.60)	7.58 (4.11)	DG > BG > CG	<0.001
CCL-M-R Pleasure/Excitement	10.22 (5.83)	10.95 (6.09)	11.09 (5.96)	DG = BG = CG	0.54
CCL-M-R Activity	8.68 (4.19)	7.77 (4.58)	8.20 (4.51)	DG = BG = CG	0.35
CCL-M-R Total	32.30 (13.77)	32.81 (13.80)	33.99 (14.64)	DG = BG = CG	0.69
CDQ Frequency	9.59 (7.70)	18.81 (11.16)	15.55 (9.46)	DG > BG > CG	<0.001
CDQ Intensity	12.04 (9.87)	20.04 (10.87)	16.32 (9.41)	DG > BG > CG	<0.001
CDQ Total	14.28 (12.80)	24.64 (15.63)	20.53 (13.81)	DG = BG > CG	<0.001
DAS Perfectionism/Achievement	18.47 (9.37)	26.11 (13.15)	21.87 (10.72)	DG > BG = CG	<0.001
DAS Need for approval/Dependency	11.49 (4.92)	16.32 (8.48)	13.44 (7.35)	DG > BG = CG	<0.001
DAS Total	29.96 (13.20)	42.24 (20.41)	35.39 (16.80)	DG > BG > CG	<0.001
HAPPI	61.61 (29.12)	75.08 (32.24)	70.34 (27.35)	DG = BG > CG	0.005
BCSS Negative Self	8.71 (2.95)	12.65 (5.71)	10.12 (4.23)	DG > BG > CG	<0.001
BCSS Positive-Self	20.09 (5.40)	17.93 (5.37)	17.77 (5.93)	CG > DG = BG	0.005
BCSS Negative-Others	10.24 (4.88)	12.39 (7.12)	9.43 (4.25)	DG > BG = CG	<0.001
BCSS Positive-Others	17.05 (6.63)	16.18 (6.62)	16.40 (6.27)	DG = BG = CG	0.62

Note. Results are presented as mean (standard deviation). CG, control group; DG, depression group; BG, bipolar disorder group; CCL, Cognition Checklist; CCL-M-R, Cognition Checklist for Mania Revised; CDQ, Cognitive Distortions Questionnaire; DAS, Dysfunctional Attitude Scale; HAPPI, Hypomanic Attitudes and Positive Predictions Inventory; BCSS, Brief Core Schema Scale.

[7]. In our study, through the scales which evaluated the automatic thoughts and cognitive distortions of the participants, the DG, the BG and the CG were negative respectively in the CCL-D and CCL; whereas the DG was more negative than the other groups in the CCL-A. The clinical groups had higher mean scores in the CCL-M-R relationships subscale. Beck et al. found that the CCL-M-R was valid and reliable when studied with unipolar depression, schizoaffective, and bipolar disorder type I patients who had recently been in a manic, mixed or depressive episode. Moreover, the total scale scores and the subscale scores of myself, activity and relationships were found to be higher in the group of participants who recently had a manic episode compared to the BG participants who had a recent depressive and mixed episode [8]. Having high scores of the clinical group than the CG only in the relationships subscale, but having no differences in the other subscales make a difference in our study.

In many previous studies, when bipolar disorder patients in remission, unipolar depression patients in remission and the CG were compared in terms of their dysfunctional attitudes, no significant differences were found in the DAS scores [6,14,15,17,52]. In a recent study to determine the cognitive differences of the patients with unipolar and bipolar depression during the acute episode, it was seen that the total

scores of the dysfunctional attitudes scale of both depression groups were higher than the healthy control similarly our study, whereas the BG had higher scores than the DG in the need for approval and independent attitude subscales of the DAS unlike the findings in our study, and finally both depression groups were found to have perfectionistic and tentative attitudes [7]. In another previous study, bipolar disorder patients were found to have higher scores on the DAS dependency and achievement subscales than the DG in remission and the CG [18]. In another study, it was seen that during their euthymic period, the need for approval and perfectionistic attitudes of bipolar disorder patients were higher than the CG [16]. However, there are concerns about whether the results can be used for bipolar patient groups, since the DAS was basically developed to evaluate the dysfunctional attitudes in unipolar depression [7]. In a study conducted with subscales considered to be applicable for bipolar patients, it was seen that the BG in the euthymic period had significantly higher scores than the DG in the goal attainment subscale [14].

In a study comparing the core belief levels of the patients in the BG and the DG in remission; it was seen that the BG got higher scores than the DG and the CG in the total scores of HAPPI, and subscale scores of self-catastrophic beliefs, beliefs related to negative responses from other people and response style [17].

**Table 5.** Group comparisons according to response style.

	CG	DG	BG	post-hoc comparisons (Tukey)	<i>p</i>
RRS Total	19.35 (6.12)	24.84 (6.57)	21.55 (6.05)	DG > BG > CG	<0.001
RRS Brooding	9.94 (2.98)	12.67 (3.55)	11.03 (3.29)	DG > BG > CG	<0.001
RRS Reflection	9.41 (3.36)	12.28 (3.45)	10.57 (3.08)	DG > BG > CG	<0.001
RPAQ Self-Focused Positive Rumination	14.88 (3.92)	14.27 (3.82)	13.62 (4.55)	DG = BG = CG	0.09
RPAQ Emotion-Focused Positive Rumination	8.91 (1.77)	7.96 (2.85)	7.72 (2.40)	CG > DG = BG	<0.001
RPAQ Dampening	15.21 (3.90)	18.13 (4.80)	15.84 (5.08)	DG > BG = CG	<0.001

Note. Results are presented as mean (standard deviation). CG, control group; DG, depression group; BG, bipolar disorder group; RRS, Ruminative Response Scale; RPAQ, Responses to Positive Affect Questionnaire.

In our study, total scores of HAPPI were higher in the clinical groups compared to the CG, whereas similar in the BG and the DG. These findings differ from the study mentioned. In the study conducted by Alatiq et al. [17], it was found that self-catastrophic beliefs were higher in the BG in remission than in the CG, but similar with the DG in remission [53]. In their study conducted on a healthy student group and a psychosis group about the relationship between the BCSS and self-esteem, paranoia and grandiosity symptoms, Fowler et al. reported that BCSS was more independent from mood compared to the Rosenberg Self-Esteem Scale, and that chronic psychotic patients had extremely negative evaluations of themselves and others, but that they were similar to the healthy group about self-esteem and positive evaluation of themselves and others. The relationship between negative-self evaluation and paranoia has been shown in different studies. It has also been reported that the positive-self evaluation score predicts grandiosity in the non-clinical group [23]. There is no study which examines the BCSS of the BG and the DG. From this aspect, our study has the feature of being the first. The subscale of negative-self was found high in the DG, the BG and the CG, respectively, the subscale of negative-others was higher in the DG than in other groups, the subscale of positive-self was found high in the CG than in the clinical group; there was no significant difference between the groups in terms of positive-others.

### **Ruminative response styles**

In a recent study examining the bipolar and unipolar depression groups and a healthy group; it was seen that BD I, BD II and unipolar depression groups had higher ruminative response levels than a healthy group; and there was no significant difference between the clinical groups [26]. In another study comparing the ruminative responses between unipolar depression, bipolar depression and anxiety disorders, reflection and brooding levels were higher in the bipolar depression group than in the unipolar depression group [27]. These findings differ from the findings of our study. In a different study, evaluating the ruminative responses of unipolar and bipolar depression patients and the people having no mood disorder; it was seen that ruminations, which appear as a response to negative affect, were higher in the bipolar and unipolar depression group than in the group without mood disorder [54]. In a study evaluating the metacognition and ruminative responses in unipolar depression, bipolar depression and healthy group; ruminations in response to negative affects were found to be higher in the unipolar and bipolar depression groups than in the healthy group [55].

Feldman et al. found that RPAS was valid and reliable in measuring the responses to positive affects in a non-clinical group [28]. Olofsson et al. emphasized that there

was a significant relationship between depression, hypomania, anxiety, recurrent negative thoughts and positive and negative affects. The subscales of self-focused positive rumination and emotion-focused positive rumination were associated with positive affect [30]. In our study, emotion-focused positive rumination subscale was higher in the CG than in the clinical groups in terms of responses to positive affect. The subscale of dampening the responses to positive affect was higher in the DG than in the other groups. Since there is no study comparing the BG and the DG from this aspect, our study's results are novel.

### **Limitations**

Some of the limitations of the study need to be noted. First, there was no homogeneous distribution between the groups in terms of age, gender, education level, socioeconomic level, and social support level. Second, comorbid psychiatric disorders, substance-use and trauma history rates were different between the groups. Yet, there was no statistical adjustment for these inter-group differences, and this may have affected the results. Third, the cases were evaluated cross-sectionally, and there was no longitudinal follow-up. Fourth, first episode depression patients were included in the unipolar depression group. Yet, the fact that the age of onset of the disorder in the unipolar group was younger than conventionally reported in the literature in the current study may suggest that some of the patients in this group may indeed be patients with bipolar disorders who have not yet experienced any manic/hypomanic episodes. Fifth, the self-report measures used in this study may have some shared variance, and therefore more sophisticated statistical analyses, e.g. path analysis or structural equation modelling, would produce even more reliable results. Even further methods for data reduction may be additionally implemented to reduce the shared variance, or mediation analyses which demonstrate the association of the variables on the severity of the psychopathology ratings might provide additional insight about the interrelationship of the content of cognitions and the ruminative response styles. Unfortunately, this study was not designed to test whether these hypotheses were true and neither did we aim to come forward with a proposed model of the interaction between cognitive content and ruminative response styles. Therefore, although we believe that such an investigation might be worthwhile and innovative, the main aim and hypotheses of the current study were out of the scope of such analyses. Yet, we urge other researchers to try to answer these questions in future studies. Sixth, since the number of participants in an acute depressive episode or in remission differed between the unipolar depression and bipolar disorder groups, there may be a strong possibility that this heterogeneity may have affected the results obtained on

the scales used in this study. This may be the major limitation of the current study. Therefore, future studies with homogeneity between groups or involving only patients in acute episodes or in remission are recommended.

## Conclusion

In conclusion, many similar and different aspects of unipolar depression and bipolar disorder were determined in terms of their cognitive content and response styles in this study. However, these findings are thought to be important in the differential diagnosis of both disorders, and in cognitive behaviour psychotherapy, which is a very common treatment approach.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

## ORCID

Nurgul YESILYAPRAK  <http://orcid.org/0000-0003-1194-8027>

Sedat BATMAZ  <http://orcid.org/0000-0003-0585-2184>

Mesut YILDIZ  <http://orcid.org/0000-0001-6964-6705>

Emrah SONGUR  <http://orcid.org/0000-0003-4949-0154>

Esmra AKPINAR ASLAN  <http://orcid.org/0000-0003-4714-6894>

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