Original article / *Araştırma*

Cognitive error characteristics of rumination and cleaning dimensions of obsessive-compulsive disorder

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ABSTRACT

Objective: Cognitive errors in psychiatric disorders have been frequently investigated. In this study, we aimed to investigate the cognitive errors, cognitive domains including interpersonal relationships (IP) and personal achievements (PA), and psychiatric comorbidity in the rumination (R) and cleaning (C) dimensions of obsessive-compulsive disorder (OCD). **Methods:** The disorder symptoms were assessed via the Maudsley Obsessive Compulsive Inventory (MOCI) and Symptom Check List-90-Revised (SCL-90-R). The Cognitive Distortions Scale (CDS) was used to evaluate cognitive errors. **Results:** There were 31 female patients with OCD-R, 31 female patients with OCD-C and 31 healthy female controls. The mean age and the mean education level of the patient and control groups were similar (p=0.461 and p=0.203, respectively). The patient and control groups were different in terms of MOCI, SCL-90-R, and CDS scores (p<0.05). There were significant differences between the OCD-R and the OCD-C groups in terms of MOCI, SCL-90-R and CDS-IP scores (p<0.05). The CDS scores of the patients who had cognitive behavioral therapy history were lower than those who did not. In the OCD-R group, there was a significant correlation between psychiatric symptoms and cognitive errors (p<0.05). ROC analysis determined that CDS-IP moderately predicted OCD-R. Regression analysis showed that CDS cannot be used in prediction of R and C subdimensions of OCD. **Discussion:** Psychiatric symptom-cognitive error correlation was more prominent in rumination dimension. In the rumination dimension, cognitive errors related to interpersonal relationships were higher than the cleaning dimension. However, advanced analyzes reveal that further studies are needed to clarify this issue. **(Anatolian Journal of Psychiatry 2020; 21(6):592-599)**

Keywords: obsessive-compulsive disorder, cognitions, cognitive error, symptom subtypes, rumination

Obsesif kompulsif bozukluğun ruminasyon ve temizlik boyutlarının bilişsel hata özellikleri

ÖZ

Amaç: Psikiyatrik bozukluklardaki bilişsel hatalar sıklıkla araştırılmıştır. Biz bu çalışmada, obsesif-kompulsif bozukluğun (OKB) ruminasyon (R) ve temizlik (T) boyutlarındaki bilişsel hataları, kişilerarası ilişkiler (IP) ve kişisel başarıları (PA) içeren bilişsel alanları ve psikiyatrik eş tanıyı araştırmayı amaçladık. **Yöntem:** Bozukluk belirtileri Maudsley Obsesif Kompulsif Soru Listesi (MOKSL) ve Belirti Tarama Listesi-90-Revize Edilmiş (SCL-90-R) ile değerlendirildi. Düşünce Özellikleri Ölçeği (DÖÖ) bilişsel hataları değerlendirmek amacıyla kullanıldı. **Bulgular:** Otuz bir OKB-R'li kadın hasta, 31 OKB-T'li kadın hasta ve 31 sağlıklı kadın vardı. Hasta ve kontrol grubunun yaş ortalaması ve ortalama eğitim düzeyi benzerdi (p=0.461 ve p=0.203, sırasıyla). Hasta ve kontrol grubu MOKSL, SCL-90-R ve DÖÖ puanları açısından farklıydı (p<0.05). OKB-R ve OKB-T grupları arasında MOKSL, SCL-90-R ve DÖÖ-IP puanları açısından anlamlı farklılıklar vardı (p<0.05). Bilişsel davranışçı terapi öyküsü olan hastaların DÖÖ puanları olmayanlara göre daha düşüktü. OKB-R grubunda psikiyatrik belirtiler ile bilişsel hatalar arasında anlamlı bir ilişki vardı (p<0.05). ROC analizi, DÖÖ-IP'nin OKB-R'yi orta derecede öngördüğünü belirledi. Regresyon analizi, DÖÖ'nün

*OKB'nin R ve T alt boyutlarının tahmininde kullanılamayacağını gösterdi. **Tartışma:** Ruminasyon boyutunda psiki-yatrik belirti-bilişsel hata korelasyonu daha belirgindi. Ruminasyon boyutunda kişilerarası ilişkilere ilişkin bilişsel hatalar temizlik boyutundan daha yüksekti. Bununla birlikte, ileri analizler bu konunun açıklığa kavuşturulması için ilerleyen çalışmalara gerek duyulduğunu göstermektedir.* **(Anadolu Psikiyatri Derg 2020; 21(6):592-599)**

INTRODUCTION

Obsessive-compulsive disorder (OCD) is characterized by repetitive, time-consuming, and ritualized behaviors to reduce intrusive and unwanted thoughts, impulses, and images.[1] OCD presents with a wide range of varied symptoms, also termed subtypes or symptom dimensions, which can cause diagnostic and treatment challenges.[2] The researchers have made many attempts to establish a classification system that corresponds to the symptoms listed in the psychometric assessment instruments of OCD.[3] Firstly, Baer identified three factors including contamination/checking, symmetry/hoarding, and pure obsessions based on Yale-Brown Obsessive Compulsive Symptom Checklist (Y-BOCS).[4] Leckman et al.[5] extended this three dimensions and identified four factors including symmetry and ordering, obsessions and checking, cleanliness and washing, and hoarding. Abramowitz et al.[6] conducted a cluster analysis of the YBOCS and obtained a similar five-factor solution consisting of symptom dimensions with themes including hoarding, harming, contamination, symmetry, and unacceptable thoughts. The Maudsley Obsessive Compulsive Inventory (MOCI) is another instrument in which we can obtain OCD dimensions. While there were subdimensions of checking, cleaning, slowness and doubting in the original scale, Erol and Savasir[7] added the rumination subdimension to the Turkish form. Given the salience of cognitive errors in OCD, the importance of rumination subdimension becomes apparent.[2]

Obsessional ruminations which are not observable and they are less predictable may be distasteful, shameful, worrying or abhorrent or a combination of all these characteristics. To relieve, the individuals try to suppress these unwanted thoughts. The temporary relief produced by such reassurance, mental ritualization, and neutralizing will positively reinforce the frequency of disturbing thoughts and may lead to ruminative processing.[3] Some studies reported that individuals with ruminations may suffer with more severe obsessions than those with other forms of OCD.[8] Additionally, there is an inverse relationship between severity of psychiatric symptoms such as worry, quilt, distress, displeasure and thought control ability.[9]

The responsibility and threat estimation, perfectionism and intolerance of uncertainty, and importance and control of thoughts are three cognitive domains have been found to best represent the main cognitions associated with OCD. In studies using self-report instruments, cleaning dimension has been associated with perfectionism/certainty and responsibility/threat overestimation.[2,10] Obsessional rumination has been associated with responsibility/threat overestimation and importance/control of thoughts.[2,11] Although many studies have been conducted on dimension-related cognitive errors, the alterations in the interpersonal relationship and personal achievement areas of the same cognitive errors have not been adequately studied. The effect of any cognitive error on persons' social relationships may be different from the effect on their working life.[12,13] Cognitive error measurement instruments often do not have subdomains. By contrast, the Cognitive Distortions Scale (CDS) evaluates cognitive errors in interpersonal (IP) and personal achievement (PA) domains.[14]

Cleaning and rumination dimensions are OCD dimensions which are frequently encountered in psychiatry outpatient clinics. Differences between the cognitive processes of these two dimensions affect the treatment processes.[15] In intensive outpatient clinic conditions, focusing on the disorder itself without taking into account the dimensions of OCD may adversely influence the treatment outcomes. The aim of this study was to compare the rumination and cleaning dimensions of OCD in terms of cognitive error level and area including interpersonal relationships and personal achievements, and psychiatric comorbidity. According to our best knowledge, the IP and PA domains of the rumination and cleaning dimensions are compared with an instrument such as CDS for the first time. It was hypothesized that MOCI-derived symptom dimensions would predict distinct CDS-derived cognitive domains, psychiatric comorbidity, and psychiatric symptom and cognitive error correlation. The findings will be relevant to clinicians attempting to treat OCD symptoms with cognitive behavioral therapy (CBT) and medication.

METHODS

Study design

This is a cross-sectional study with female patients from the psychiatric outpatient clinic of Kahta State Hospital. Patients admitted to our outpatient clinic due to obsessional rumination or cleaning obsession and MOCI subscale scores are also consistent with the admission complaint were included in the study. In this way, two patient groups were formed: OCD-rumination (OCD-R) and OCD-cleaning (OCD-C). The control group consisted of healthy female volunteers. Interviews were conducted in an environment suitable for psychiatric examination. Local ethics committee approval was obtained, and all study participants provided written informed consent (2019/9-19).

Inclusion and exclusion criteria

To be included in the study, individuals had to meet Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)[16] criteria for OCD diagnosis and agree to answer the research protocol. The patients on psychotropic drugs were excluded from the study. Patients and controls with mental retardation and organic conditions such as thyroid, liver and kidney disorders that could directly or indirectly affect their mental state were not included in the study. Patients with a primary psychiatric diagnosis of other than OCD were excluded from the study. Patients and controls who gave incomplete information during the interviews were not included in the study.

Procedure and assessment

All patients were directly interviewed by psychiatrist (MHO) between December 2019 and February 2020. The research protocol included demographic data, medical history, family psychiatric history and a range of other structured interviews. The main assessment instruments are briefly described below.

Maudsley Obsessive-Compulsive Inventory: The MOCI which is a psychological test used for assessing the obsessive and compulsive symptoms have been developed by Hodgson and Rachman in 1977.[17] The Turkish version[7] has five subscales: checking (9 items), cleaning (11 items), slowness (7 items), doubting (7 items), and rumination (9 items).

Symptom Checklist-90-Revised (SCL-90-R): SCL-90-R is a 90-item self-report of subjects' symptoms and psychopathologic features on subscales: paranoid ideation (PAR), interpersonal sensitivity (I-S), hostility (HOS), psychoticism (PSY), phobic anxiety (PHOB), anxiety (ANX), somatization (SOM), depression (DEP), obsessive-compulsive (O-C), additional (AD) and general symptoms (GSI). The validity and reliability study of the Turkish version was conducted by Kılıç.[18]

Cognitive Distortions Scale (CDS): This is a 20-item self-report, Likert type scale instrument developed by Covin et al.[19] to measure 10 cognitive distortions (*mindreading, catastrophizing, all-or-nothing thinking, emotional reasoning, labelling, mental filter, overgeneralization, personalization, should statements, minimizing the positive*) using a 7-point scale (1=never, 7=all the time). Each cognitive distortion is rated in two domains: IP and PA. Cronbach's α values were excellent in both the non-clinical and clinical samples (0.933 and 0.918 respectively). It was adapted into Turkish by Özdel et al.[14]

Clinical Global Impression Scale (CGI): It was developed to evaluate the patients in clinical trials and to observe the changes in treatment during the follow-up process. It is a scale scored by the observer. CGI consists of three parts, which include disease severity, recovery and severity of side effects.[20]

Global Assessment Scale (GAS): It is a grading scale that is applied in a short time and covers all aspects (psychological, social and professional functionality) of changes in psychopathology. It was developed by Endicott[21] and can be scored between 0-100.

Statistical analysis

Statistical analysis was performed using Windows SPSS 22.0 (Statistical Package for the Social Sciences Inc.). Descriptive statistics and continuous variables were given as mean±standard deviation, and categorical variables were given as frequency and percentage. Chi-square test was used to analyze categorical data. Kolmogorov-Smirnov test was used to examine the distribution of variables and Mann-Whitney U test was used to evaluate continuous variables. Pearson's correlation analysis was used for correlation analysis. Receiver operating characteristics (ROC) curve analysis and binary logistic regression analysis were used to have advanced results. Cohen's d and R^2 were calculated as the effect size. Statistical significance level was accepted as $p<0.05$ for all values.

RESULTS

Sociodemographic data of the patient and control groups are shown in Table 1. There were significant differences between the patient and control groups in terms of MOCI and its subscales, CGI, GAS, SCL-90-R and its subscales, CDS and its subscales (Table 2). Sociodemographic data of the OCD-R and OCD-C groups are shown in Table 3. There was no significant difference between IP and PA scores of the OCD-R group (p=0.779). No significant difference was found between IP and PA scores of OCD-C group (p=0.720).

Table 1. Sociodemographic data of patient and control groups

		Patient (n=62)	Control (n=31)	p
Age (Mean±SD, years)		31.87±7.58	30.64±7.39	0.461
Education (Mean±SD, years)		11.61±4.12	10.45±4.09	0.203
Working status	Yes (n, %)	14 (22.58)	14 (45.16)	**0.025**
	No (n, %)	48 (77.42)	17 (54.84)	
Marital status	Married (n, %)	36 (58.06)	19 (61.29)	0.553
	Single (n, %)	22 (35.48)	12 (38.71)	
	Widow (n, %)	2 (3.23)	0 (0.0)	
	Divorced (n, %)	2 (3.23)	0 (0.0)	
Family psychiatry history	Yes (n, %)	19 (30.64)	2 (6.45)	**0.009**
	No (n, %)	43 (69.36)	29 (93.55)	

Table 2. Data on MOCI, CGI, GAS, CDS, SCL-90-R and their sub-parameters

	Patient (n=62) Mean±SD	Control (n=31) Mean±SD	p	OCD-R (n=31) Mean±SD	OCD-C (n=31) Mean±SD	p
MOCI total	17.08±8.55	6.77±2.31	**<0.001**	15.67±6.62	18.48±10.05	0.200
MOCI checking	3.80±2.37	0.96±0.94	**<0.001**	3.64±1.70	3.96±2.91	0.597
MOCI cleaning	4.43±2.71	0.74±0.72	**<0.001**	3.58±2.46	5.29±2.72	**0.012**
MOCI slowness	2.93±1.79	1.32±0.87	**<0.001**	2.90±1.10	2.96±2.30	0.889
MOCI doubting	3.82±2.18	0.96±0.94	**<0.001**	3.03±2.02	4.61±2.07	**0.004**
MOCI rumination	5.61±2.63	1.06±0.51	**<0.001**	6.29±1.88	4.93±3.10	**0.042**
CGI	8.40±2.22	3.22±0.42	**<0.001**	7.54±2.04	9.25±2.09	**0.002**
GAS	67.20±8.37	86.16±4.23	**<0.001**	65.51±6.91	68.90±9.43	0.112
SOM	1.22±0.84	0.15±0.13	**<0.001**	1.69±0.77	0.75±0.62	**<0.001**
ANX	1.38±1.02	0.21±0.10	**<0.001**	1.91±1.04	0.85±0.69	**<0.001**
O-C	1.53±0.75	0.16±0.07	**<0.001**	1.69±0.71	1.37±0.77	0.092
DEP	1.66±1.06	0.10±0.02	**<0.001**	1.70±0.82	1.62±1.26	0.769
I-S	1.48±0.98	0.10±0.02	**<0.001**	1.65±0.86	1.31±1.06	0.169
PSY	1.12±0.70	0	**<0.001**	1.33±0.52	0.91±0.80	**0.020**
PAR	1.45±0.97	0	**<0.001**	1.60±1.01	1.31±0.93	0.244
HOS	1.62±1.34	0.00±0.02	**<0.001**	2.09±1.17	1.15±1.34	**0.005**
PHOB	0.82±0.44	0.01±0.04	**<0.001**	1.06±0.27	0.57±0.44	**<0.001**
AD	1.51±0.87	0.15±0.07	**<0.001**	1.84±0.68	1.18±0.93	**0.003**
GSI	1.39±0.76	0.10±0.02	**<0.001**	1.66±0.64	1.11±0.78	**0.004**
CDS-IP	37.66±9.05	25.29±2.57	**<0.001**	39.93±7.94	35.38±9.63	**0.004**
CDS-PA	38.43±10.13	24.70±2.86	**<0.001**	40.51±8.29	36.35±11.45	0.107
CDS-T	76.09±18.62	49.99±3.62	**<0.001**	80.45±15.47	71.74±20.66	0.065

OCD: Obsessive-Compulsive Disorder; R: Rumination; C: Cleaning; MOCI: Maudsley Obsessive Compulsive Inventory; CGI: Clinical Global Impression Scale; GAS: Global Assessment Scale; SOM: Somatization; O-C: Obsessive-Compulsive; I-S: Interpersonal Sensitivity; DEP: Depression; ANX: Anxiety; HOS: Hostility; PHOB: Phobic; PAR: Paranoid; PSY: Psychotic; AD: Additional; GSI: Global Severity Index; SD: Standard Deviation; CDS: Cognitive Distortions Scale; IP: Interpersonal; PA: Personal Achievement; T: Total

Table 3. Sociodemographic data of OCD-R and OCD-C groups

		OCD-R (n=31)	OCD-C (n=31)	p
Age (Mean±SD years)		30.01±8.18	32.98±7.01	0.061
Education (Mean±SD years)		10.12±3.77	12.01±4.11	0.094
Age of disorder onset (Mean±SD, years)		22.48±5.14	24.06±4.08	0.185
Working status	Yes (n, %)	6 (19.35)	8 (25.80)	0.544
	No (n, %)	25 (80.65)	23 (74.20)	
Marital status	Married (n, %)	19 (61.29)	17 (54.83)	0.125
	Single (n, %)	8 (25.80)	14 (45.17)	
	Widow (n, %)	2 (6.45)	0 (0.0)	
	Divorced (n, %)	2 (6.45)	0 (0.0)	
Family psychiatry history	Yes (n, %)	12 (38.70)	7 (22.58)	0.168
	No (n, %)	19 (61.30)	24 (77.42)	
Drug use history	Yes (n, %)	14 (45.60)	24 (77.42)	**0.009**
	No (n, %)	17 (54.40)	7 (22.58)	
CBT history	Yes (n, %)	7 (22.58)	12 (38.70)	0.168
	No (n, %)	24 (77.42)	19 (61.30)	
CBT+drug use history	Yes (n, %)	4 (12.90)	11 (35.48)	**0.038**
	No (n, %)	27 (87.10)	20 (64.52)	

OCD: Obsessive-Compulsive Disorder; R: Rumination; C: Cleaning; CBT: Cognitive Behavioral Therapy

Table 4. Correlation analysis in OCD-R group

		MOCI-T	MOCI-C	MOCI-R	O-C	GSI	CDS-IP	CDS-PA	CDS-T
Age	r	0.002	0.536	-0.052	-0.368	-0.264	0.121	0.549	0.356
	p	0.990	**0.002**	0.783	**0.042**	0.152	0.517	**0.001**	**0.049**
MOCI total	r	1	0.784	0.893	0.762	0.746	0.458	0.363	0.430
	p		**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.009**	**0.045**	**0.016**
MOCI cleaning	r	0.784	1	0.740	0.537	0.611	0.619	0.779	0.736
	p	**<0.001**		**<0.001**	**0.002**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
MOCI rumination	r	0.893	0.740	1	0.783	0.770	0.527	0.425	0.499
	p	**<0.001**	**<0.001**		**<0.001**	**<0.001**	**0.002**	**0.017**	**0.004**
SOM	r	0.650	0.386	0.766	0.846	0.800	0.595	0.252	0.441
		<0.001	**0.032**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.171	**0.013**
ANX	r	0.519	0.336	0.618	0.927	0.895	0.652	0.345	0.520
	p	**0.003**	0.065	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.058	**0.003**
O-C	r	0.762	0.537	0.783	1	0.984	0.647	0.411	0.553
	p	**<0.001**	**0.002**	**<0.001**		**<0.001**	**<0.001**	**0.022**	**0.001**
DEP	r	0.480	0.650	0.403	0.608	0.695	0.578	0.694	0.669
	p	**0.006**	**<0.001**	**0.025**	**<0.001**	**<0.001**	**0.001**	**<0.001**	**<0.001**
I-S	r	0.623	0.790	0.615	0.737	0.820	0.648	0.786	0.754
	p	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
GSI	r	0.746	0.611	0.770	0.984	1	0.731	0.539	0.664
	p	**<0.001**	**<0.001**	**<0.001**	**<0.001**		**<0.001**	**<0.001**	**<0.001**
CDS-IP	r	0.458	0.619	0.527	0.647	0.731	1	0.815	0.950
	p	**0.009**	**<0.001**	**0.002**	**<0.001**	**<0.001**		**<0.001**	**<0.001**
CDS-PA	r	0.363	0.779	0.425	0.411	0.539	0.810	1	0.955
	p	**0.045**	**<0.001**	**0.017**	**0.022**	**0.002**	**<0.001**		**<0.001**
CDS-T	r	0.430	0.736	0.499	0.553	0.664	0.950	0.955	1
	p	**0.016**	**<0.001**	**0.004**	**0.001**	**<0.001**	**<0.001**	**<0.001**	

OCD: Obsessive-Compulsive Disorder; R: Rumination; C: Cleaning; MOCI: Maudsley Obsessive Compulsive Inventory;
SOM: Somatization; O-C: Obsessive-Compulsive; I-S: Interpersonal Sensitivity; DEP: Depression; ANX: Anxiety; GSI:
Global Severity Index; CDS: Cognitive Distortions Scale; IP: Interpersonal; PA: Personal Achievement; T: Total

According to the binary logistic regression analysis, the sensitivity of CDS-IP, CDS-PA and CDS-T related to the diagnosis of OCD-R was 54.8 percent and the specificity was 67.7 percent (Nagelkerke R^2=0.087; -2 Log Likelihood [a]: 81.769) (CDS-IP: p<0.230, Exp(B) 1.078, 95% CI for EXP(B) 0.954-1.218); the sensitivity of CDS-IP, CDS-PA, CDS-T, and MOCI rumination related to the diagnosis of OCD-R was 61.3 percent and the specificity was 35.5 percent (Nagelkerke R^2=0.122; -2 Log Likelihood [a]: 79.981); the sensitivity of CDS-IP, CDS-PA, CDS-T, and MOCI cleaning related to the diagnosis of OCD-C was 45.2 percent and the specificity was 67.7 percent (Nagelkerke R^2=0.288; -2 Log Likelihood [a]: 70.869).

ROC analysis was performed on the basis of 62 patients (31 OCD-R and 31 OCD-C). The area under the ROC curve of CDS-IP score for OCD-R was 0.668 (p=0.023; 95% CI (0.530-0.806)); CDS-PA score for OCD-R was 0.592 (p=0.213; 95% CI (0.445-0.740)); and CDS-T score for OCD-R was 0.621 (p=0.101; 95% CI (0.478-0.764). The optimal cut-off score for CDS-IP was 35.5, and its sensitivity and specificity for the diagnosis of OCD-R were 74.2% and 67.7%, respectively. The optimal cut-off score for CDS-PA was 48.5, and its sensitivity and specificity for the diagnosis of OCD-R were 25.8% and 87.1%, respectively. The optimal cut-off score for CDS-T was 98.0, and its sensitivity and specificity for the diagnosis of OCD-C were 25.8% and 87.1%, respectively. The areas under the ROC curve of CDS-IP, CDS-PA, CDS-T scores for OCD-C were below 0.4.

In the comparison between OCD-R and OCD-C in terms of CDS-IP, Cohen's d and Glass's delta were 0.51 and 0.57, respectively. In terms of CDS-PA, Cohen's d and Glass's delta were 0.41 and 0.50, respectively. In terms of CDS-T, Cohen's d and Glass's delta were 0.47 and 0.56, respectively.

Table 5. Correlation analysis in OCD-C group

		MOCI-T	MOCI-C	MOCI-R	O-C	GSI	CDS-IP	CDS-PA	CDS-T
Age	r	-0.736	-0.562	-0.701	-0.686	-0.322	0.175	0.388	0.297
	p	**<0.001**	**0.001**	**<0.001**	**<0.001**	0.077	0.345	**0.031**	0.105
MOCI total	r	1	0.936	0.976	0.907	0.591	0.222	0.003	0.105
	p		**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.229	0.988	0.573
MOCI cleaning	r	0.936	1	0.885	0.760	0.456	0.156	-0.058	0.040
	p	**<0.001**		**<0.001**	**<0.001**	**0.010**	0.403	0.757	0.829
MOCI rumination	r	0.976	0.885	1	0.974	0.751	0.342	0.122	0.227
	p	**<0.001**	**<0.001**		**<0.001**	**<0.001**	0.060	0.512	0.219
SOM	r	0.492	0.229	0.608	0.743	0.725	0.154	-0.020	0.060
	p	**0.005**	0.215	**<0.001**	**<0.001**	**<0.001**	0.409	0.914	0.747
ANX	r	0.329	0.040	0.493	0.677	0.808	0.389	0.320	0.359
	p	0.070	0.830	**0.005**	**<0.001**	**<0.001**	**0.031**	0.079	**0.047**
O-C	r	0.907	0.760	0.974	1	0.857	0.403	0.198	0.297
	p	**<0.001**	**<0.001**	**<0.001**		**<0.001**	**0.025**	0.287	0.104
DEP	r	0.531	0.536	0.670	0.718	0.904	0.683	0.553	0.625
	p	**0.002**	**0.002**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.001**	**<0.001**
I-S	r	0.518	0.475	0.675	0.754	0.950	0.614	0.492	0.559
	p	**0.003**	**0.007**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.005**	**0.001**
GSI	r	0.591	0.456	0.751	0.857	1	0.635	0.476	0.560
	p	**<0.001**	**0.010**	**<0.001**	**<0.001**		**<0.001**	**0.007**	**0.001**
CDS-IP	r	0.222	0.156	0.342	0.403	0.635	1	0.920	0.976
	p	0.229	0.403	0.060	**0.025**	**<0.001**		**<0.001**	**<0.001**
CDS-PA	r	0.003	-0.058	0.122	0.198	0.476	0.920	1	0.983
	p	0.988	0.757	0.512	0.287	**0.007**	**<0.001**		**<0.001**
CDS-T	r	0.105	0.040	0.227	0.297	0.560	0.976	0.983	1
	p	0.573	0.829	0.219	0.104	**0.001**	**<0.001**	**<0.001**	

OCD: Obsessive-Compulsive Disorder; R: Rumination; C: Cleaning; MOCI: Maudsley Obsessive Compulsive Inventory; SOM: Somatization; O-C: Obsessive-Compulsive; I-S: Interpersonal Sensitivity; DEP: Depression; ANX: Anxiety; GSI: Global Severity Index; CDS: Cognitive Distortions Scale; IP: Interpersonal; PA: Personal Achievement; T: Total

DISCUSSION

This study, which was conducted in a relatively high education group, examined the sociodemographic and disorder characteristics, comorbid psychiatric symptoms, and cognitive errors in IP and PA domains of the rumination and cleaning dimensions of OCD and compared the results with healthy controls. The similarity of age and education levels between patient and control groups facilitates the interpretation of the findings.

Our first finding regarding the scale data is that all scales were higher in the patient group compared to the control group. Our findings are consistent with studies investigating psychiatric comorbidity in OCD.[22] Although OCD is considered as a disorder characterized by obsessions and compulsions, it is known that many different psychiatric symptoms or disorders accompany OCD frequently.[23-25] Lifetime comorbidity between OCD and other anxiety disorders was determined as 22% for specific phobia, 18% for social anxiety disorder, 12% for panic disorder and 30% for generalized anxiety disorder.[9] In our study, it was found that psychiatric comorbidity of OCD patients was higher than healthy controls. More importantly, the rumination dimension was more affected by somatic, psychotic, hostility and anxiety symptoms than the cleaning dimension. Most importantly, it was found that cognitive errors were more affected in interpersonal relationships in the rumination subscale than the cleaning subscale. Our findings were similar to the literature in terms of subdimensions.

Obsessional ruminations generally comprise thoughts of harming others, distasteful religious or sexual ideas, causing accidents to occur. Individuals who are concerned about harming others exhibit avoidant behaviors. As these avoidant behaviors increase, patients may undergo a depressive process, leading to a vicious circle.[26] Undoubtedly, this information about rumination dimension leads us to cognitive errors. However, since there are not too many instruments in the literature that differentiate cognitive errors into domains such as interpersonal and personal success, this is not properly proven. Our study is important in terms of presenting different results in interpersonal relationships while two different dimensions have similar cognitive errors in the field of personal achievement. In this study, a predicted situation was reported by means of a scale. The increased psychiatric comorbidity in the rumination dimension also affects the seeking treatment or treatment benefit of these patients.[2,27] Indeed, in our study, the past treatment history of rumination dimension was lower than that of cleaning dimension, however, many SCL-90-R subscales were higher. Individuals with unacceptable thoughts have often been described as more treatment resistant than those with other types of OCD.[2] The studies provide evidence that CBT may be useful in rumination.[28] In our study, it was shown that cognitive errors of patients with a history of CBT were significantly lower than those without a history of CBT. Similar results were not found in patients with a history of drug therapy. These findings are important in terms of showing that the CBT causes permanent changes in the rumination dimension.

Psychiatric symptoms obtained with SCL-90-R showed various correlations with cognitive errors. The severity of the disorder in the rumination dimension was associated with the level of cognitive error. Cognitive errors, which are directly proportional to the severity of the disorder, may be a condition that distracts patients from treatment and social life. Complaints of the patient who does not receive treatment and whose decreased social functionality may increase: the result is a vicious circle. In addition, in the rumination dimension, many psychiatric symptoms were associated with interpersonal relationships but not with personal achievements.[29] Our study shows that not only the rumination dimension but also the cleaning dimension are associated with depressive symptoms.

As a result, this is the first study examining the relationship between rumination dimension-cleaning dimension and interpersonal relationship domain-personal achievement domain. In our study, OCD, especially in the rumination dimension, was associated with significant psychiatric comorbidity and high cognitive error levels. In the rumination dimension, cognitive errors related to interpersonal relationships were higher than the cleaning dimension. Psychiatric symptom-cognitive error correlation was more prominent in rumination dimension. Treatment history was lower in rumination dimension. CBT plus drug use history was associated with low cognitive error. Depressive symptoms were significantly high in both dimensions. Our findings suggest that a detailed evaluation of symptoms-dimensions in OCD treatment will affect treatment success. There are several limitations in our study. There is a need to increase the sample size in the further studies and to carry out studies including male gender. It is thought that

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the results will be better interpreted by increasing the scale diversity, expanding the sociodemog-

raphic data, elaborating the OCD history.

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