

# COULD AFFECTIVE TEMPERAMENT PREDICT OBSESSIVE COMPULSIVE SYMPTOM DIMENSIONS?

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## Abstract:

**Background:** In this study, we aimed to investigate the relationship between affective temperament characteristics and obsessive-compulsive disorder (OCD) symptom dimensions and severity.

**Subjects and Methods:** 100 patients diagnosed with OCD and 100 healthy controls by random sampling method were included in the study. SCID-5-CV was administered to all participants. Dimensional Obsessive-Compulsive Scale (DOCS), Temperament Evaluation of Memphis, Pisa, Paris, San Diego Autoquestionnaire (TEMPS-A), Beck Anxiety (BAI), Depression Inventories (BDI) were provided to all participants.  $p < 0.05$  was taken as statistically significant.

**Results:** It was found that cyclothymic temperament predicted all OCD symptom dimensions except contamination dimension, and predicted the OCD severity. Moreover, irritable temperament predicted the OCD symmetry dimension.

**Conclusion:** In our study, the first study in terms of scrutinizing the relationship between symptom dimensions of OCD and affective temperament, it was revealed that irritable and cyclothymic temperament significantly predicted the dimensions of OCD, and cyclothymic temperament was associated with OCD severity. Affective temperaments appear to make a remarkable contribution to OCD heterogeneity.

**Keywords:** Obsessive-compulsive disorder; classification, irritable temperament, cyclothymic temperament.

\* \* \* \* \*

## BACKGROUND

Obsessive-compulsive disorder (OCD) is characterized by distressing obsessions and/or compulsions (Grabill et al. 2008). Obsessions consist of intrusive, repetitive, ego-dystonic thoughts, impulses, and images. Compulsions are physical or mental behaviors that neutralize the distress caused by obsessions (Sahin et al. 2022). The fact that it considerably reduces individuals' quality of life and functionality has led researchers to investigate the etiopathogenesis and clinical characteristics of OCD to elucidate it better (Gururaj et al. 2008). Having affective symptoms in OCD is not an exception. Many studies have suggested that there may be a reciprocal relationship between OCD symptoms and affective symptoms (Perugi et al. 1997). For this reason, the relationship between OCD and affective temperament might be important (Perugi et al. 1999). Affective temperament has been an issue that has attracted people's attention since ancient times (Akiskal 2001); Hippocrates defined four personality types (choleric, melancholic, phlegmatic, and sanguine) based on the amount of yellow bile, black bile, phlegm, and blood in the body (Widiger & Smith 2008). Kraepelin defined four temperament traits as depressive, hyperthymic, irritable, and cyclothymic personality before the illness and suggested that these traits induce predisposition to mood

disorders and persist even if the mood disorder recovers (Kraepelin 1921). In addition to Kraepelin, Akiskal developed the Temperament Evaluation of Memphis, Pisa, Paris, San Diego Autoquestionnaire (TEMPS-A) scale, which defines anxious temperament, in 2005, and aimed to identify the depressive, cyclothymic, hyperthymic, irritable, and anxious temperament characteristics of individuals with the help of this scale (Akiskal et al. 2005).

In the presence of the affective component accompanying OCD, the fact that the person's approach and attitude towards one's symptoms and illness are different, the change in treatment-seeking response, and also the change in treatment options make it necessary to understand the relationship of the affective temperament with OCD (Perugi et al. 1999). In one study including the people with OCD, dominant affective temperament was found in more than %50 patients (D'ambrosio et al. 2010), while in the healthy population dominant affective temperament frequency was up to 20% (Rihmer et al. 2010). It has been found that, particularly in cyclothymic temperament, OCD begins at an earlier age, the disease progresses more severely, and responds less to treatment (D'ambrosio et al. 2010; D'ambrosio et al. 2012; Hantouche & Demonfaucon 2008).

Due to the heterogeneity in OCD symptomatology thus far, a broad range of classifications have been made

to categorize OCD (Foa et al. 1998; Goodman et al. 1989; Sanavio 1988; Sternberger & Burns 1990). Because these classifications are based on the symptom type, avoidances are not considered, and obsessions can occur in the healthy population leading researchers to assess OCD in terms of dimensions (Abramowitz et al. 2002). With the Dimensional Obsessions and Compulsions Scale (DOCS), which they developed in 2010, Abramowitz et al. classified OCD into four dimensions (contamination concerns, concerns about being responsible for harm, injury, or bad luck, unacceptable thoughts, and concerns about symmetry, completeness, and the need for things to be just right) and evaluated obsessions and related compulsions via this scale. By taking avoidance into account, they prevented the erroneous lowering of the severity of the disease (Abramowitz et al. 2010). Given these developments in the approach to OCD, further studies that reconsider the etiopathogenesis of OCD are needed (Benito & Storch 2011).

To our knowledge, after this new dimensional conceptualization of OCD, no study investigated the relation between OCD dimensions and affective temperament characteristics. The purpose of the present study was to examine the relationship between affective temperament characteristics and OCD symptom dimensions. Our study hypothesized (Hypothesis 1) that affective temperaments scores will be higher in the OCD group than in the control group. Second (Hypothesis 2), OCD severity will be higher in patients with dominant affective temperament than in patients without. Third (Hypothesis 3), affective temperament characteristics will predict the OCD dimensions.

## SUBJECTS AND METHODS

### Subjects

One hundred consecutive patients with the primary diagnosis of OCD who applied to the Diskapi Training and Research Hospital Psychiatry Clinic, and 100 healthy volunteers, matched for sex and age, without any psychiatric diagnosis were included in the study. This clinic is a tertiary referral center located in the Ankara, Turkey. Power analysis has been done for the sample size and the adequate sample size has been calculated to be 96 patients and 96 controls ( $\alpha=0.05$ ;  $\beta=0.20$ ; power=0.95). The present study is a causal-comparative study.

Before starting the study, ethical approval was obtained from the ethics committee of the hospital (date: 11.06.2018, no:51/13). After the ethical approval, sample collection was done between July 2019 and July 2020.

The inclusion criteria for the patient group were to be diagnosed with OCD according to DSM-5, be between the ages of 18-65, be literate, give informed consent, and be willing to participate in the study. Informed consent was obtained from all patients, and healthy controls were included in the study. The patients, who met the criteria, were invited to the study consecutively from the outpatient clinic, and those who accepted were included in the study.

The inclusion criteria for the control group were to be between the ages of 18-65, give informed consent, and be willing to participate in the study. Individuals who are having or had any psychiatric diagnosis according to DSM-5, are illiterate or have language problems to fill out forms and measures were excluded from the study. The healthy volunteers were collected from the hospital staff and their acquaintances. They were invited to the control group and those who met the criteria and who accepted were included in the study.

Exclusion criteria for the study for both groups were the presence of neurological pathology, the presence of mental retardation, illiteracy, the presence of alcohol and substance use disorder, and the diagnosis of psychotic disorder or bipolar disorder according to DSM-5.

All the participants were evaluated via the Turkish version of the Structured Clinical Interview for DSM-5 (SCID-5-CV) for their present and past diagnoses. Also, the psychiatric disease history of the cases was evaluated from the statement of the cases and the medical records in the hospital. For the control group, people with a past or present psychiatric diagnosis or treatment were excluded. In the patients' group, cases with using medications were not excluded from the study.

### Assessment

The Structured Clinical Interview for DSM-5 (SCID 5-CV) was administered to patients referred from the outpatient unit by psychiatrists with at least four years of experience; the diagnosis of OCD was confirmed, and accompanying mental disorders, if any, were detected. And SCID 5-CV was administered to the control group, too. All sociodemographic and clinical data of the patient and control groups included in the study were obtained from a semi-structured clinical interview.

### Scales

- a. Sociodemographic data form: Using this form, which was prepared by the researchers, data about the participants' age, sex, marital status, cohabitants, educational status, employment status, income level, alcohol-substance use, history of psychiatric illness, and

- family history of psychiatric illness were collected. We checked the participants' alcohol and drug consumption, and those who met the criteria of alcohol or substance use disorder were excluded. However, people can use drugs or alcohol without meeting the criteria of alcohol or substance use disorder.
- b. Dimensional Obsessive-Compulsive Scale (DOCS): Developed by Abramowitz et al. in 2010 and used to determine OCD symptoms and dimensions, this scale consists of four symptom dimensions, including concerns about contamination (DOCS-CON), concerns about being responsible for harm, injury, or bad luck (DOCS-RES), unacceptable thoughts (DOCS-UNA) and concerns about symmetry, completeness, and the need for things to be just right (DOCS-ORD). For each dimension, five questions are asked, scored between 0-4 based on the severity of the symptom. Individuals score between 0-20 points in each symptom dimension and 0-80 in total. The total DOCS score (DOCS-TOTAL) indicates the severity of the OCD (Abramowitz et al. 2010). Obsessions, compulsions, and avoidance behaviors are assessed within symptom dimensions rather than categorized as OCD types in the dimensional approach. We used the Turkish version of DOCS (Şafak et al. 2018).
  - c. Temperament Evaluation of Memphis, Pisa, Paris, San Diego Autoquestionnaire (TEMPS-A): Whether people have a dominant affective temperament can be assessed via administering the TEMPS-A scale Akiskal developed in 2005. This scale shows five temperament characteristics (depressive, cyclothymic, hyperthymic, irritable, and anxious), consists of 110 yes-no queries (Akiskal et al. 2005). Here in this study, we used the Turkish version of the original TEMPS-A scale. In the Turkish version, some items were found psychometrically weak and deleted from the questionnaire. And finally, the Turkish version of the original TEMPS-A scale consists of 99 yes-no queries, and each yes answer represents 1 point, while each no answer represents 0 points. Individuals need to obtain at least 13 points from 18 items for dominant depressive temperament, at least 18 points from 19 items for dominant cyclothymic temperament, at least 13 points from 18 items for dominant irritable temperament, and at least 18 points from 24 items for dominant anxious temperament. They need to obtain 20 points from 20 items for dominant hyperthymic temperament. These cut-off scores were calculated according to the z-scores above the positive + 2SD, and we determined the dominant affective temperament existence according to these cut-off scores, which were suggested in the Turkish validation study (Vahip et al. 2005).

- d. Beck Depression Inventory (BDI): This inventory, developed by Beck in 1961, detects depression symptoms and severity in individuals. It consists of 21 questions scored between 0-3 points (Beck et al. 1961). The Turkish version of the scale was used in the study (Hisli 1989).
- e. Beck Anxiety Inventory (BAI): This inventory, developed by Beck in 1988, detects anxiety symptoms and severity in individuals. It consists of 21 questions scored between 0-3 points (Beck et al. 1988). In the present study, we used the Turkish version of this inventory (Ulusoy et al. 1998)

### Statistical Analysis

Our analyzes were conducted via the software of SPSS 25.0 and were studied at a confidence level of 95%. The kurtosis and skewness values between +3 and -3 obtained from the intra-item scales are considered sufficient for the normal distribution (Hopkins & Weeks 1990). Hence, the independent groups' t-test and Pearson correlation test, which are parametric, were used in our scores analysis. The difference between the scores in the presence of OCD was analyzed via the t-test. The Pearson correlation test explored the relationship between the scores in the differentiation of OCD presence. The relationship between the presence of OCD and categorical variables was analyzed via the Chi-square test. Correlation between OCD symptom dimensions (DOCS-CON, DOCS-RES, DOCS-UNA, and DOCS-ORD), severity scores (DOCS-TOTAL), and affective temperament scores (depressive, cyclothymic, hyperthymic, irritable, and anxious) was evaluated using partial correlation analysis adjusted for anxiety (BAI) and depression (BDI) scores. Six separate multiple linear regression models were built for dependent variables DOCS-CON, DOCS-RES, DOCS-UNA, DOCS-ORD, and DOCS-TOTAL. The backward stepwise method was used, which begins with all variables and, at each step, gradually eliminates variables from the regression model to find a model that best explains the data. The final models of each dependent variable were reported. The strength of association was reported in terms of unstandardized beta ( $\beta$ ).

## RESULTS

### Sociodemographic and Clinical Characteristics of OCD and Control Group

100 OCD patients and 100 healthy volunteers were included in the study. No significant difference was determined between the OCD and control groups in terms

of mean age (OCD 32.33±10.82, control 32.81±9.61), sex (F/M OCD 63/37, control 62/38), and marital status (married OCD %37, control %50). It was determined that the OCD group had a significantly lower education level; 46.0% of the OCD group were high school graduates, while 87.0% of the control group were university graduates. Regarding employment status, 47.0% of the OCD group was unemployed, while 2.0% of the control group was unemployed. An additional psychiatric diagnosis was detected in 29.0% of the OCD group; 4 of 29 OCD patients had generalized anxiety disorder, 14 had major depressive disorder, 1 had panic disorder, and 10 had generalized anxiety disorder and major depressive disorder. While 12.0% of the OCD group had a history of suicide, no suicide history was found in the control group (Table 1).

### Comparison of Affective Temperament Characteristics of OCD and Control Groups

When OCD and control groups were compared in terms of affective temperament characteristics, the rate of having a dominant affective temperament was higher in the OCD group compared to the control group. Except for hyperthymic temperament, all four temperaments were determined to be higher in the OCD group. When the OCD group and the control group were compared in terms of the scores they obtained from the affective

temperament items, it was found that the OCD group had higher scores from all the affective temperament items except hyperthymic temperament. These findings are presented in detail in Table 2.

### Demonstration of the Relationship of Affective Temperament Traits with DOCS dimensions scores and total score

One hundred people in the OCD group were divided based on whether they had a dominant affective temperament and were compared according to DOCS dimensions, DOCS total, BAI, and BDI scores. For instance, OCD patients with dominant depressive temperament were compared with OCD patients without depressive temperament in DOCS, BAI, and BDI scores. Likewise, those with dominant cyclothymic, irritable, and anxious temperaments were compared with OCD patients who did not have this dominant temperament. Ultimately, OCD patients with at least one dominant affective temperament were compared with OCD patients without a dominant affective temperament with identical scale scores. Since dominant hyperthymic temperament was not detected in the OCD group, no comparison was made based on hyperthymic temperament.

OCD patients with depressive, cyclothymic, irritable, anxious, or more than one dominant affective temperament were found to have significantly higher DOCS dimensions

**Table 1:** Comparison of sociodemographic characteristics of OCD and control groups

	OCD group (n=100)	Control group (n=100)	P
Age, mean ± SD	32.33±10.82	32.81±9.61	.275
Gender, female n (%)	63 (63%)	62 (62%)	.884
Marrital status, married n (%)	37 (37%)	50 (50%)	.064
Education level, n (%)			
Elementary school	29 (29%)	1 (1%)	.000*
High school	46 (46%)	12 (12%)	
University or above	25 (25%)	87 (87%)	
Having a job, n (%)	53 (53%)	98 (98%)	.000*
Psychiatric comorbidities exist, n (%)	29 (29%)	-	
GAD, n (%)	4 (4%)	-	
MDD, n (%)	14 (14%)	-	
Panic disorder, n (%)	1 (1%)	-	
GAD + MDB, n (%)	10 (10%)	-	
Suicide history, n (%)	12 (12%)	-	

GAD: Generalized anxiety disorder; MDB: Major depressive disorder; \*p<0.05 Chi square test, SD: Standard deviation

**Table 2:** Comparison of dominant affective temperament characteristics of OCD and control groups

	OCD group (n=100)	Control group (n=100)	P
Number of dominant temperaments, n			
Any of temperaments	45	15	.000*
No dominant temperament	55	85	.000*
Depressive	23	4	.000*
Cyclothymic	5	4	.733
Hyperthymic	0	5	.024*
Irritable	19	2	.000*
Anxious	26	3	.000*
Temperament scores, mean (±SD)			
Depressive	8.58±3.99	4.15±2.98	.000**
Cyclothymic	10.46±5.35	4.23±4.64	.000**
Hyperthymic	7.9±4.64	8.82±4.98	.178
Irritable	6.56±4.59	2.24±2.81	.000**
Anxious	11.21±7.18	4.18±4.23	.000**

\*p<0.05 Chi square test, \*\*p<0.05 Independent samples t-test; SD: Standard deviation

**Table 3:** Analysis of Scores in terms of Dominant Temperament in OCD Patients

	DOCS					BAI	BDI
	CON	RES	UNA	ORD	TOTAL		
<b>DT + (n=23)</b>	10.65±4.41	10.3±4.98	11.7±3.83	8.96±5.54	41.61±13.71	25.96±13.72	30.13±10.31
<b>DT – (n=77)</b>	8.49±5.83	8.01±5.29	8.84±5.57	6.52±6.04	31.87±16.96	17.71±15.53	15.27±11.31
<b>p</b>	.060	.030*	.307	.001*	.005*	.004*	.023*
<b>CT + (n=5)</b>	14.6±2.97	14±1.22	11.6±4.45	13.6±2.41	53.8±5.63	41.8±7.85	24.2±5.22
<b>CT – (n=95)</b>	8.69±5.55	8.25±5.26	9.39±5.38	6.74±5.93	33.07±16.48	18.44±14.89	18.4±12.93
<b>p</b>	.021*	.017*	.370	.001*	.000*	.001*	.068
<b>IT + (n=19)</b>	11.16±6.18	10.89±5	10.63±4.82	10.95±4.75	43.63±15.45	28.68±15.62	24.63±14.26
<b>IT – (n=81)</b>	8.48±5.36	7.99±5.22	9.23±5.45	6.17±5.91	31.88±16.3	17.48±14.72	17.3±11.98
<b>p</b>	.060	.030*	.307	.001*	.005*	.004*	.023*
<b>AT + (n=26)</b>	9.54±5.71	11.38±5.1	12.54±4.91	10.58±5.42	44.04±15.64	34.88±13.67	28.65±11.26
<b>AT – (n=74)</b>	8.8±5.57	7.54±5	8.43±5.1	5.85±5.72	30.62±15.75	14.24±12.16	15.19±11.3
<b>p</b>	.563	.001*	.001*	.000*	.000*	.000*	.000*
<b>Any temp + (n=45)</b>	9.96±5.3	10.4±4.76	11.36±4.49	9.73±5.27	41.44±13.75	28.42±15.34	26±12.06
<b>No temp (n=55)</b>	8.2±5.74	7.02±5.23	7.98±5.54	4.91±5.71	28.11±16.65	12.4±11.35	12.71±9.82
<b>p</b>	.119	.001*	.001*	.000*	.000*	.000*	.000*

DOCS: Dimensional Obsessive-Compulsive Scale; CON: Contamination and hygiene; RES: Responsibility for damage; UNA: Unacceptable or prohibited thoughts; ORD: Order and symmetry; TOTAL: Total score on the DOCS; BAI: Beck Anxiety Inventory; BDI: Beck Depression Inventory; DT: Dominant depressive temperament; CT: Dominant cyclothymic temperament; IT: Dominant irritable temperament; AT: Dominant anxious temperament.

\*p<0.05 Independent samples t-test; SD: Standard deviation

Data were presented in mean ±SD.



scores, DOCS total, BAI, and BDI scores compared to OCD patients without this temperament; the mean scores they obtained are presented in detail in Table 3.

### Correlation Analysis

In the OCD group, correlation analyses were made between the DOCS total score, which determines the severity of the disease, four DOCS subscales indicating the OCD symptom dimensions, and affective temperament characteristics (depressive, cyclothymic, etc. hyperthymic, irritable, and anxious) scores. As anxious and depressive symptoms of the patients could be a confounding factor, partial correlations were calculated after adjusting for Beck Anxiety and Beck Depression Inventory scores, and these analyses are presented in Table 4.

### Hierarchical Regression Analyzes

The results of multiple linear regression analysis using backward elimination are tabulated in Table 5. The regression analyses were conducted to show the effects of affective temperament scores, anxiety, and depression scores on DOCS dimensions and total scores. For each dependent variable, a separate regression analysis was conducted. Cyclothymic temperament positively affected the DOCS-RES score (Beta=.305 p=.005), DOCS-UNA score (Beta=.256 p=.009), DOCS-ORD score (Beta=.399 p=.002) and DOCS-TOTAL score (Beta=1.041 p=.000). And irritable temperament positively affected the DOCS-ORD score (Beta=.298 p=.018). Beck Depression Inventory scores positively affected all the OCD dimensions and OCD severity scores. Beck Anxiety Inventory and the other three temperaments (depressive, hyperthymic, and anxious) were less significant and eliminated from the model by backward stepwise analysis (Table 5).

## DISCUSSION

This study aimed to evaluate the predictiveness of affective temperaments on OCD symptom dimensions and severity. The main findings of our research can be summarized as follows: Affective temperament scores (except hyperthymic) were higher in OCD group than controls. OCD severity, anxiety and depression levels were higher in patients with dominant affective temperament (except for hyperthymic temperament) than in patients without. Cyclothymic temperament predicted being responsible for harm, injury, or bad luck (DOCS-RES) dimension, unacceptable thoughts (DOCS-UNA) dimension and symmetry, completeness, and the need for things to be just right (DOCS-ORD) dimension. Irritable temperament predicted only the symmetry (DOCS-ORD) dimension. Furthermore, cyclothymic temperament was the only temperament that predicted the OCD severity, measured by DOCS-TOTAL in our study. None of the affective temperaments significantly predicted the contamination (DOCS-CON) dimension.

No significant difference between the OCD and control groups regarding age, sex, and marital status support that the selected sample group has similar characteristics, so the comparison is reliable. The difference between the groups in terms of the people they live with, their occupation, education, and income might be because the hospital where the study was conducted was in a low socio-cultural region.

29% major depression and 14% generalized anxiety disorder were found in the OCD group, consistent with the literature data reporting that OCD is accompanied by 24-33% depression (Fullana et al. 2010) and 8-24% anxiety (Ruscio et al. 2010). Expectedly, the OCD group scored significantly higher on Beck Anxiety and Depression Inventories than the control group due to the frequent accompanying anxiety and depression symptoms in OCD (Sanavio 1988). It was found that the rate of dominant

**Table 4:** Investigation of the Correlation between Dimensional Obsession Compulsion Scale Dimensions, Total Score, and Temperament scores in the OCD Group

Control Variables	Dysthymic temp	Cyclothymic temp	Hyperthymic temp	Irritable temp	Anxious temp	
DOCS-CON	-.027	.117	-.112	.157	-.040	
DOCS-RES	.092	.248*	.091	.038	.197	
BAI & BDI	DOCS-UNA	-.007	.276**	.101	.055	.091
	DOCS-ORD	-.035	.299**	.141	.276**	.192
	DOCS-TOTAL	.006	.347**	.077	.205*	.161

\*p<0.05; \*\*p<0.01 Pearson correlation test

**Table 5:** Results of the multiple linear regression analysis

Dependent Variable	Model	$\beta$	SE	t	p	R2	95% CI	
							LL	UL
DOCS-CON	Constant	6.173	.942	6.551	.000*	.117	4.303	8.043
	BDI	.151	.042	3.609	.000*		.068	.234
DOCS-RES	Constant	3.241	1.022	3.171	.002*	.253a	1.213	5.269
	Cyclothymic temp	.305	.106	2.873	.005*		.094	.516
	BDI	.113	.045	2.514	.014*		.024	.201
DOCS-UNA	Constant	3.229	.926	3.487	.001*	.401a	1.391	5.066
	Cyclothymic temp	.256	.096	2.654	.009*		.064	.447
	BDI	.192	.041	4.744	.000*		.112	.273
DOCS-ORD	Constant	.730	1.206	.605	.546	.376a	-1.665	3.125
	Cyclothymic temp	.399	.124	3.213	.002*		.153	.646
	Irritable temp	.298	.123	2.417	.018*		.053	.543
	BDI	.179	.059	3.042	.003*		.062	.296
DOCS -TOTAL	Constant	12.429	2.737	4.541	.000*	.466a	6.996	17.861
	Cyclothymic temp	1.041	.285	3.655	.000*		.476	1.606
	BDI	.578	.120	4.814	.000*		.339	.816

$\beta$ : Regression Coefficient, SE: Standard Error, \*:  $p < 0.05$ , a: Adjusted R2 (used when there was more than one variable), CI: Confidence Interval, LL: Lower Limit, UL: Upper Limit

affective temperament in the OCD group was higher than in the control and healthy groups.

The higher presence of dominant temperament in the patient group than in the control group was presumable; since temperament characteristics play an active role in the cognition of the individual and in making sense of events (Katar et al. 2022). Additionally, when the dominant affective temperament distribution in the OCD group was analyzed, unlike studies showing that OCD is mainly accompanied by cyclothymic (D'ambrosio et al. 2010) or depressive temperament (Fistikci et al. 2013), it was found that OCD was accompanied primarily by anxious temperament in our sample.

Based on the results of our study, the fact that the severity of OCD, accompanying anxiety, and depression symptoms are higher in those with dominant affective temperament compared to those who do not have any might be associated with the fact that the affective temperament is a significant factor in the etiology of psychopathologies (D'ambrosio et al. 2012) and that it increases the severity of existing psychopathology in its presence.

In the OCD group, we investigated the correlations between affective temperaments and OCD symptom dimensions and severity, using partial correlation analysis adjusted for anxiety scores (BAI) and depression scores (BDI). After controlling for confounding effects of anxiety and depression, no correlation between DOCS

scores and depressive, hyperthymic, and anxious temperaments.

Partial correlation analyses demonstrated cyclothymic temperament was positively correlated to all OCD symptom dimensions except contamination; irritable temperament was positively correlated to the symmetry dimension. Both cyclothymic and irritable temperaments were positively correlated to the OCD severity. Regression analyses resulted similarly, except for irritable temperaments predictiveness for OCD severity.

The relationship between cyclothymic temperament and OCD has been a subject of interest thus far, and it has been repeatedly shown that cyclothymic temperament increases the severity of OCD (Hantouche & Demonfaucon 2008). Studies have demonstrated that cyclothymic temperament reduces the response to treatment of OCD (Hantouche & Demonfaucon 2008), exacerbates symptoms and increases aggressive, religious, and sexual obsessions, causes more psychiatric referrals (Hantouche et al. 2003), increases symmetry obsessions, and is accompanied by comorbid depression and anxiety symptoms more frequently (D'ambrosio et al. 2012). Likewise, in our study, OCD patients with cyclothymic temperament scored higher on the DOCS-CON, DOCS-RES, and DOCS-ORD dimensions and on the DOCS-TOTAL scale, which indicates the severity of the disease, suggests that the course of OCD would be more severe in the presence of cyclothymic temperament. Since DOCS considers not only obsessions and

compulsions but also avoidance, it is a significant result that our study repeated the previous findings.

Considering the serotonin dysfunction in obsessive-compulsive disorder (Perani et al. 2008), the results of our study were predictable. After controlling the confounding effects of anxiety and depression, only cyclothymic and irritable temperaments were predictive for OCD symptom dimensions and severity. Irritable temperament makes individuals more impulsive and compulsive, and critical. The patients with OCD symmetry dimension are less tolerant to things that are not “just right” (Phan et al. 2015), and the relation between irritable temperament and OCD symmetry dimension is convincing.

In general terms, affective temperament characteristics are associated with OCD severity. The predictiveness of affective temperament in symptom dimensions suggests the effect of temperament on OCD heterogeneity.

Any of the affective temperaments does not predict the revelation of the DOCS-CON dimension is one of the noteworthy results of our study. Studies on the contamination dimension have underscored the significance of classical conditioning in this dimension (Armstrong & Olatunji 2017). The acquisitive nature of contagion obsessions and the fact that they were found to be unrelated to temperament in our study support each other.

Studies investigating the relationship between obsessive-compulsive disorder and temperament have been conducted; however, studies on OCD symptom dimensions are limited. No study in the literature scrutinizes the relationship between OCD symptom dimensions and affective temperament. It is expected that identifying the relationship between affective temperament and symptom dimensions, and disease severity would contribute to the diagnosis and treatment process of OCD. This study suggests that incredibly irritable and cyclothymic temperaments contribute to symptom heterogeneity and severity of OCD.

## References

1. Abramowitz JS, Deacon BJ, Olatunji BO, Wheaton MG, Berman NC, Losardo D et al. Assessment of obsessive-compulsive symptom dimensions: development and evaluation of the Dimensional Obsessive-Compulsive Scale. *Psychol Assess* 2010; 22:180-98.
2. Abramowitz JS, Huppert JD, Cohen AB, Tolin DF & Cahill SP. Religious obsessions and compulsions in a non-clinical sample: The Penn Inventory of Scrupulosity (PIOS). *Behav Res Ther* 2002; 40:825-38.
3. Akiskal HS. Dysthymia and cyclothymia in psychiatric practice a century after Kraepelin. *J Affect Disord* 2001; 62:17-31.

## LIMITATION

The study’s cross-sectional nature, self-reported scales, and the significant education level difference between the groups are some of the limitations of the present study. And not considering the patients’ pharmacotherapy, psychotherapy, and hospitalization status is another study limitation.

## CONCLUSION

This is the first study to investigate the relationship between affective temperament characteristics and OCD symptom dimensions. Ultimately, in this study, we found out that cyclothymic temperament predicted the OCD dimensions of “being responsible for harm, injury, and bad luck”, “unacceptable thoughts” and “symmetry, completeness, and the need for things to be just right”; and irritable temperament predicted the dimension “symmetry, completeness, and the need for things to be just right”. Consistent with the data in the literature, in the presence of both cyclothymic and irritable temperaments, OCD symptom severity increases. Further studies should try to replicate our study’s findings in other locations and cultures for the generalizability of these findings. Moreover, future studies should investigate the effects of affective temperament characteristics on OCD treatment outcomes.

**Ethical Considerations:** Does this study include human subjects? NO

**Conflict of interest:** No conflict of interest

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4. Akiskal HS, Akiskal KK, Haykal RF, Manning JS & Connor PD. TEMPS-A: progress towards validation of a self-rated clinical version of the Temperament Evaluation of the Memphis, Pisa, Paris, and San Diego Autoquestionnaire. *J Affect Disord* 2005; 85:3-16.
5. Armstrong T & Olatunji BO. Pavlovian disgust conditioning as a model for contamination-based OCD: Evidence from an analogue study. *Behav Res Ther* 2017; 93:78-87.
6. Beck AT, Epstein N, Brown G & Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol* 1988; 56:893-97.
7. Beck AT, Ward CH, Mendelson M, Mock J & Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961; 4:561-71.
8. Benito K & Storch EA. Assessment of obsessive-compulsive disorder: review and future directions. *Expert Rev Neurother* 2011; 11:287-98.
9. D'ambrosio V, Albert U, Bogetto F & Maina G. Obsessive-compulsive disorder and cyclothymic temperament: an exploration of clinical features. *J Affect Disord* 2010; 127:295-99.
10. D'ambrosio V, Albert U, Domene Boccolini F, Mirra M, Bogetto F & Maina G. Cyclothymic temperament in obsessive-compulsive disorder's patients. *Minerva Psichiatr* 2012; 53:91-100.
11. Fistikci N, Hacıoğlu M, Şakire E, Abdülkadir T, Erten E, Güler AS et al. Differences in affective temperaments in anxiety disorders: comparison of panic disorder and obsessive compulsive disorder. *Noro Psikiyatr Ars* 2013; 50:337-43.
12. Foa EB, Kozak MJ, Salkovskis PM, Coles ME & Amir N. The validation of a new obsessive-compulsive disorder scale: The Obsessive-Compulsive Inventory. *Psychol Assess* 1998; 10:206-14.
13. Fullana MA, Vilagut G, Rojas-Farreras S, Mataix-Cols D, De Graaf R, Demyttenaere K et al. Obsessive-compulsive symptom dimensions in the general population: Results from an epidemiological study in six European countries. *J Affect Disord* 2010; 124:291-99.
14. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL et al. The Yale-Brown obsessive compulsive scale: I. Development, use, and reliability. *Arch Gen Psychiatry* 1989; 46:1006-11.
15. Grabill K, Merlo L, Duke D, Harford K-L, Keeley ML, Gefken GR et al. Assessment of obsessive-compulsive disorder: a review. *J Anxiety Disord* 2008; 22:1-17.
16. Gururaj G, Math SB, Reddy J & Chandrashekar C. Family burden, quality of life and disability in obsessive compulsive disorder: An Indian perspective. *J Postgrad Med* 2008; 54:91-97.
17. Hantouche E, Angst J, Demonfaucon C, Perugi G, Lancrenon S & Akiskal HS. Cyclothymic OCD: a distinct form? *J Affect Disord* 2003; 75:1-10.
18. Hantouche E & Demonfaucon C. Resistant obsessive compulsive disorder (ROC): clinical picture, predictive factors and influence of affective temperaments. *Encephale* 2008; 34:611-17.
19. Hisli N. Validity and accuracy of Beck depression inventory among university students. *Turk. J. Psychol.* 1989; 7:3-13.
20. Hopkins KD & Weeks DL. Tests for normality and measures of skewness and kurtosis: Their place in research reporting. *Educ Psychol Meas* 1990; 50:717-29.
21. Katar KS, Gündoğmuş AG & Örsel S. Investigation of the relationship between personality beliefs and dimensional personality traits according to DSM-5. *J Cogn Behav Psychother Res* 2022; 11:136-46.
22. Kraepelin E: *Manic-depressive insanity and paranoia*. E. & S. Livingstone, 1921.
23. Perani D, Garibotto V, Gorini A, Moresco RM, Henin M, Panzacchi A et al. In vivo PET study of 5HT2A serotonin and D2 dopamine dysfunction in drug-naive obsessive-compulsive disorder. *Neuroimage* 2008; 42:306-14.
24. Perugi G, Akiskal HS, Pfanner C, Presta S, Gemignani A, Milanfranchi A et al. The clinical impact of bipolar and unipolar affective comorbidity on obsessive-compulsive disorder. *J Affect Disord* 1997; 46:15-23.
25. Perugi G, Akiskal HS, Ramacciotti S, Nassini S, Toni C, Milanfranchi A et al. Depressive comorbidity of panic, social phobic, and obsessive-compulsive disorders re-examined: is there a bipolar II connection? *J Psychiatr Res* 1999; 33:53-61.
26. Phan TD, Kostek NT & Coffey BJ. The Impact of Psychosocial Stressors on Treatment of a Teenage Girl with Obsessive Compulsive Disorder, Trichotillomania, and Anxiety. *J Child Adolesc Psychopharmacol* 2015; 25:722-25.
27. Rihmer Z, Akiskal KK, Rihmer A & Akiskal HS. Current research on affective temperaments. *Curr Opin Psychiatry* 2010; 23:12-18.
28. Ruscio AM, Stein DJ, Chiu WT & Kessler RC. The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. *Mol Psychiatry* 2010; 15:53-63.
29. Sahin B, Safak Y & Özdel K. The relationship between symptom dimensions and cognitive features in obsessive compulsive disorder. *Curr Psychol* 2022:1-13.
30. Sanavio E. Obsessions and compulsions: the Padua Inventory. *Behav Res Ther* 1988; 26:169-77.
31. Sternberger LG & Burns GL. Compulsive Activity Checklist and the Maudsley Obsessional-Compulsive Inventory: Psychometric properties of two measures of obsessive-compulsive disorder. *Behav Ther* 1990; 21:117-27.
32. Şafak Y, Say D, Özdel K, Kuru E & Örsel S. Dimensional approach to obsessive-compulsive disorder: Dimensional obsessive-compulsive scale with Turkish Psychometric properties. *Turkish J Psychiatry* 2018; 10:u18281.
33. Ulusoy M, Sahin NH & Erkmen H. Turkish version of the Beck Anxiety Inventory: psychometric properties. *J Cogn Psychother* 1998; 12:163.
34. Vahip S, Kesebir S, Alkan M, Yazıcı O, Akiskal KK & Akiskal HS. Affective temperaments in clinically-well subjects in Turkey: initial psychometric data on the TEMPS-A. *J Affect Disord* 2005; 85:113-25.
35. Widiger TA & Smith GT. *Personality and psychopathology*. 2008.

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