

Dimensional Approach to Obsessive-Compulsive Disorder: Dimensional Obsessive-Compulsive Scale with Turkish Psychometric Properties



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SUMMARY

Objective: The Dimensional Obsessive Compulsive Scale (DOCS) is a measurement tool that examines the severity of thematically distinct symptom domains of obsessive compulsive disorder (OCD). In this study we assess psychometric properties of the Turkish version of DOCS.

Methods: Ninety-six patients who presented consecutively to the Dışkapı Yıldırım Beyazıt Teaching and Research Hospital outpatient unit and who were diagnosed with OCD according to the DSM-IV-TR criteria were enrolled in the study. The DOCS, Yale-Brown Obsessive Compulsive Scale (YBOCS), and Padua Inventory (PI) were completed by the participants. Internal consistency was estimated using Cronbach's Alpha values and item-total correlations. Principal component analyses with Varimax rotation were used to assess latent factor structure .

Results: Explanatory Factor Analyses (EFA) revealed a 4-factor solution for the DOCS. Chronbach's alpha values for the whole scale, "contamination" sub-scale, "responsibility" sub-scale, "unacceptable thoughts", and "symmetry" sub-scales were 0.874, 0.932, 0.933, 0.948, 0.921, respectively. There was a high correlation between both total scores and sub-scales scores of DOCS, YBOCS and PI.

Conclusions: Internal consistencies were good for the total scale and excellent for the sub-scales. The factor structure and the contents of the factors were perfectly in line with the original scale (i.e. 4 factor). Positive correlations between DOCS, its sub-scales, and similar OCD scales suggest that the DOCS accurately measures the structures it claims to assess. Thus the DOCS Turkish version can measure dimensional obsessive compulsive symptoms among the Turkish speaking OCD population.

Keywords: Obsession, compulsion, obsessive compulsive disorder, validity, reliability

OBJECTIVE

Persistent, unwanted, and sometimes improper thoughts, ideas, images, and impulses that lead to anxiety and / or distress are known as obsessions (American Psychiatric Association-APA 2013). Compulsions are recognised as repetitive behaviours or mental actions (APA 2013), which are perceived as necessary actions in response to obsessions or strict rules that must be followed. The clinical appearance

of obsessions and compulsions may vary from patient to patient. Common obsessions include: dirtiness-contamination, harm, unwanted thoughts, sexual intrusions, and the need for certainty. Common compulsions are behaviours designed to provide certainty, such as wash rituals, control, repetitive behaviours, mental rituals, symmetry, and arrangement (APA 2013). OCD symptoms are heterogeneous (McKay et al.,

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2004, Abramowitz et al., 2010) due to the many different clinical manifestations of obsessions and compulsions.

OCD inventories have been developed to evaluate signs and symptoms of OCD such as Obsessive-Compulsive Inventory-Revised (DOCS-R; Foa et al., 2002), Yale-Brown Obsessions and Compulsion Scale (Y-BOCS, Goodman et al., 1989), Padua Inventory (PI; Sanavio 1988). The Y-BOCS is designed primarily as a measure of obsessions and the severity of compulsions. Severity is assessed for the whole disorder based on the content of the statements in the Y-BOCS, and based on patient reports of violence and hardship. The same scale is used for the classification of obsessions and compulsions (Goodman et al., 1989). The re-evaluated Obsessive-Compulsive Inventory is used for the measurement of specific types of obsessive-compulsive symptoms (Foa et al., 2002). Scales that measure symptom types, such as the Padua inventory, are primarily aimed at detecting obsessions or compulsions that are common in patients. When examining the factor structures of these scales, it is possible to measure symptom categories, although these scales measure the symptom category indirectly. Although measures of symptom severity are the gold standard scales for global clinical assessment (eg, YBOCS), they do not measure the category. Moreover, these scales often evaluate obsessions separately from compulsions (Amir et al., 1997, Deacon and Abramowitz 2005, McKay et al., 1998). In fact, the Clark-Beck Obsessive-Compulsive Scale (CBOCS) was developed by Clark et al. (2005) to assess the severity of obsessive-compulsive symptoms and translated to Turkish by Beşiroğlu et al. (2007). This scale meets the important needs and does not provide a detailed assessment that includes the avoidance factor. OCD patients may sometimes exhibit avoidance behaviours instead of compulsions, and this may cause the severity of the symptoms to be overlooked or underestimated (Abramowitz et al., 2010). Finally, current scales measure hoarding behaviour and are inconsistent with the current structural framework of OCD since the DSM-5 hoarding disorder is treated as a distinct disorder from OCD. These scales may overestimate hoarding behaviour in patients with OCD symptoms (Rachman et al., 2009, Abramowitz et al., 2010).

Structural analysis shows that OCD cannot be divided into obsessions and compulsions, although obsessions and compulsions can be divided into various dimensions that are characterised together (Amir et al., 1997, Deacon and Abramowitz 2005, McKay et al.). There are 4 thematically clustered symptom dimensions related to obsessions and compulsions: 1) contamination and cleansing, 2) responsibility, harm, and control, 3) symmetry, sorting and arrangement, and 4) unwanted thoughts (Deacon and Abramowitz 2005, Abramowitz et al., 2010). These dimensions are based on factor analysis of the YBOCS-symptom check list and

similar scales (Deacon and Abramowitz 2005, Abramowitz et al., 2010).

The cognitive model for heterogeneity of obsessive-compulsive disorder suggests that the underlying cognitive elements are more determinative than the diversity of the symptoms (Shafran 2005). There are different cognitive models to explain the role of these cognitive elements (beliefs and hypothesis types). However, in all the models the main determinant is action in contrast to the belief system (Clark 2004, Rachman 1997, 1998, Salkovskis 1985, Salkovskis et al 1998). The cognitive model suggests that the experience of these thoughts and the evaluation and interpretation of the content within a range of non-functional beliefs (e.g., exaggerated sense of responsibility, exaggerated threat anticipation, thought-action integration, etc.) increase anxiety. The individual exhibits compulsive behaviours (such as compulsive rituals, avoidance behaviours) to reduce the severity of negative emotions, primarily anxiety (Clark 2004). In the cognitive theory of OCD specific symptoms tend to be associated with specific types of beliefs (Tolin et al., 2006). Most studies use the Obsessive Compulsive Cognitions Working Group (OCCWG) to assess the association of symptoms with specific beliefs in the cognitive model. Prior studies on the relationship between beliefs and symptoms are based on the measurement of specific types of obsessive compulsive symptoms (Tolin et al., 2008, Tolin et al., 2003, Wu and Carter 2008, Emmelkamp and Aardema 1999, Anholt et al 2004, 2006, Baptista et al., 2011, Belloch et al., 2010). However, a scale aimed at directly measuring symptom categories or symptom scenarios related to obsessions will increase the quality of the data in these studies.

Pathophysiological changes in the orbitofrontal region have been investigated in neurobiological studies on the heterogeneity of OCD, (Menzies et al., 2008). The most interesting insight from these studies is the multidimensional model (Mataix-Cols et al., 2005). Some neuroimaging studies have examined the direct link between OCD symptom dimensions and brain structural and functional indices (Mataix-Cols et al., 2005, Gilbert et al., 2008). Pujol et al. (2004) and van den Heuvel et al. (2009) reported significant associations between aggression / control symptoms and temporolimbic volume reductions, the severity of contamination / cleansing symptoms, and the severity of dorsal caudate nucleus and incompleteness / sequencing symptoms, and a reduction in the sensorimotor cortex volume. However, some studies suggest that pathophysiological changes in orbitofrontal-striatal regions may be common in all OCD patients (Harrison et al., 2013). For this reason, a more detailed examination of some dimensional relationships may be necessary to explain the present neurobiological models of the disorder. Given the complexity of existing models, a new scale is needed to properly evaluate OCD. The severity of OCD symptom dimensions can be determined by excluding the scale accumulation

behaviour with additional evaluation of symptom severity by many supporting parameter (Steketee 2011) directly related to functional deterioration; The severity of symptoms can be assessed independently of the type and number of obsessions and compulsions.

The Dimensional Obsessional Compulsion Scale (DOCS) is a 20-item self-report scale developed by Abramowitz et al. (2010). The scale evaluates four distinct obsessive-compulsive symptom categories, each of which contains general definitions and examples including evasive behaviour measures and the severity of each symptom dimension. Thus, the scale provides a link between obsessive, compulsive, and avoidance behaviours in each symptom dimension, and measures the severity of symptoms independently of the type of obsessions and compulsions present. The most consistent OCD symptoms identified in structural analysis included 1) contamination, 2) responsibility for harm or mistakes, 3) incompleteness, 4) unacceptable thoughts. Rather than listing the specific indications contained in each dimension, a number of typical thought examples, rituals, and compulsions are presented for each dimension. Within each symptom dimension, there are 5 items (to be answered with regard to the prior 30 days) that measure severity according to various parameters. These items are a) time spent with the symptoms, b) avoidance behaviour, c) experiencing distress, d) impairment/deterioration in functionality, e) difficulty in coping with the symptoms.

According to Abramowitz and colleagues, unlike the symptom-based scales that assess symptom severity as a single marker or the scales that do not assess the functional relationship of symptoms (Y-BOCS), the structure of the DOCS brings many benefits (Abramowitz et al., 2010). Symptom severity measurement with DOCS is less dependent on the frequency or type of specific symptoms and makes a general measure of that category of symptoms when measuring certain indicators in each category (Abramowitz et al., 2010). DOCS is highly effective in assessment of avoidance level, measurement of obsession-related anxiety level, assessment of general functioning, and evaluation of resistance to compulsive behaviours with emphasis on obsessions (Abramowitz et al. 2010). Another important finding is that there is a strong relationship between the symptom dimensions suggested by the dimensional model and the beliefs suggested by the cognitive model. Assessment of the association between dimensional obsessive compulsive scale scores and obsessive beliefs has revealed unique relationships (Abramowitz et al. 2010, Viar et al 2011, Fitch and Cougle 2013).

Abramowitz and colleagues assessed the psychometric properties of the DOCS in college students, OCD patients, and other patient populations with anxiety disorders (Abramowitz

et al., 2010). In these studies, a 4-factor structure was found to be valid. Consistency statistics were excellent for all scales and sub-scales (Abramowitz et al., 2010). The psychometric properties of the DOCS have been reported in Sweden (Enander et al., 2012), China (Wang et al., 2012), Korea (Kim et al., 2013), Spain (López-Solà et al., 2013), Iceland (Ólafsson et al.), Italy (Melli et al., 2015), and the validity of the scale was established in these countries.

DOCS provides a different perspective on evaluating obsessive-compulsive symptoms. Although the reliability and validity studies of the scale were conducted in different languages, there is no study has been done in our country. The present study addresses this shortcoming. In this study, we evaluated an adapted DOCS-Turkish for use in OCD patients and determined whether it can be used as a valid and reliable clinical tool in Turkish society.

METHODS

With permission from the original authors, we translated the Dimensional Obsessional Compulsion Scale into Turkish and to conduct this validity and reliability study. The scale was translated independently from English to Turkish by three specialist psychiatrists. Later, these experts came together and evaluated the suitability of the translations in both Turkish and English. After the evaluation, the most appropriate translation was determined on the basis of the opinions of the evaluators. The agreed upon translation text has been translated back into English by experts in mental health and illnesses and reassessed for coherence and accuracy.

The Ankara Dışkapı Yıldırım Beyazıt Education and Research Hospital Ethics Committee reviewed and approved the study design (Ethics Committee Decision No: 15.12.2014- 18/01). OCD patients participating in the study were evaluated by a Sociodemographic Information Form, DSM-IV Structured Clinical Interview (SCID-1), Yale-Brown Obsessional Compulsion Scale (Y-BOCS), Padua Inventory (PI), and Dimensional Obsessional Compulsion Scale (DOCS).

Sample

Ninety six in-patients presenting at the Ankara Dışkapı Yıldırım Beyazıt Teaching and Research Hospital who had been diagnosed with OCD and / or newly diagnosed according to the the diagnostic criteria of DSM-IV-TR (Text and Revision-APA 2000) between October 2014 and April 2015 were enrolled in the study. All study subjects provided informed written consent to participate in the research.

The criteria for inclusion in the study were as follows: age 18 - 65 years, diagnosis consistent with the DSM IV-TR OCD diagnostic criteria , written consent to participate in

the study, and willingness to participate in clinical interviews. Individuals with neurological disease or mental retardation, psychotic disorder, or bipolar disorder according to the DSM-IV-TR diagnostic criteria, or cognitive mental disorder (dementia, delirium), or illiteracy were excluded from the study,

Data Collection Tools

Sociodemographic Data Form: This is a detailed interview form created by our clinic which evaluates age, gender, marital status, occupation, education status of the patients.

Structured Clinical Interview for DSM-IV (SCID-I): A semi-structured clinical interview instrument administered by the interviewer to investigate the diagnosis of Axis I psychiatric disorders according to DSM-IV. The Turkish validity and reliability study of SCID-I was performed by Özkürkçügil et al. (Özkürkçügil et al., 1999).

Yale-Brown Obsessive Compulsive Scale (YBOCS): A semi-structured measure administered by an interviewer with psychopathology knowledge to measure the type and severity of obsessive-compulsive symptoms in OCD patients. The validity and reliability of the Turkish version of the scale developed by Goodman et al. (1989) was studied by Karamustafaloğlu et al. (1993). It consists of a total of 19 items, but only the first 10 items are used to measure symptom severity. In addition to this scale, there is the YBOKÖ Symptom Check list, which helps identify past and present symptoms. Obsessions and compulsions are scored separately with five items and each item is scored separately on a 4 point scale, and obsessional and compulsory subtotal scores and finally a total score on a 40 point scale is obtained from YBOCS scoring.

Padua Inventory (PI): PI consists of 60 questions. These questions were selected from 200 different symptoms identified by patients with OCD. Each item consists of five options. Each item is scored between 0-4 according to the response scheme. There are 5 options: Never = 0; Very few = 1; Multi = 2; Very High = 3 and High = 4. A score of “0” for each item of the test corresponds to the absence of any indication or disturbance, while a score of score “4” corresponds to an extreme level of dissatisfaction or disturbance. Van Oppen et al. (1992) demonstrated validity and reliability for the 41-item version. The adaptation of the inventory to Turkish was completed by Beşiroğlu et al. (2005).

Dimensional Obsessive Compulsive Scale (DOCS): The scale developed by Abramowitz et. al. (2010) contains four distinct obsessive compulsion symptom dimensions, each of which contains general definitions and examples. DOCS measures the severity of each symptom dimension, including avoidance behaviour. It consists of 4 dimensions with grades 0-4. The Turkish version of the DOCS was translated in this study. Internal reliability values of the scales used in the study were YBOC-S: 0.897 and; Padua inventory: 0.951 olacak.

Statistical Methods

The results obtained from the study were evaluated using the SPSS 21.0 Computer Statistical Package Program. Cronbach's alpha coefficient and item-total score correlation analysis were calculated to evaluate the reliability of the DOCS-Turkish form. Bartlett's sphericity test and the Kaiser-Meyer-Olkin (KMO) sample fit measure were used for factor analysis. Bartlett's sphericity test requires $p < 0.05$ for suitability. For factor analysis, Basic Component Analysis and Varimax rotation were used. In order to determine the validity of the items, the relationship between DOCS total and sub-scale scores and the total and sub-scale scores of other measurement instruments (Y-BOCS-PI) measuring the obsessive-compulsive indicators were evaluated by Pearson correlation. The level of significance in the analysis was set as $p < 0.05$

RESULTS

Demographic Data

The mean age of the patients participating in the study was 27.21 ± 8.06 years. Seventy-six (72.9%) of the participants were female and 61 (63.5%) were single. The mean duration of OCD in the study participants was 7.45 ± 7.27 years. Of the participants, 59 (61.5%) were still using a pharmacological treatment. The mean duration of treatment for these patients was 31.7 ± 27.6 months. Demographic and clinical characteristics of the patients participating in the study are shown in Table 1.

Factor Structure

The KMO and Barlett tests were conducted to determine whether the factor structure and reliability were in accordance with DOCS structure validation analysis. The KMO test result was 0.795 and the Barlett sphericity test was significant ($P < 0.01$). Four factors have been obtained as a result

Table 1. Demographic and Clinical Findings of Study subjects

Demographical Features		Number (N)	Percentage (%)	Mean + Standard deviation
Sex	Ladies	70	72.9	
	Gentlemen	26	27.1	
Marital Status	Married	35	36.5	
	Single	61	63.5	
Age (years)				27.21±8.06
Education duration (years)				10.45±3.57
Illness duration (years)				7.45±7.27
Treatment Status	Yes	59	61.5	
	No	27	39.5	
Treatment duration (months)				31.7±27.6

Table 2. Explanatory Factors Analysis Results

	Factors			
	1	2	3	4
Contamination –Time Spent	0.902			
Contamination - Avoidance	0.902			
Contamination - Distress	0.879			
Contamination - Impact / deterioration	0.849			
Contamination - Control	0.829			
Responsibility for Harm or Mistakes - Time Spent		0.918		
Responsibility for Harm or Mistakes – Avoidance		0.910		
Responsibility for Harm or Mistakes - Distress		0.881		
Responsibility for Harm or Mistakes - Impact / deterioration		0.829		
Responsibility for Harm or Mistakes - Control		0.772		
Unacceptable Thoughts - Time Spent			0.942	
Unacceptable Thoughts – Avoidance			0.929	
Unacceptable Thoughts - Distress			0.920	
Unacceptable Thoughts - Impact / deterioration			0.901	
Unacceptable Thoughts - Control			0.792	
Incompleteness - Time Spent				0.925
Incompleteness – Avoidance				0.885
Incompleteness - Distress				0.868
Incompleteness - Impact / deterioration				0.816
Incompleteness - Control				0.772

Extraction method: Basic Component Analysis
Rotation Method: Varimax rotation

of factor analysis of DOCS. The first factor explained 6.15% eigenvalue and 30.76% of the variance, the second factor revealed 4.81 eigenvalue and 24.04% variance, the third factor 2.69 eigenvalue and 13.47%, and the fourth factor 2.37 eigenvalue and 11.86% variance. The sum of the factor dimensions explains 80.13% of the total variance. Variables are

based on four factors and 5 factors are included in all factors. Values of 0.4 and below are not shown so that the low load values of the table are not confounding. According to this analysis, the minimum load value was 0.79 for the first factor, 0.83 for the second factor, 0.77 for the third factor, and 0.77 for the fourth factor. There were no cross-loaded items (Table 2). The factors are named with according to the original form of the scale,. According to this, factor 1 (items 1, 2, 3, 4 and 5) is termed “contamination”; Factor 2 (items 6, 7, 8, 9 and 10) “responsibility for harm or mistakes”; Factor 3 (items 11, 12, 13, 14 and 15) represents “unacceptable thoughts”; Factor 4 (items 16, 17, 18, 19, 20) is named “incompleteness”.

When the relation between sub-scales was examined, a moderate correlation was found among some factors (contamination-incompleteness, responsibility-unacceptable thoughts, responsibility-incompleteness) (Table 3).

Criterion Content Validity and Concurrent validity

In order to study the validity of the criterion, the correlation coefficients of the total all of the scale and four sub-scales of the Yale-Brown Obsessional Compulsion Scale (Y-BOCS) and Padua Inventory (PI) were examined (Table 4). It has been determined that the total score of the DOCS is highly correlated with all scales and sub-scales of PE. From the sub-scales, the ‘ DOCS - Contamination ‘ sub-scale was the most highly correlated with the Padua-subscale ($r = 0.744$). The highest level of ‘ DOCS – Responsibility for Harm or Mistakes ‘ sub-scale being was correlated with PI - obsessional thoughts about harm to oneself or others ($r = 0.502$) and PI - checking compulsions ($r = 0.543$). The ‘ DOCS – Unacceptable Thoughts ‘ sub-scale was the was correlated with the PI - obsessional impulses to harm oneself or others ($r = 0.285$). While the ‘ DOCS - Incompleteness ‘ sub-scale was associated with the highest level of correlated with PI - dressing/ grooming compulsions ($r = 0.519$) (Table 4).

Reliability Analysis

In order to study the reliability of the DOCS, the internal consistency of the scale and corrected item-total correlation levels were examined. Cronbach’s alpha coefficients were 0.87

Table 3. Correlation between Factors

Factors	DOCS - Contamination	DOCS – Responsibility for Harm or Mistakes	DOCS – Unacceptable Thoughts	DOCS - Incompleteness
DOCS - Contamination				
DOCS – Responsibility for Harm or Mistakes	0.198			
DOCS – Unacceptable Thoughts	-0.120	0.286**		
DOCS - Incompleteness	0.271**	0.306**	0.051	

Pearson’s Correlation **p<0.01
DOCS: Dimensional Obsessive Compulsive Scale

Table 4. Correlation between DOCS, PI and Y-BOCS

	DOCS - Total	DOCS - Contamination	DOCS – Responsibility for Harm or Mistakes	DOCS – Unacceptable Thoughts	DOCS - Incompleteness	PI - Total	PI - obsessive thoughts about harm to oneself or others	PI - contamination obsessions and washing compulsions	PI - obsessive impulses to harm oneself or others	PI - checking compulsions	PI - dressing/ grooming compulsions	Y-BOCS Total	Y-BOCS Obsession	Y-BOCS Compulsion
DOCS - Total														
DOCS - Contamination	0.546**													
DOCS – Responsibility for Harm or Mistakes	0.727**	0.198												
DOCS – Unacceptable Thoughts	0.532**	-0.120	0.286**											
DOCS - Incompleteness	0.638**	0.271**	0.306**	0.051										
PI - Total	0.615**	0.448**	0.454**	0.133	0.484**									
PI - obsessive thoughts about harm to oneself or others	0.500**	0.131	0.502**	0.219*	0.361**	0.825**								
PI - contamination obsessions and washing compulsions	0.450**	0.744**	0.155	-0.071	0.262*	0.710**	0.355**							
PI - obsessive impulses to harm oneself or others	0.386**	0.075	0.258*	0.285**	0.313**	0.759**	0.612**	0.270*						
PI - checking compulsions	0.521**	0.266*	0.543**	0.035	0.437**	0.835**	0.680**	0.428**	0.572**					
PI - dressing/ grooming compulsions	0.534**	0.396**	0.279*	0.122	0.519**	0.805**	0.574**	0.526**	0.633**	0.573**				
Y-BOCS Total	0.619**	0.369**	0.396**	0.314**	0.437**	0.508**	0.530**	0.262*	0.407**	0.378**	0.383**			
Y-BOCS Obsession	0.580**	0.280**	0.369**	0.402**	0.354**	0.493**	0.565**	0.172	0.443**	0.392**	0.356**	0.921**		
Y-BOCS Compulsion	0.575**	0.398**	0.370**	0.198	0.454**	0.468**	0.443**	0.316**	0.334**	0.325**	0.365**	0.942**	0.736**	

Pearson's Correlation is *p<0.05, **p<0.01

Y-BOCS: Yale–Brown Obsessive Compulsive Scale, DOCS: Dimensional Obsessive-Compulsive Scale, PI: Padua Inventory

Table 5. Total Correlations for Adjusted Items and Cronbach Alpha after Deletion of Items

Item	Total Correlations for Adjusted Items	Cronbach Alpha After Deletion of Items
Contamination – Time spent	0.354	0.870
Contamination - Avoidance	0.320	0.871
Contamination - Distress	0.479	0.866
Contamination - Impact / deterioration	0.408	0.868
Contamination - Control	0.461	0.866
Responsibility for Harm or Mistakes - Time spent	0.539	0.864
Responsibility for Harm or Mistakes - Avoidance	0.538	0.864
Responsibility for Harm or Mistakes - Distress	0.624	0.860
Responsibility for Harm or Mistakes - Impact / deterioration	0.667	0.860
Responsibility for Harm or Mistakes - Control	0.579	0.862
Unacceptable Thoughts - Time spent	0.347	0.870
Unacceptable Thoughts - Avoidance	0.439	0.867
Unacceptable Thoughts - Distress	0.339	0.871
Unacceptable Thoughts - Impact / deterioration	0.502	0.865
Unacceptable Thoughts - Control	0.411	0.868
Incompleteness - Time spent	0.446	0.867
Incompleteness - Avoidance	0.464	0.866
Incompleteness - Distress	0.491	0.865
Incompleteness - Impact / deterioration	0.533	0.864
Incompleteness -Control	0.528	0.864

for the complete all of the scale; 0.93 for factor 1 sub-scale; 0.93 for the factor 2 sub-dimension.; Factor 3 was 0.95 for the sub-dimension and 0.92 for the factor 4 sub-dimension. In addition, corrected substance correlation coefficients for each substance were calculated. The Cronbach alpha coefficient calculated in the case of deletion of the materials with respect to the total scores of the items did not differ significantly from the Cronbach's alpha coefficient before deletion (Table 5).

DISCUSSION

The aim of this study is to evaluate the psychometric properties of the Turkish version of the DOCS. The original scale was developed by Abramowitz et al. (2010) and translated into Swedish (Enander et al., 2012), Chinese (Wang et al., 2012), Korean (Kim et al., 2013), Spanish (López-Solà et al.) and Italian (Melli et al., 2015). In conclusion, this Turkish version of the Dimensional Obsessional Compulsion Scale was found to be valid and reliable in Turkish society.

Explanatory Factor Analysis was used to evaluate the factor structure of the original scale and the validity of the material distribution for the Turkish sample. Internal consistency was found to be excellent for the total and sub-scale scores of

the DOCS your scale. Factor analysis supports the four-factor structure of the DOCS as expected on the original scale. These factors are: 'contamination' as factor 1 (items 1, 2, 3, 4 and 5), as in the original measure, factor 2 (items 6, 7, 8, 9 and 10) as 'responsibility for harm or mistakes', factor 3 (items 11, 12, 13, 14 and 15) as 'unacceptable thoughts', and factor 4 (items 16, 17, 18, 19, 20) as 'incompleteness'. In terms of factors, the lowest load value was 0.79 for the first factor, 0.83 for the second factor, 0.77 for the third factor and 0.77 for the fourth factor. There are no cross-loaded items. The factor structure for this scale and its content are statistically sound for the Turkish version as well. When we compare the factor loadings of our study with that of the original study, it is seen that all the sub-scale items in the original study are clustered under the same factor in our study. This similarity can be explained by the fact that the study was conducted in a sample consisting of clinically different types of OCD patients, and the patients were able to understand the measurement expressions.

When the sub-scale correlation levels were examined, low-to-moderate correlation was found among some factors (contamination-incompleteness, responsibility-unacceptable thoughts, responsibility-incompleteness). The significance of the correlation levels between some sub-scales may be due to the fact that some patients may exhibit have more than one symptom group together at the same time. The fact that there is no significant correlation between all factors between sub-scales and that the level of correlation found is low, supports the conclusion that the sub-scales are independent subscales. These findings show that both the total score and the scores calculated on each dimension can be used to demonstrate the severity of the OCD indications. The Cronbach's alpha coefficients calculated for the reliability study of the scale are excellent good for all scale the total scale and all sub-scales, and these values are similar to those calculated for the original scale (Abramowitz et al., 2010).

Relevance coefficients of all of the scale the total scale and four sub-scales of the Yale-Brown Obsessional Compulsion Scale (Y-BOCS) and the Padua Inventory (PI) were examined to study of concurrent validity. According to this analysis, it was determined that DOCS total score is highly correlated with all scales and sub-scales. The 'contamination' subscale of the subscales was highest with the PI - contamination obsessions and washing compulsions; The 'responsibility' subscale is at the highest level with the PI - obsessional thoughts about harm to oneself or others and PI - checking compulsions subscales; The 'unacceptable thoughts' subscale is at the highest level with the PI - obsessional impulses to harm oneself or others subscale; While the 'incompleteness' subscale was found at the highest level with the PI - dressing/grooming compulsions subscale. All of the sub-scales had comparable correlations with both Y-BOCS-obsessions and Y-BOCS-compulsions.

In previous studies on the specific relationships between obsessive beliefs and OCD symptoms, different scales are used in measuring the highly heterogeneous symptoms of this disorder. In this regard, the DOCS is a new measure of the extent of OCD symptom size independent of obsessive-compulsive symptom types. In studies conducted on the cognitive model of OCD, it is predicted that the relationship between obsessive beliefs and symptoms can be best assessed by dimensional evaluation (Abramowitz et al., 2010). A recent study using this scale revealed that some obsessive beliefs predict some OCD symptom dimensions consistent with the cognitive behavioural model (Wheaton et al., 2011). In particular, contamination symptoms are associated with beliefs of responsibility / threat, and the beliefs of symmetry symptoms with perfectionism / certainty beliefs, unacceptable beliefs with respect to feelings / threats, and the perception that the individual is responsible for harm. Translating this scale into Turkish will also be useful for research on OCD dimensions and obsessive beliefs in Turkey.

Considering the recent neurobiological studies of OCD heterogeneity using the dimensional model, we believe that dimensional obsessions and compaction scales may become useful when additional clinical data are available.

This study has four major limitations. First, since this was the first time the DOCS scale has been applied in the Turkish population, descriptive factor analysis was performed. However, confirmatory factor analysis using structural equality models could be useful in larger samples. An ideal analysis would use both explanatory and confirmatory factor analysis in the adaptation of a language to the scale. However, explanatory factor analysis has been used both in terms of the small number of samples and in the understanding of the natural factor structure in Turkish. Another limitation was that data were collected from only the clinical group that received an OCD diagnosis, and all analyses were made using this clinical sampling group. However, in adaptation studies it is important to examine the criterion validity that assesses the extent to which the adaptive scale distinguishes the group that received an OCD diagnosis from other diagnostic groups and healthy / normal sample groups without any psychiatric diagnosis. In this study, it would be useful to compare discriminant validity with other groups of non-OCD psychiatric disorders. Therefore, the results of our study should be carefully evaluated in terms of specificity for obsessive compulsive disorder. An additional limitation is the relatively small sample size, which is acceptable for a sample consisting entirely of clinical occurrences. Finally, another limitation is that test-retest reliability has not been established. This information should be taken into account when using a structure that does not prevent temporal stability. In conclusion, we have determined that the DOCS-Turkish demonstrates a factor structure similar to that of the original and is valid and reliable for use in Turkish society.

REFERENCES

- Abramowitz JS, Deacon BJ, Olatunji BO et al (2010) Assessment of obsessive-compulsive symptom dimensions: Development and evaluation of the dimensional obsessive-compulsive scale. *Psychol Assessment*, 22:180-98.
- American Psychiatric Association (2013) DSM 5-Diagnostic and statistical manual of mental disorders, 5th Ed. American Psychiatric Association, Arlington.
- Anholt GE, Cath DC, Emmelkamp PMG et al (2006) Do obsessional beliefs discriminate OCD without tic patients from OCD with tic and Tourette's syndrome patients? *Behav Res Ther* 44:1537-43.
- Anholt GE, Emmelkamp PMG, Cath DC et al (2004) Do patients with OCD and pathological gambling have similar dysfunctional cognitions? *Behav Res Ther* 42:529-37.
- Baptista MN, Magna LA, McKay D et al (2011) Assessment of obsessive beliefs: Comparing individuals with obsessive-compulsive disorder to a medical sample. *J Behav Ther Exp Psy* 42:1-5.
- Belloch A, Morillo C, Luciano JV et al (2010) Dysfunctional belief domains related to obsessive-compulsive disorder: A further examination of their dimensionality and specificity. *The Spanish J Psychol* 13: 376-88.
- Besiroglu L, Yucel MY, Boysan M et al (2007) The psychometric properties of the ClarkeBeck obsessive-compulsive inventory in a Turkish population. *Anatolian Journal of Psychiatry* 8:197-205.
- Beşiroğlu L, Ağarün MY, Boysan M et al (2005) Obsesif-Kompulsif Belirtilerin Değerlendirilmesi: Padua Envanteri'nin Türk Toplumunda Geçerlik ve Güvenilirliği. *Türk Psikiyatri Derg* 16:179-89.
- Clark DA (2004) *Cognitive-behavioral therapy for OCD*. New York, NY. Guilford Press.
- Deacon BJ, Abramowitz JS (2004) Cognitive and behavioral treatments for anxiety disorders: A review of meta-analytic findings. *J Clin Psychol* 60:429-41
- Emmelkamp PMG, Aardema A (1999) Metacognition, specific obsessive-compulsive beliefs and obsessive-compulsive behaviour. *Clin Psychol Psychot* 6:139-45.
- Enander J, Andersson E, Kalso V et al (2012) Internet administration of the dimensional obsessive-compulsive scale: a psychometric evaluation. *J Obsessive-Compulsive and Related Disorders* 1:325-30.
- First MB, Gibbon M, Spitzer RL et al (1996) User's guide for the Structured Clinical Interview for DSM-IV Axis I disorders- Research Version (SCID-I, version 2.0, February 1996 final version). New York, NY: Biometrics Research Department, Psychiatric Institute.
- First MB, Williams JB, Carl R, Spitzer RL (2015) *Structured Clinical Interview for the DSM-5 Disorders*. New York, NY: Biometrics Research Department, New York State Psychiatric Institute.
- Fitch KE, Cogle JR (2013) An evaluation of obsessive beliefs as predictors of performance on in vivo assessments of obsessive-compulsive symptoms. *Cog Ther Res* 37: 207-20.
- Foa EB, Huppert JD, Leiberg S et al (2002) Obsessive-compulsive inventory: development of a short version. *Psychol Assessment* 14:485-96.
- Gilbert AR, Mataix-Cols D, Almeida JR et al (2008) Brain structure and symptom dimension relationships in obsessive-compulsive disorder: A voxel-based morphometry study. *J Affect Disord* 109:117-26.
- Goodman WK, Price LH, Rasmussen SA et al (1989) The Yale-Brown Obsessive-Compulsive Scale: Development, use, reliability, and validity. *Arch of Gen Psychiat* 46:1006-16.
- Harrison BJ, Pujol J, Cardoner N et al (2013) Brain corticostriatal systems and the major clinical symptom dimensions of obsessive-compulsive disorder. *Biol Psychiatry* 73: 321-8.
- Karamustafaloğlu KO, Üçışık AM, Ulusoy M (1993) Yale-Brown obsesyon kompulsiyon derecelendirme ölçeği'nin geçerlilik ve güvenilirlik çalışması. *Bursa Savaş Ofset*, p. 86.
- Kim HW, Kang JI, Kim SJ et al (2013) A Validation Study of the Korean-Version of the Dimensional Obsessive-Compulsive Scale. *J Korean Neuropsychiatr Assoc* 52:130-42.
- López-Solà C, Gutiérrez F, Alonso P et al (2013) Spanish version of the dimensional obsessive-compulsive scale (docs): psychometric properties and relation to obsessive beliefs. *Comprehensive Psychiatry* 55:206-14.
- Mataix-Cols D, Rosario-Campos MC, Leckman JF (2005) A multidimensional model of obsessive-compulsive disorder. *Am J Psychiatry* 162:228-38.
- McKay D, Abramowitz JS, Calamari JE et al (2004) A critical evaluation of obsessive-compulsive disorder subtypes: Symptoms versus mechanisms. *Clin Psychol Rev* 24:283-313.
- Melli G, Chiorri C, Bulli F et al (2015) Factor Congruence and Psychometric Properties of the Italian Version of the Dimensional Obsessive-Compulsive Scale (DOCS) Across Non-Clinical and Clinical Samples. *J Psychopathol Behav Assess* 37:329-39.
- Menzies L, Chamberlain SR, Laird AR, et al (2008) Integrating evidence from neuroimaging and neuropsychological studies of obsessive-compulsive disorder: The orbitofronto-striatal model revisited. *Neurosci Biobehav Rev* 32:525-49.
- Obsessive Compulsive Cognitions Working Group (2001) Development and initial validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory. *Behav Res Ther* 39:987-1006.
- Ólafsson RP, Arngrímsson JB, Árnason P et al (2013) The Icelandic version of the dimensional obsessive compulsive Scale (DOCS) and its relationship with obsessive beliefs. *J Obsessive-Compulsive and Related Disorders* 2:149-56.
- Özkürkçügil A, Aydemir Ö, Yıldız M (1999) DSM-IV Eksen I Bozuklukları için Yapılandırılmış Klinik Görüşmenin Türkçe'ye uyarlanması ve güvenilirlik çalışması. *İlaç ve Tedavi Derg* 12:233-6.
- Pujol J, Soriano-Mas C, Alonso P et al (2004): Mapping structural brain alterations in obsessive compulsive disorder. *Arch Gen Psychiatry* 61:720-30.
- Rachman S (1997) A cognitive theory of obsessions. *Behav Res Ther* 35:793-802.
- Rachman S (1998) A cognitive theory of obsessions: elaborations. *Behav Res Ther* 36:385-401.
- Rachman S, Elliot CM, Shafran R et al (2009) Separating hoarding from OCD. *Behav Res Ther* 47:520-2.
- Salkovskis PM (1985) Obsessional-compulsive problems: A cognitive-behavioral analysis. *Behav Res Ther* 23:571-83.
- Salkovskis PM, Forrester E, Richards C (1998) Cognitive-behavioral approach to understanding obsessional thinking. *Brit J Psychiat* 173:53-63.
- Sanavio E (1988) Obsessions and compulsions: The Padua Inventory. *Behav Res Ther* 26:169-77.
- Shafran R (2005) Cognitive-behavioral models of OCD. In: JS Abramowitz, AC Houts (Eds.), *Concepts and controversies in obsessive-compulsive disorder*, New York. Springer, p 229-52.
- Steketee, G. (Ed.). (2011). *The Oxford Handbook of Obsessive Compulsive and Spectrum Disorders*. Oxford University Press p 260.
- Tolin DF, Brady RE, Hannan SE (2008) Obsessive beliefs and symptoms of obsessive-compulsive disorder in a clinical sample. *J Psychopathol and Behav* 30:31-42.
- Tolin DF, Woods CM, Abramowitz JS (2003) Relationship between obsessive beliefs and obsessive-compulsive symptoms. *Cog Ther Res* 27:657-69.
- Tolin DF, Worhunsky P, Maltby N (2006) Are "obsessive" beliefs specific to OCD?: A comparison across anxiety disorders. *Behav Res Ther* 44:469-80.
- van den Heuvel OA, Remijnse PL, Mataix-Cols D et al (2009): The major symptom dimensions of obsessive-compulsive disorder are mediated by partially distinct neural systems. *Brain* 132:853-68.
- Van Oppen P (1992) Obsessions and compulsions: dimensional structure, reliability, convergent and divergent validity of the Padua Inventory. *Behav Res Ther* 30:631-7.
- Viar MA, Bilsky SA, Armstrong T et al (2011) Obsessive beliefs and dimensions of obsessive-compulsive disorder: An examination of specific associations. *Cog Ther Res* 35:108-17.
- Wang C, Wang J, Tang T et al (2012) Psychometric validation of dimensional obsessive-compulsive scale (DOCS) in Chinese college students. *Chinese J Clin Psychol* 20:315-9.
- Wheaton M, Abramowitz J, Berman N et al (2010) The relationship between obsessive beliefs and symptom dimensions in obsessive-compulsive disorder. *Behav Res Ther* 48:949-54.
- Wu KD, Carter SA (2008) Further investigation of the obsessive beliefs questionnaire: Factor structure and specificity of relations with OCD symptoms. *J Anxiety Dis* 22:824-36.