

Assessing obsessive-compulsive symptoms in a subclinical and clinical sample: the development of the Hungarian version of the OCI-R

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Objectives: The prevalence of clinical obsessive-compulsive disorder (OCD) is around 1-2% in the population. Questionnaires, such as the OCI-R, are a useful tool in the diagnostic process. The purpose of this study was to develop the Hungarian version of the OCI-R, examine its validity and reliability, and its ability to differentiate between clinical and subclinical OCD.

Methods: Confirmatory factor analysis was carried out on the subclinical sample (N = 4301). Reliability analysis was carried out on both samples, and Mann-Whitney tests were used to compare the two samples. **Results:** The six-factor structure identical to the original was confirmed by confirmatory factor analysis. In the subclinical sample, all scales but Neutralizing had good reliability. Reliability analysis on the clinical sample (N = 26) showed good Cronbach's alpha values for all scales except for Hoarding. There were significant differences between the two groups on three scales: Neutralizing, Washing, and Obsessing, with the clinical group scoring significantly higher on these scales. The average score for Checking, Hoarding, and Ordering was higher in the subclinical sample, although the difference was not significant. **Conclusion:** The results highlight the advantages of symptom severity scales, such as the OCI-R, in the diagnostic process of obsessive-compulsive disorder.

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Keywords: obsessive-compulsive disorder, subclinical sample, symptom severity scales, OCI-R

INTRODUCTION

According to the DSM-5 definition (American Psychiatric Association, 2022), obsessive-compulsive disorder (OCD) is characterized by the presence of obsessions, compulsions, or both. Obsessions are recurrent, persistent, and intrusive thoughts or images that cause anxiety and distress; individuals may attempt to get rid of these images, or neutralize them with other thoughts or actions. Compulsions are repetitive actions or mental acts that the individual feels compelled to perform, and that aim to alleviate anxiety caused by obsessions.

There are a number of clinical scales for diagnosing OCD. One of the most widely used questionnaires is the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989a). The Y-BOCS measures the severity of obsessive-compulsive symptoms. It consists of two parts: a self-report portion measuring past and current symptoms of obsessions and compulsions, filled out by the patient; and a portion measuring symptom severity, filled out by the administering clinician. This latter part consists of items examining the duration and frequency of obsessions and compulsions, as well as their obstructiveness, and the patient's ability to resist and control them. Overall, there are five items each concerning obsessions and compulsions.

The Y-BOCS has been shown to have high internal consistency, and to be a good measure of symptom severity (Goodman et al., 1989a). It has also been found to have high convergent and discriminant validity, and it was also sensitive to drug-induced changes that resulted from pharmacological treatment of OCD (Goodman et al., 1989b). Criticism of the Y-BOCS stems mainly from the fact that the Y-BOCS is only able to measure symptom severity, and its temporal changes (Abramovitch et al., 2020). Thus, more recent measurement tools of OCD have been more focused on a dimensional approach concerning OCD symptoms. In recent decades, there have been a number of symptom severity scales with this dimensional approach, such as the Dimensional Yale-Brown Obsessive-Compulsive Scale (DY-BOCS, Rosario-Campos et al., 2006; see Harsányi et al., 2009 for the Hungarian version) or the Florida Obsessive-Compulsive Inventory (FOCI; Storch et al., 2007).

Another alternative instrument for measuring symptoms related to OCD is the Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al., 2002). The OCI-R consists of 18 items that form

6 subscales, with 3 items each. The six subscales each represent different symptoms related to OCD: Ordering ("I get upset if objects are not arranged properly."), Obsessing ("I find it difficult to control my own thoughts."), Checking ("I check things more often than necessary."), Washing ("I sometimes have to wash or clean myself simply because I feel contaminated."), Neutralizing ("I feel compelled to count while I am doing things."), and Hoarding ("I have saved up so many things that they get in the way."). The OCI-R has been shown to have high internal consistency, test-retest reliability, and convergent validity. It is also able to differentiate between patients with OCD, and patients with other mental health conditions, such as anxiety disorders (Foa et al., 2002).

The OCI-R has been translated into multiple languages, such as German (Gönner et al., 2008); French (Zermatten et al., 2006); Persian (Mohammadi et al., 2008); Mandarin Chinese (Peng et al., 2011; Hon et al., 2019); and Turkish (Aydin et al., 2014). An advantage of the OCI-R over the Y-BOCS is that the OCI-R organizes symptoms into factors, which has been shown to aid the planning of treatment. There appear to be different endophenotypes, neurobiological markers, and responsiveness to treatment associated with the different factors of symptoms. In particular, hoarding tendencies are associated with increased comorbidity, as well as decreased responsiveness to both pharmacological (SSRIs) and behavioral treatment (cognitive behavioral therapy). These symptom dimensions, while distinct from each other, can show an overlap in patients (Mataix-Cols et al., 2005).

The OCI-R has been used to evaluate both clinical and subclinical samples. The six-factor structure established by Foa and colleagues (Foa et al., 2002) has been replicated in all studies that adapted the OCI-R into different languages and cultural contexts. The different language versions have also shown overall good internal consistency as measured by Cronbach's alpha coefficients, with some exceptions. For instance, in the German version, the Neutralizing subscale showed poor internal consistency in the subclinical samples but not in the clinical sample (Gönner et al., 2008), while in the Turkish version, the Hoarding subscale showed inadequate Cronbach's alpha values (Aydin et al., 2014). Also in Aydin and colleagues' study, all subscales but Neutralizing were successful in differentiating between patients with clinical OCD and healthy controls.

Table 1. Factor loadings of the OCI-R in the subclinical sample

	1. Ordering	2. Obsessing	3. Checking	4. Hoarding	5. Washing	6. Neutralizing
3.	.931					
15.	.873					
9.	.805					
18.		.892				
12.		.889				
6.		.820				
8.			.912			
14.			.908			
2.			.713			
1.				.893		
7.				.836		
13.				.787		
11.					.853	
17.					.820	
5.					.669	
10.						.845
4.						.778
16.						.466

Overall, the OCI-R appears to be a reliable, as well as a short and easy-to-administer measure of OCD symptoms. The main goal of the present study was to validate the Hungarian version of the OCI-R, on a large subclinical sample, thus contributing to the growing literature on the psychometric characteristics of the questionnaire. We also included a clinical sample, to examine the OCI-R's ability to differentiate between clinical and subclinical groups, given the controversial results of previous studies.

SAMPLE 1: SUBCLINICAL SAMPLE

Participants and procedure

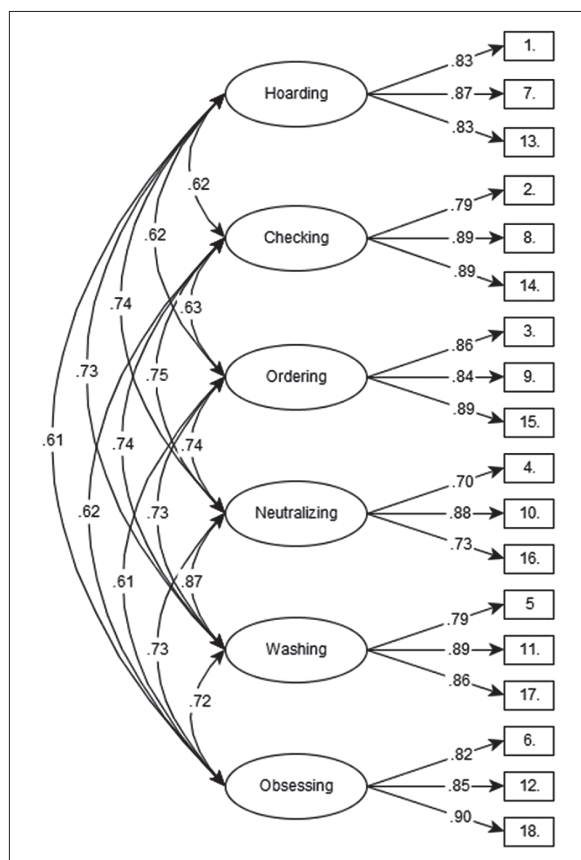
The subclinical sample consisted of 4301 participants (2222 women, 51.7%). The mean age was 39.44 (SD = 12.66), ranging from 18 to 93. Participants were native Hungarians with no current or previous mental illness diagnoses reported. They were recruited online via Facebook, and an article published on Hungarian news website qubit.hu, as part of a bigger study investigating the associations of subclinical OCD, schizotypy, and earworms. Participants filled out the questionnaires online; the process took approximately 20 to 25 minutes overall.

The OCI-R H questionnaire

The OCI-R contains 18 items that form 6 scales: Ordering, Obsessing, Checking, Washing, Hoarding, and Neutralizing (Foa et al., 2002). The Hungarian translation of the OCI-R was first created by GD and KF - the latter of whom was a professional special translator -, who both translated the scale separately. A later translation was also created by FF and FH, and the final translation of the OCI-R-H was created by comparing the two translations and making adjustments.

Statistical analyses

Exploratory factor analysis with a Promax rotation was performed in order to examine the factor structure of the OCI-R. Confirmatory factor analysis was used to confirm the factor structure obtained with the EFA. Descriptive statistics (mean, standard deviation), as well as inter-item, and item-total correlations were conducted. Cronbach's alpha coefficients were measured in the case of the individual scales, to check their reliability.

Figure 1. Results of the confirmatory factor analysis in the subclinical sample**Table 2.** Descriptive statistics of the OCI-R in the subclinical and clinical samples

	Subclinical sample		Clinical sample	
Item	M	SD	M	SD
1.	1.32	1.25	.50	.98
2.	1.71	1.34	2	1.87
3.	1.49	1.26	1.42	1.74
4.	.89	1.25	2.04	1.71
5.	.68	1.06	1.46	1.77
6.	1.36	1.27	3.04	1.26
7.	1.05	1.17	.83	1.31
8.	.91	1.23	1.46	1.69
9.	1.48	1.29	1.91	1.76
10.	.25	.72	1.25	1.65
11.	.31	.75	1.25	1.78
12.	1.56	1.33	3.13	1.52
13.	1.4	1.26	1.5	1.44
14.	.86	1.18	1.09	1.56
15.	1.83	1.24	1.57	1.8
16.	.64	1.15	1.22	1.76
17.	.43	.88	2.04	1.89
18.	1.32	1.26	3.41	1.18

Results

Exploratory and confirmatory factor analyses

In accordance with the original OCI-R, a Promax rotation was used when running the exploratory factor analysis. The results of the analysis can be seen in Table 1. The results show the same six-factor structure as the original by Foa and colleagues (Foa et al., 2002): the six factors are Ordering, Obsessing, Washing, Neutralizing, Checking, and Hoarding, with three items loading on each factor. The result of the confirmatory factor analysis can be seen in Figure 1. Overall, the fit indices indicate an adequate model (TLI = .827; CFI = .834; RMSEA = .088, 95% CI [.086 - .090]).

Descriptive statistics, scale reliability, inter-item, and item-total correlations

Descriptive statistics (mean, standard deviation) for all items, as well as the six scales of the OCI-R can be seen in Table 2. Cronbach's alpha values for

all six scales were also calculated. Out of the six scales, five showed good reliability ($\alpha_{\text{Ordering}} = .849$; $\alpha_{\text{Obsessing}} = .830$; $\alpha_{\text{Checking}} = .832$; $\alpha_{\text{Hoarding}} = .789$; $\alpha_{\text{Washing}} = .701$); however, the last scale, Neutralizing, had poor reliability ($\alpha_{\text{Neutralizing}} = .552$), which was not improved when removing any of the items from the scale. Inter-item and item-total correlations can be seen in Table 3.

SAMPLE 2: CLINICAL SAMPLE

Participants and procedure

Participants in the clinical sample were 26 outpatients with a clinical OCD diagnosis, who were undergoing treatment at the National Institute of Mental Health, Neurology and Neurosurgery (Nyíró Gyula National Institute of Psychiatry and Addictology) in Budapest, Hungary. All patients received their diagnosis according to the DSM-5 guidelines (American Psychiatric Association, 2022) by KC, who is a clinical psychologist and psychotherapist at this hospital. Of the 26 participants, 14 were

Table 3. Inter-item and item-total correlations of the OCI-R in the subclinical sample

Ordering	3.	9.	15.	Item-total
3.	-			.718
9.	.612	-		.686
15.	.694	.651	-	.748
Obsessing	6.	12.	18.	Item-total
6.	-			.614
12.	.540	-		.703
18.	.599	.719	-	.753
Checking	2.	8.	14.	Item-total
2.	-			.607
8.	.588	-		.749
14.	.543	.738	-	.714
Hoarding	1.	7.	13.	Item-total
1.	-			.631
7.	.578	-		.644
13.	.536	.552	-	.612
Washing	5.	11.	17.	Item-total
5.	-			.476
11.	.410	-		.531
17.	.414	.493	-	.528
Neutralizing	4.	10.	16.	Item-total
4.	-			.333
10.	.382	-		.436
16.	.201	.291	-	.277

Table 4. Inter-item and item-total correlations of the OCI-R in the clinical sample

Ordering	3.	9.	15.	Item-total
3.	-			.676
9.	.633	-		.724
15.	.600	.662	-	.698
Obsessing	6.	12.	18.	Item-total
6.	-			.727
12.	.629	-		.662
18.	.673	.580	-	.689
Checking	2.	8.	14.	Item-total
2.	-			.780
8.	.841	-		.803
14.	.610	.757	-	.708
Hoarding	1.	7.	13.	Item-total
1.	-			.303
7.	.068	-		.115
13.	.369	.115	-	.304
Washing	5.	11.	17.	Item-total
5.	-			.730
11.	.602	-		.676
17.	.721	.651	-	.766
Neutralizing	4.	10.	16.	Item-total
4.	-			.626
10.	.600	-		.719
16.	.542	.662	-	.673

women (53.85%). The mean age was 30.5 (SD = 10.55), ranging from 18 to 59. Data gathering was conducted in person, by co-author KC. Participants filled out the OCI-R as part of the psychodiagnostic process prior to receiving treatment.

Statistical analyses

Similarly to the subclinical sample, descriptive statistics, reliability analysis, and inter-item and item-total correlations were measured.

Results

Descriptive statistics, scale reliability, inter-item, and item-total correlations

Descriptive statistics of the individual items, as well as the six scales (means, standard deviations) can be seen

in Table 2. Cronbach's alpha values were calculated for the six scales: five scales showed good reliability, as indexed by high alpha values ($\alpha_{\text{Ordering}} = .837$; $\alpha_{\text{Obsessing}} = .835$; $\alpha_{\text{Checking}} = .893$; $\alpha_{\text{Washing}} = .852$; $\alpha_{\text{Neutralizing}} = .819$). However, the Hoarding scale showed poor reliability ($\alpha_{\text{Hoarding}} = .404$); this was somewhat improved by removing item 7 of the scale ("I collect things I don't need."), which resulted in a Cronbach's alpha of .511, which was still not satisfactory. Inter-item and item-total correlations can be seen in Table 4.

Comparison between the clinical and the subclinical samples

Mann-Whitney tests were used to investigate the differences between the scores of the subclinical and clinical samples on all the scales of the OCI-R. For this reason, a control group (N = 97) was selected from the subclinical sample, matched to the clinical sample in

Table 5. Demographic information about the clinical group and the matched control group

	Clinical group	Matched control group
N	26	97
Gender		
Female	14 (53.85%)	51 (52.6%)
Male	12 (46.15%)	46 (47.4%)
Level of education		
High school degree	7 (26.9%)	21 (21.6%)
University degree	19 (73.1%)	76 (78.4%)
M _{Age}	30.5	31.01
SD _{Age}	10.55	10.51

age, gender, and level of education (for demographic information on the two groups, see Table 5). Out of the six scales of the OCI-R, the two groups showed a significant difference on three: Obsessing ($U = 339$, $p < .001$); Washing ($U = 810.5$, $p = .034$); and Neutralizing ($U = 779$, $p = .021$). The clinical group scored significantly higher on these scales compared to the subclinical group. There was no significant difference between the groups on the other three scales (Ordering, Hoarding, and Checking).

DISCUSSION

The present study aimed to adapt the OCI-R into Hungarian, using both a subclinical group, and a group of patients with a clinical diagnosis of OCD. Exploratory factor analysis conducted on the subclinical sample showed the same six-factor structure as the origin scale by Foa and colleagues (Foa et al., 2002), which was confirmed to be accurate using confirmatory factor analysis. In the subclinical sample, Cronbach's alpha coefficients showed good reliability for five out of six scales; the exception was the Neutralizing scale, which had poor reliability, which was not improved by removing any of the items from the scale. This is partially in line with the results of Gönner and colleagues (Gönner et al., 2008). The German version of the OCI-R also showed unsatisfactory reliability on the Neutralizing scale in the subclinical sample. This may be due to the fact that the Neutralizing scale of the OCI-R only consists of items related to numbers and counting, while the definition of neutralizing is broader: according to Clark (Clark 2004, p. 44) neutralizing is "intentional, effortful and voluntary overt and covert acts directed at canceling out the occurrence of an obsession or

its associated discomfort, or to prevent a dreaded outcome symbolized in the obsession". It is possible that the Neutralizing scale of the OCI-R, in its current format, is not suitable to properly encompass all aspects of this phenomenon, and thus may require modification in the future.

In the case of the clinical sample, all scales except for Hoarding showed good reliability; this could be somewhat improved by removing one item from the scale ("I collect things I don't need."), however, even with this modification, the scale did not show satisfactory reliability. This result is also similar to that obtained by Aydin and colleagues (Aydin et al., 2014) on the Turkish version of the OCI-R. According to previous studies (e.g. Grisham et al., 2005), hoarding tendencies appear to form a distinct syndrome on the spectrum of OCD-related disorders; however, our sample of OCD patients does not fully support this claim. Out of the 26 patients, 3 had high scores on the Hoarding scale of the OCI-R. In line with the results of Grisham and colleagues, it would be expected that these patients do not score high on any of the other scales, but this was not the case: all 3 of the high-hoarding individuals also scored high on 3 or 4 other scales. Thus, in the case of these patients, the high scores obtained on the Hoarding scale may signal symptom severity. It is important, however, to note that since there were only three such patients in our sample, it is not possible to draw definitive conclusions.

When comparing the clinical group to a matched control group from the subclinical sample, the OCI-R was able to successfully differentiate between the two on three scales: Obsessing, Washing, and Neutralizing, with the clinical group scoring significantly higher on these scales than the subclinical controls. The result that the other three scales - Ordering, Checking, and Hoarding - did not properly differentiate between the two groups is somewhat in line with previous results. In the original study carried out by Foa and colleagues (Foa et al., 2002), Hoarding and Ordering did not differentiate between the OCD and non-OCD groups. According to Foa and colleagues, this may be due to the low prevalence of these kinds of symptoms in their sample of OCD patients. Indeed, when examining our sample of patients with clinical OCD, there were few individuals who reported having either ordering or hoarding symptoms: out of the 26 patients, only 3 had a Hoarding score higher than 6 (half of the total attainable points on each scale), while this number was 10 in the case of Ordering. Thus, the potential explanation posed by Foa and

colleagues may be applicable, especially in the case of hoarding symptoms. The same thought process may be used to explain the results related to Checking as well: out of the 26 patients, 8 had high scores on this dimension, with one person reporting only checking symptoms. In fact, on average, the subclinical group scored higher on this dimension than the clinical group. It is important to note that the clinical sample in the present study was small; further studies with larger sample sizes may be beneficial for investigating the OCI-R-H.

Apart from the low prevalence of certain dimensions of symptoms in the clinical group, another possible explanation may be related to the prevalence of symptoms in the subclinical group. Despite not having a formal OCD diagnosis, a number of individuals scored high on one or more of the symptom dimensions. This indicates that some phenomena that are traditionally associated with OCD have become prevalent in subclinical populations as well. Some research has shown that the COVID-19 pandemic has resulted in a decrease in overall well-being (Alonso, 2021; Fontenelle, 2021) and an increase in contamination-related symptoms in patients with OCD (Jassi et al., 2020). A study by Hassoulas and colleagues (Hassoulas et al., 2022) found that washing and checking OCD subtypes are associated with increased hand-washing and distress-avoidance associated with COVID-19. However, a recent study by Csigó and Németh (Csigó and Németh, 2022) on a sample of Hungarian OCD patients found that contamination-related symptoms significantly increased only in patients who did not receive continuous psychiatric care during the course of the pandemic. Nevertheless, it is possible that the ongoing pandemic affected those with no formal OCD diagnosis as well, resulting in the manifestation of some OCD symptoms in otherwise healthy individuals. Thus, it may be important to introduce more early preventions targeting not just those with a clinical OCD diagnosis, but those with increased subclinical symptoms as well.

Symptom severity scales, such as the OCI-R, are a useful tool in diagnosing obsessive-compulsive disorder. Developing and using such scales in the psychodiagnostic process is a necessary next step; the Y-BOCS, while still a useful diagnostic tool, has a number of disadvantages compared to tools that directly measure different symptom dimensions. The Y-BOCS is also somewhat outdated, as the understanding of OCD has drastically changed since the 1980s, due to new results from neuropsychological

and imaging studies, and due to experience gained from clinical treatment. Thus, tools like the OCI-R could be a valuable addition to the diagnostic process of OCD in the Hungarian clinical practice as well. At the same time, our results show that certain modifications may be necessary to improve the reliability of the questionnaire.

ETHICAL CONSIDERATIONS: The study was carried out in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants, and all ethical procedures were performed. The study was approved by the Ethical Board of the National Institute of Mental Health, Neurology and Neurosurgery (IV/2904-3/2021/EKU).

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Obszesszív-kompulzív tünetek vizsgálata szubklinikai és klinikai mintán: az OCI-R magyar változatának kidolgozása

Célkitűzések: A klinikai obszesszív-kompulzív zavar prevalenciája 1-2% körül van a lakosság körében. Az olyan kérdőívek, mint az OCI-R, hasznos eszközök az OCD diagnosztizálásának folyamatában. A jelen kutatás célja az OCI-R magyar változatának kidolgozása, validitásának és reliabilitásának vizsgálata volt, valamint annak vizsgálata, hogy a kérdőív képes-e megfelelően differenciálni a klinikai és a szubklinikai szintű OCD között. **Módszerek:** A szubklinikai mintán (N = 4301) megerősítő faktoranalízist végeztünk. Mindkét mintán megvizsgáltuk a reliabilitást, valamint Mann-Whitney tesztek segítségével összehasonlítottuk a két mintát. **Eredmények:** A faktoranalízis megerősítette az eredeti, angol nyelvű kérdőívével azonos hatfaktoros struktúrát. A szubklinikai mintában a Neutralizáció kivételével minden alskála jó reliabilitással rendelkezett. A klinikai mintán (N = 26) végzett reliabilitás elemzés a Gyűjtögetés alskála kivételével jó Cronbach-alfa értékeket mutatott mindegyik alskála esetében. A két minta között három alskála esetében volt szignifikáns különbség: a klinikai minta átlagosan szignifikánsan magasabb pontszámot ért el a Neutralizáció, Mosakodás, és az Obszessziók alskálákon. A klinikai csoport szintén magasabb pontszámot ért el az Ellenőrzés, Gyűjtögetés és Rendszerezés alskálákon, azonban ezek a különbségek nem voltak szignifikánsak. **Következtetések:** Az eredményeink megerősítik, hogy az elkészült OCI-R magyar változata alkalmazható a diagnosztikai, klinikai munkában.

Kulcsszavak: obszesszív-kompulzív zavar, szubklinikai minta, tüneti súlyosság skála, OCI-R