ORIGINAL REPORT

Psychometric Properties of the Persian Language Version of Obsessive Beliefs Questionnaire (OBQ-44) in Iranian General Population

Giti Shams[1], Yaghoob Esmaili[2], Narges Karamghadiri[1], Narges Ebrahimhkani[1], Youness Yousefi,[1] and Dean McKay[3]

[1] Department of Psychiatry, Roozbeh Hospital, Tehran University of Medical Sciences, Tehran, Iran

[2] Department of Psychology, Islamic Azad University Rodhen Branch, Rodhen, Iran

[3] Department of Psychology, Fordham University, USA

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Abstract- The Obsessive Beliefs Questionnaire-44 (OBQ-44), a self-report measure, was developed by the Obsessive Compulsive Cognitions Working Group (OCCWG) to assess beliefs considered relevant in the etiology and maintenance of obsessions and compulsions. The purpose of this study was to evaluate the psychometric properties of the Persian language version of the Obsessive Beliefs Questionnaire (POBQ-44). A sample of 222 medical students from an Iranian university was used to assess the reliability and validity of the POBQ-44. The results indicated five factors: 1) general, 2) perfectionism, certainty, 3) responsibility and threat estimation, 4) importance and control of thoughts, 5) complete performance. Each of these factors was found to have adequate test-retest and internal consistency reliability. Each of the factors was associated with O-C symptoms. In addition, adequate convergent validity was found with a measure of obsessive compulsive symptoms, and discriminate validity was found with measures of depression and anxiety.

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Introduction

At the present time, the dominant model guiding etiology, assessment, and treatment of Obsessive-Compulsive Disorder (OCD) (1,2).While the original cognitive model emphasizes inflated responsibility, other prominent cognitive models have built upon the original work and have highlighted additional beliefs, such as importance and control over thoughts, perfectionism, overestimation of threat and intolerance of uncertainty (summarized in (3)) . One of the aims of the Obsessive Compulsive Cognitions Workgroup (OCCWG) was to develop a single psychometrically sound instrument that would assess the all the core belief areas considered central to OCD (OCCWG) (1, 4). The initial measure, the Obsessive Beliefs Questionnaire (OBQ; OCCWG) (5) was an 87-item scale with three factor-analytically derived subscales: responsibility and threat estimation; perfectionism and intolerance of uncertainty; and importance and control of thoughts. The OCCWG (5) reported on the validation of the OBQ to assess the primary beliefs and appraisals considered critical to the pathogenesis of obsessions. Tests of internal consistency and test-retest reliability indicated that OBQ assessed stable aspects of O-C related thinking as well as core cognitive features of obsessionally. Since that time, a brief version, the OBQ-44, has been developed to assess these same domains using 44 items. The composition of the OBQ-44 is from items with the highest factor loadings from the original 87-item scale (OCCWG) (4).

Myers *et al.* (6), using exploratory factor analysis of the OBQ-44, indicated four factors: (1) perfectionism/intolerance of uncertainty, (2) importance/ control of thoughts, (3) responsibility, and (4) overestimation of threat. This factorial structure is not substantively different in that responsibility, and the overestimation of threat was separate factors, but the content of each factor was identical to the original factor analytic findings. Woods *et al.* (7) evaluated the

* **Corresponding Author:** Giti Shams
Department of Psychiatry, Roozbeh Hospital, Tehran University of Medical Sciences, Tehran, Iran, South Kargar Ave., Tehran 13185/1741/Iran,
Tel: +98 21 55419151, Fax: +98 21 55419113, E-mail: shamsgit@tums.ac.ir

dimensionality of the OBQ in students. The factor structure of the original OBQ and the OBQ-44 (OCCWG's OBQ-87 & OBQ-44) were tested in confirmatory factor analyses. Their results revealed three factors that are conceptually consistent with the OCCWG's recent three: (1) distorted beliefs about one's own thoughts, (2) perfectionism, and (3) inflated responsibility, with adequate convergent and discriminate validity. Ertle *et al.* (8) studied confirmatory and exploratory factor analysis of OBQ-44 in clinical and non-clinical samples. The original structure could not be replicated, and a reduction of the item pool was carried out. The shortened scales demonstrated satisfactory reliability and validity characteristics. They suggested the implementation of a shortened version of the OBQ for the German translation.

To date, data have been collected on different languages and cultural variations of the OBQ. OCD is widely recognized across cultures, and it is important to determine whether ethnic or cultural differences in O-C related beliefs and appraisals are evident (OCCWG, (5)). Thus, the aim of the present study was to investigate the psychometric properties of OBQ-44, when administered to a non-clinical Iranian student sample. We were interested in examining the reliability, factor structure, and convergent and discriminate validity of the OBQ-44, and compare the structure to prior analyses with Western samples (Myers, et al., (6); OCCWG,(4,5); Woods, (7)). It was anticipated that the Persian OBQ-44 (POBQ-44) would show similar psychometric properties to the versions examined with Western samples.

Materials and Methods

Participants

The sample for this study was comprised of 222 students at the Tehran University of Medical Sciences, Tehran, Iran, who volunteered to participate in the study. The mean age of the sample was 21.01 years (SD=2.74, range=17-31); 65% were female, and 35% male and the majority were single (n=181; 81.4%).

Preparation procedure of the Persian version of the OBQ-44 (POBQ - 44)

Standard steps outlined in the psychology literature guided the translation process used in this study (9). In the first step, the original English version of OBQ-44 was translated to Persian. The Persian translation reviewed by one psychiatrist and two clinical psychologist in the psychiatric department of medical sciences of Tehran university .To ensure there were no colloquialism's slang, or esoteric phrases that would make interpretations difficult. The shared form was then back-translated by a bilingual person with extensive knowledge of psychological research. The back-translation proved to be nearly identical the original one. As a final step, the back-translation version of OBQ-44 evaluated by us and the co-chair of OCCWG indicating well-suited for Iranian cultural society.

Assessments

Obsessive-Belief Questionnaire-44 (OBQ-44, OCCWG)

(4) Consists of 44 belief statements considered characteristic of obsessive thinking (OCCWG) (1,10). Scale item represent 6 rationally determined subscales thought to represent the key belief domains of OCD. The subscales are 1) Responsibility/Threat Estimation (16 items), 2) Perfectionism/Certainty (16 items), and 3) Importance/Control of thoughts (12 items). Similar to the English version, the POBQ-44, respondents are asked to read each statement carefully and decide how much they agree or disagree with it and then choose the number matching the answer that best describes how they think. Respondents indicate their general level of agreement with items on a 7- point rating scale that ranges from "disagree very much"(-3) to "neutral"(0) to "agree very much"(+3). Item responses were transformed to1 to 7 scale, and subscale scores were calculated by summing across their respective items. Fifteen to thirty days after the baseline administration, the test, was re-administered to 222 of the baseline sample to assess test-retest reliability.

Maudsley Obsessional-Compulsive Inventory (MOCI; Rachman & Hodgson)

The MOCI is a 30-item true-false self-report questionnaire that assesses overt rituals and their related obsessions, providing four subscales and a total score. The scale has been shown to have satisfactory test-retest reliability (r= .80) and internal consistency (0.70 to 0.80; Rachman & Hodgson) (11). The MOCI's validity was found to be satisfactory with the washing and checking subscales, showing good discriminate and convergent validity (12). This test has been translated into Persian and used in our previous study in Iran (13-15).

State-Trait Anxiety Inventory (STAI)

The STAI is a 40-item self-report measure of general anxiety. The first 20 items assess state anxiety or how

the participant feels "right now". The second 20 items assess trait anxiety, or how the participant feels "generally". The STAI has high reliability and validity (16). Only the state subscale (STAI-S) was used in the present study. The Persian STAI (PSTAI) has excellent internal consistency (Cronbach's a=.90) and adequate test-retest reliability (r=0.53) assessed in Iranian student samples (17).

Beck Depression Inventory (BDI-II; Beck)

BDI-II is the second edition of the widely used Beck Depression Inventory. Originally introduced in 1960s (19). The BDI-II was revised to approximate the DSM-IV (American Psychiatric Association) (20) criteria for major depression. The reliability and validity of various non-English versions of the BDI have been established in numerous previous studies. The BDI-II contains 21-items, each with a series of four statements describing the severity of depressive symptoms along ordinal continuum from absent or mild (scored 0) to severe (scored 3). Scores on this test can thus range from 0 to 63. The Persian BDI-II (PBDI-II) has excellent internal consistency (Cronbach's a=0.87) and adequate test-retest reliability (r= .73) as assessed in an Iranian student sample (14).

Beck Anxiety Inventory (BAI; Beck, Epstein, Brown & Steer)

The BAI is a 21-item anxiety symptom checklist that covers common anxiety symptoms commonly experienced by clinically anxious people. Scores on this test can thus range from 0 to 63. It has excellent psychometric properties. The BAI-Persian has excellent internal consistency (Cronbach's a=0.92) and test-retest reliability (r=0.87) as assessed in Iranian student sample. (22).

Statistical analyses

The evaluation of the psychometric properties of the POBQ-44, were as follows: First, using exploratory factor analysis, the factor structure of the POBQ-44 was assessed via Principal Component Analysis (PCA), and Maximum Likelihood (ML) estimation. Second, the item-total correlations were computed for the POBQ-44. Third, the internal consistency of the POBQ-44 and its subscales was assessed by computing Cronbach's alpha. Forth, the test-retest reliability of the measurement was obtained by computing the intra-class correlation coefficient for scores obtained across two assessment points separated by a 15-30-day interval. Finally, we obtained the construct validity of the POBQ-44 by its convergent validity via correlations with the PMOCI subscales. We also assessed the correlations between BDI-II, BAI and STAI to evaluate discriminate validity.

Results

Factor analysis of the POBQ-44

We sought to determine whether distinct empirically derived dimensions might underlie the POBQ-44 through PCA. The high subscale intercorrelation indicated that it was unlikely that each item would correspond to a distinct factor as was justified by Barlett test of sphericity ($p<0.001$), suggesting that the correlation matrix does differ significantly from an identity matrix. Moreover, the summary value of Kaiser-Meyer-Olkin index of sampling adequacy was 0.09, showing an overall adequacy of the correlation matrix (Tabachnick & Fidell,) (23).

The dimensionality of the 43-item (item 13 was excluded because it loaded quite weakly on all subscales derived) version was analyzed using two methods of factor extraction: PCA and ML estimates. For both methods, using the Kaiser criterion or the so-called Eigen-value one criterion, 11 factors were identified which accounted for the 23.25, 6.48, 6.16, 4.78, 3.93, 3.41, 3.19, 2.83, 2.69, 2.57 and 2.40 percent of the total variance respectively adding to about 62 percent in total. We retained the five factor model, as the sixth factor contributed an insignificant increment in explained variance.

In order to have a more clear interpretation of the factor structure, varimax rotation was used. In the present study, the results of the varimax rotated ML factor loadings is reported in Table 1. The five factors were labeled: (G), perfectionism/certainty (PC), responsibility and Threat Estimation (RT), importance and control of thought (ICT) and complete performance (CP) respectively. We applied Stevens criterion to retain factor loadings, which were statistically significant, which in this case the factor loading criterion was considered as greater than or equal to 0.35. Scales and their corresponding factors are listed in Table 1.

Factor one was primarily a combination of RT, PC and ICT characteristics. As similar to Woods (7) result, it has been preferred to call this general factor (G). It should be noted that items 18, 32, 34 and 38 did not meet the minimum required factor loading of 0.35 for this factor, although factor one was the highest loading for these items.

Table 1. Varimax- rotated five-factor solution for OBQ-44-Persian items.

OBQ Item	English OBQ-44	Persian OBQ-44	Factor 1	Factor2	Factor 3	Factor 4	Factor 5
1	RT	G	.451				
2	PC	G	.452				
18	PC	G	.314				
22	RT	G	.451				
29	RT	G	.608				
30	ICT	G	.461				
32	ICT	G	.294				
33	RT	G	.439				
34	RT	G	.343				
35	ICT	G	.521				
36	RT	G	.528				
38	ICT	G	.277				
40	PC	G	.355				
41	RT	G	.476				
43	PC	G	.412				
44	ICT	G	.506				
3	PC	PC		.536			
4	PC	PC		.675			
9	PC	PC		.469			
10	PC	PC		.538			
11	PC	PC		.577			
14	PC	PC		.437			
20	PC	PC		.523			
26	PC	PC		.448			
31	PC	PC		.599			
37	PC	PC		.531			
5	RT	RT			.484		
6	RT	RT			.384		
8	RT	RT			.543		
16	RT	RT			.555		
17	RT	RT			.625		
19	RT	RT			.459		
23	RT	RT			.499		
7	ICT	ICT				.578	
21	ICT	ICT				.550	
24	ICT	ICT				.312	
27	ICT	ICT				.691	
28	ICT	ICT				.448	
42	ICT	ICT				.578	
12	PC	CP					.498
15	RT	CP					.501
25	PC	CP					.486
39	RT	CP					.395
13	ICT	-	-	-	-	-	-

Note: N= 222, items with loading greater than .35 were used to identify the meaning of each factor, G= General, PC= Perfectionism/Certainty, RT= Responsibility/Threat estimation , ICT= Importance/Control of thought, CP= Complete Performance.

Factor 2 was identified as Perfectionism; Factor 3 was named Responsibility/Treat estimation. Factor 4was named Importance/Control of Thoughts, and factor 5 was named Complete Performance.

Internal consistency and scale inter-correlations of the POBQ-44

The average total score on POBQ-44 was 154.14 (SD=36.36) for the whole sample and for the factor analytically derived subscales, as follows: G: 45.16 (SD=16.55), PC: 45.36 (SD=11.17), RT: 23.92 (SD=7.65), ICT: 30.87 (SD=8.20), and CP: 8.82 (SD=3.84). The corrected item total correlation column shows the relationship between the responses on individual items and overall total score on the questionnaire. Each question had a positive item-total correlation. We have also examined the adjusted correlation of each item with the factor it belongs to (in calculating the correlation of each item with its subscale, the item itself has been excluded from the subscale). The findings showed that each item has the highest item-total correlation with the factor to which loaded. Finally, there were no differences across gender on total and subscale scores (Table 2).

The five subscales and the total scale of OBQ-44 were used for the reliability and validity analysis. The internal consistency of the POBQ-44 scale as assessed by Cronbach's alpha was .91. Corrected item total correlations ranged from 0.11 to 0.59. The overall, as well as the subscales internal consistency of the POBQ-44, was acceptable (Table 3). Four out of five subscales of POBQ-44 had alpha coefficients higher than 0.75, demonstrating excellent internal consistency (G (0.81), PC (0.84), RT (0.76), and ICT (0.78)). The coefficient of internal consistency for CP subscale was 0.61.(Table 3)

Table 2. Descriptive Statistics for the POBQ-44, and other measures of OCD and mood/anxiety symptoms.

Scale (of Item)	Male (N=77)		Female (N=145)		Total (N= 222)		*T* Between M & F
	M	SD	M	SD	M	SD	
OBQ-Total	152.36	34.40	155.09	37.43	154.14	36.36	-
POBQ-G	44.64	14.02	45.44	17.79	45.16	16.55	-
POBQ-PC	45.52	11.05	45.28	11.28	45.36	11.17	-
POBQ-RT	23.03	7.19	24.40	7.86	23.92	7.65	-
POBQ-ICT	30.36	8.30	31.14	8.16	30.87	8.20	-
POBQ-CP	8.82	3.70	8.82	3.92	8.82	3.84	-
PMOCI-Total	6.36	3.84	7.59	4.76	7.10	4.47	F>M
PMOCI-Wash	1.47	1.41	2.29	1.93	1.99	1.79	F>M
PMOCI-Slow	2.01	1.13	2.28	1.46	2.19	1.35	-
PMOCI-Check	1.73	1.61	1.78	1.80	1.75	1.73	-
PMOCI-Doubt	2.82	1.53	3.06	1.56	2.97	1.54	-
BAI	8.74	7.36	13.42	10.39	11.78	9.66	F>M
STAI	39.71	10.20	42.48	11.83	41.49	11.32	-
BDI-II	8.96	7.42	11.24	8.57	10.44	8.26	-

OBQ= Obsessive Beliefs Questionnaire, G= General, PC= Perfectionism/Certainty, ICT=Importance/Control of Thoughts, RT= Responsibility and Threat estimation, CP= Complete Performance, MOCI= Maudsley Obsessive Compulsive Inventory, CH= Checking, Wa= Washing, Sl= Slowness, Do= Doubting, BAI= Beck Anxiety Inventory, STAI= State Anxiety Inventory, BDI-II= Beck Depression Inventory-Revised

Table 3. Coefficient Alpha and Intra class Correlation for the OBQ-44-Persian subscales and total score.

Scales	Cronbach alpha	ICC Coefficient
POBQ- T	0.91	0.87
POBQ- G	0.81	0.82
POBQ- PC	0.84	0.89
POBQ- RT	0.76	0.86
POBQ- ICT	0.78	0.83
POBQ- CP	0.61	0.70

Test-retest reliability

Scores on the POBQ-44 were highly consistent across time. An unbiased estimate of the Intra-class correlation coefficient (ICC) for the total score across the two time points (15-30 days interval) was 0.87. The respective unbiased estimate of ICC for subscales were 0.82 (G), 0.89 (PC), 0.86 (RT), 0.83 (ICT), and 0.70 (CP).(Table 3)

Convergent validity

Convergent validity of the OBQ-44- Persian total score was determined by correlating this measure with the PMOCI score. This correlation is presented in Table 4 and indicated a moderate convergent validity in the total scores (r=0.49) (see Table 4) .Further the general subscale of the POBQ was positively correlated with checking and doubting subscales of POBQ (r=0.46 and r=0.50 respectively).Our result showed a significant positive correlation between subscales of perfectionism/certainty (PC), important/control of thought (ICT) and complete performance (CP) of POBQ and the doubting subscale of PMOCI (Table 4). On the other hand, the slowness and washing subscales of PMOCI did not seem correlated with POBQ and its subscales. Overall correlations between OBQ-44-Persian subscales and PMOCI-Persian subscales varied from -0.04 to 0.54.

Discriminant validity

Correlation between POBQ-44 total scale and its subscales calculated with the BAI, STAI and BDI-II. Correlations for BAI with OBQ-44- Persian and subscales ranged from 0.14 to 0.37 (BAI/Total score (0.32), BAI/G (0.37), BAI/PC (0.25), BAI/RT (0.20), BAI/ICT (0.14) and BAI/CP (0.26)). Correlations between BAI/OBQ-44-Persian total score, BAI/G, BAI/PC, BAI/RT and BAI/CP were lower but significant (p< .01). Other correlation between BAI/RT (0.20) was weak but significant (p<0.05). All four subscales (except PC) of the OBQ-44-Persian had low correlation with STAI and BDI-II ranging from 0.16 to 0.49, but were significant (P< 0.05). The magnitude of these correlations suggests adequate discriminate validity for the factor analytically derived subscales of the POBQ-44 (Table 4).

Table 4. Correlations among the empirically derived OBQ-44-Persian subscales and other symptom measures.

	OBQ Total	OBQ G	OBQ PC	OBQ RT	OBQ ICT	OBQ CP	MOCI T	MOCI CHEK	MOCI WASH	MOCI SLOW	MOCI DOUbt	BAI	STAI	BDI-II
POBQ Total	1													
POBQ G	.86 **	1												
POBQ PC	.76 **	.47 **	1											
POBQ RT	.70 **	.48 **	.44 **	1										
POBQ ICT	.72 **	.49 **	.44 **	.48 **	1									
POBQ CP	.60 **	.52 **	.42 **	.27 **	.34 **	1								
PMoci Total	.49 **	.54 **	.35 **	.21 **	.37 **	.40 **	1							
PMOCI Check	.43 **	.46 **	.27 **	.25 **	.37 **	.29 **	.80 **	1						
PMOCI Wash	.19 **	.24 **	.11	.03	.10	.17*	.74 **	.36 **	1					
PMOCI Slow	-.02	.-04	.0	- .05	- .04	.12	.23 **	- .10	.17 *	1				
PMOCI Doubt	.52**	.50 **	.42 **	.24 **	.42 **	.38 **	.77 **	.52 **	.30 **	.06	1			
BAI	.32 **	.37 **	.25 **	.20 **	.14 *	.26 **	.39 **	.26**	.20 **	.01	.32 **	1		
STAI	.30 **	.42 **	.13	.14 *	.17 *	.25 **	.38 **	.27 **	.20 **	- .05	.32 **	.53**	1	
BDI-II	.41 **	.49 **	.25 **	.16 *	.28 **	.34 **	.45 **	.39 **	.28 **	- .16 *	.44 **	.50 **	.64 **	1

OBQ= Obsessive Beliefs Questionnaire, G=General, PC= Perfectionism/Certainty, ICT=Importance/Control of Thoughts, RT= Responsibility and Threat estimation, CP= Complete Performance, MOCI= Maudsley Obsessive Compulsive Inventory, T= Total, Check= Checking, Wash= Washing, Slow= Slowness, Doubt=Doubting, BAI= Beck Anxiety Inventory, STAI= State- Anxiety Inventory, BDI-II= Beck Depression Inventory-Revised, **= P<0.01, *= P< 0.05

Discussion

The OCCWG (1) formed to develop a comprehensive measure of cognitions relevant to the contemporary cognitive-behavioral model of OCD. The Obsessive Beliefs Questionnaire was developed with 87 items representing dysfunctional beliefs covering six domains (overestimation of threat, intolerance of uncertainty, importance of thoughts, control of thoughts, responsibility, and perfectionism). However, a short form (OCCWG) (4) developed, reducing the number of items from 87 to 44, and named as OBQ-44. Three factors emerged in the OBQ-44 reflecting (1) Responsibility and Threat estimation (RT), (2) Perfectionism and Intolerance for uncertainty (PC), and (3) Importance and Control of Thoughts (ICT). The purpose of the present study was to contribute to the scale validation process by evaluating the dimensionality of the OBQ using data distinct from that in used OCCWG and to evaluate the development of the Persian form of the measure. Dimensionality evaluated with data from Iranian student sample that included both men and women. In keeping with OCCWG (5,4) , American (7) and British (6) studies, principal component analysis with varimax rotation were used to investigate the structure of the POBQ-44. The order in which factor emerged to some extent was similar to the OCCWG (4, 5), American (7), British (6) and German (8) studies. (See Appendix 1)

An exploratory factor analysis carried out, and the five-factor solution extracted. The first factor, a general factor, reflect common aspects of anxiety disorders that are less specific to OCD than domains such as importance and control of thoughts, inflated responsibility and perfectionism. Recent research suggests that such a factor may have specific relevance for the OBQ and related measures. For example, it has been shown that, among individuals with OCD, a subgroup was found that endorsed OCD related beliefs at a rate no higher than a group with other anxiety disorders (12). Out of sixteen items, seven items on the OBQ/general factor were from OBQ-44/ RT domain, five items OBQ-44/ICT and four items OBQ-44 PC. In OCCWG (5), overestimation of threat appeared to be OCD relevant but not OCD specific. while, in OCCWG (4), the OCD group scored significantly higher than non-OCD anxious patients on OBQ-44/RT. Infactor analysis of the full OBQ in a student population, similar results were found in the Woods *et al.* (7) study, who named their first factor as the general factor and considered to be the reminder of items coming from each of the other five domains.

The second factor was name OBQ perfectionism and certainty (PC), and included ten of the items from the original sixteen items on the OCCWG's PC factors. This is consistent with the recent findings of Myers *et al.* (6), who also found perfectionism and certainty (PC) loaded on its own. Meanwhile, Woods *et al.* (7) study found only perfectionism, but not certainty, loaded on a separate factor. Frost, *et al.* (24) suggests that the relationship between perfectionism and intolerance of uncertainty is expected, and these findings support that hypothesis.

The third factor named OBQ Responsibility and Threat Estimation, which included seven of the items from the original sixteen items on the OBQ-44/RT factor. In the present analysis, seven of OBQ-44/RT loaded on the OBQ/general factor, and the remaining two items loaded on a factor named Complete Performance, which consisted of two items from RT and two from PC from the original scale structure of the OBQ-44,. Results in the present study are consistent with the hypothesis that beliefs concerning responsibility for causing or preventing harm to oneself play a critical role in the maintenance of OCD.

The fourth factor was named OBQ importance and control of thoughts (ICT), which included six items from the original twelve items from the OBQ-44 ICT factor, with the remaining five items loading on OBQ/general. One additional item, item 13, also loaded on this factor, but excluded due to low factor loading. This item did not load adequately on any other factor, and its highest loading was on the general factor. The factors obtained in this study is consistent with OCCWG's theoretical domains (OCCWG) (1,10), and similar to their recent proposed three factors OCCWG, (4), and it consistent with Woods *et al.* (7), and Myers *et al.* (6). As Woods (7) noted, a merging of these domains is expected because when one believes that an intrusive thoughts is important, and may lead to a feared event to occur, an increase in motivation would follow for the person to control their thoughts, and in turn reduce distress or the perceived likelihood of the feared events (25). The final factor named OBQ complete performance (CP), which included four items from the original sixteen items of the OCCWG's RT and PC factors. It is noteworthy that none of the ICT questions loaded significantly on this factor.

Discriminate validity was found for the POBQ-44 with measures of anxiety and depression, for all factor analytically derived subscales, with the exception of the STAI with PC. The convergent validity was also found

by way of the POBQ-44 with the overall score of the PMOCI. Some correlations between POBQ-44 and PMOCI subscales were not significant. These are consistent with previous studies that have found a relationship between these beliefs domains and O-C symptoms (6, 10, and 26). However, the POBQ-44 was correlated with worry, consistent with the original factors of the OBQ-87 (OCCG) (5). Results of this study confirmed that a range of beliefs is positively related to O-C symptoms as predicted by the cognitive models of OCD, but they are also related to worry. There were no differences across gender on total and subscale scores, but scores on the POBQ-44 were remarkably consistent across time. The ICC for the total scores across the two times point (15-30) was 0.87, meanwhile Cronbach's alpha for OBQ-44 was .91. Item-total correlations ranged 0.11 to 0.59. The alpha coefficient and item correlations in this study both indicate a high level of internal consistency among the items. These results suggest the POBQ-44 is a reliable instrument to measure obsessive beliefs in Iranian sample.

The current findings support the reliability and validity of the POBQ-44 as a self-report measure of OC-related cognitive phenomena. Further research with these measures warranted. A comparison across more specific diagnostic group such as those with major depression, GAD, panic disorder or PTSD across different countries might provide better insight into the distinctiveness of these concepts and serve to evaluate the concurrent validity of the scale.

Additional research with the POBQ-44 should rely on heterogeneous samples. As the present study relied on medical students volunteers, there may be a non-representative sample of the population. Furthermore, future studies should examine the relationship between the OBQ-44-Persian and other related scales in both clinical and non-clinical community samples for better understanding of the structure of OC symptoms, especially obsessions. Finally, additional research with diverse cultural groups is warranted. The present study showed several consistencies with samples of the OBQ evaluated with Western samples. However, there were several notable differences in the factor structure and item loadings. This, in turn, may suggest significant differences in the cognitive model of OCD. As Sica *et al.* (27) indicated; the cross-cultural research may help to verify the reliability of the models and measures. If there are inconsistencies, the cultural, ethnic, or religious diversity of subjects may allow for greater understanding of the contribution of these variables to O-C cognitions.

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Appendix 1

A brief comparative review of factors emerged in OCCWG (2001), OCCWG (2005), Wood (2004), Myers et al. (2007) and present study

OCCWG (1997)	OCCWG (2005)	Wood (2004)	Myers et al. (2007)	Shams (2011)
Inflated Responsibility (R)	Responsibility/Threat estimation (RT)	OBQ general	Perfectionism/ Intolerance of Uncertainty (PC)	General (G)
Over-importance of thoughts (I)	Perfectionism/ Certainty (PC)	Importance/ Control of Thoughts (ICT)	Importance/ Control of Thoughts (ICT)	Perfectionism/ Certainty (PC)
Beliefs about the importance of controlling one's thought (C)	Importance/ Control of Thoughts (ICT)	Perfectionism (P)	Responsibility (R)	Responsibility/Threat estimation (RT)
Over-estimation of threat (T)		Responsibility (R)	Over-estimation of threat (T)	Importance/ Control of thoughts (ICT)
Intolerance of uncertainty (U)				Complete Performance (CP)
Perfectionism (P)				