

A Comparative Study of Obsessive Beliefs in Obsessive-Compulsive Disorder, Anxiety Disorder Patients and a Normal Group

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Received: 28 Jan. 2014; Accepted: 28 May 2014

Abstract- Cognitive models of obsessive-compulsive disorder (OCD) posit that specific kinds of dysfunctional beliefs underlie the development of this disorder. The aim of present study was to determine whether these beliefs are endorsed more strongly by OCD patients than by those with other anxiety disorders and by community samples. A battery of questionnaires, including the OBQ-44, MOCI, BDI-II, BAI, STAI, used to assess obsessive-compulsive symptoms, depression and anxiety in 39 OCD patients (OC), 46 anxious patients (AC) and 41 community controls (CC). Compared to CCs and ACs, OC patients more strongly endorsed beliefs related to importance and control of thoughts. Both OC and AC patients scored higher than CC participants did on belief domains about responsibility/threat estimation and perfectionism/certainty. Therefore, the domain that seems to be specific to OCD is a set of beliefs that revolves around the contention that it is possible and necessary to control one's thoughts. Results regarding group differences on particular items of the OBQ-44 indicated that 21 items discriminated between the OC and CC groups and 7 items discriminated between the OC and AC groups, suggesting that these items are more specific to the OC group. Additional research warranted because it is plausible that these cognitive factors relate differently to OCD phenomena across different cultures.

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Acta Medica Iranica, 2015;53(5):301-310.

Keywords: Obsessive-compulsive disorder; PersianOBQ-44; Cognition; Beliefs

Introduction

Obsessive-compulsive disorder (OCD) is an anxiety disorder characterized by persistent, inappropriate intrusive thoughts, ideas, images, or impulses that evoke anxiety and subjective resistance (obsessions) and urges to perform overt or covert acts to neutralize obsessional fear according to rigidly applied rules (compulsive rituals). Themes in OCD symptoms typically concern contamination, violence, sex, religion, responsibility for harm, hoarding, and symmetry (1,2).

Recently, theoreticians interested in the etiology, assessment and treatment of OCD have focused their attention on cognitive factors that might be central to this disorder. Theoretical models indicate that several cognitive domains are especially relevant to OCD (3,4), and several years of research have been devoted to the development and refinement of self-report measures of beliefs and appraisals thought to be important in this disorder (5). The original work of Rachman (6) and

Salkovskis (7,4) has guided most of the research on OCD. Accordingly, the OCCWG (8,9) identified domains considered central to OCD and developed the 87-item Obsessive Beliefs Questionnaire (OBQ) and the 31-item Interpretation of Intrusions Inventory (III). The OBQ consists of six subscales representing maladaptive beliefs thought to characterize OCD: responsibility, the importance of thoughts, control of thoughts, threat estimation, tolerance of uncertainty, and perfectionism. The first OCCWG (10) study demonstrated that three OBQ scales (control of thoughts, the importance of thoughts, responsibility) distinguished individuals with OCD from anxiety controls. On the other hand, anxious patients scored higher than non-clinical control groups on all subscales of the OBQ. Three cognitive domains (tolerance of uncertainty, over-estimation of threat and perfectionism) appeared to be OCD-relevant but not OCD-specific. Correlations of OBQ subscales with measures of OCD symptoms, mood and worry, showed that the OBQ subscales were as highly correlated with

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non-OCD symptom measures (anxiety, depression and worry) as they were with OCD symptom measures. In a second OCCWG (11) study, items from six theoretically derived subscales of the OBQ were submitted to factor analysis, three factors emerged, including responsibility/threat estimation (RT), perfectionism/certainty (PC), and importance/control of thoughts (ICT). Meanwhile, comparisons of group measures on the OBQ-44 indicated that OCD patients scored significantly higher than non-OCD anxious patients did on the OBQ/RT/ICT but not on the PC subscale.

To date, the OBQ has studied in both clinical, and non-clinical samples drawn from the English language population (5,8-17). In non-English language populations, data are available for Sica *et al.*, (18) and Julien *et al.*, (19) studies on clinical samples. In Sica *et al.* (18) study, with Italian participants, the six OBQ subscales found to be reasonably distinct from each other. The OBQ discriminated among OCD patients, GAD patients, and normal controls. At last, three cognitive domains (tolerance of uncertainty, control of thoughts and perfectionism) seemed to be specific to OCD, whereas over importance of thoughts and inflated responsibility barely discriminated clinically anxious individuals from non-clinical ones. Julien *et al.* (19) validated a French version of the OBQ-44 on OCD patients, panic disorder patients, and non-anxious controls. The factor structure of the measure suggested a three-factor solution (RT, PC, and ICT) for the OCD sample, with high correlations between each factor and the OBQ-44 total score, as well as moderate inter-correlations among the three factors. The findings demonstrated specificity of the belief domains to OCD, such that participants with OCD had significantly higher scores than the two control groups on the scale's total score and on the scores on each of the subscales. Shams *et al.*, (20) study examined the psychometric properties of the Persian language version of the OBQ-44 in a sample of 222 medical students from the Tehran University of Medical Sciences. The order in which factors emerged was, to some extent, similar to the OCCWG (10,11), American (21), and British (13) studies. An exploratory factor analyses indicated five factors: (1) general, (2) perfectionism and certainty, (3) responsibility and threat estimation (4) importance and control of thoughts and (5) complete performance. Tolin and colleagues (15) were interested in examining OC beliefs in OCD patients. They found that OCD patients differed from ACs on beliefs about perfectionism, tolerance of uncertainty and importance and control

thoughts, but not on beliefs about threat estimation and inflated responsibility. When controlling for depression and trait anxiety, it found that the OCD and AC groups did not differ in most belief domains except for beliefs about importance and control of thoughts. In another study, Tolin and colleagues (13) examined the relationship between symptom presentation in OCD and dysfunctional beliefs. They found that threat estimation significantly predicted the OCD symptom domains of washing, checking/doubting, obsessing, mental neutralizing and hoarding. Additionally, the perceived need to control one's thoughts predicted obsessing. The perceived importance of thoughts predicted neutralizing, and perfectionism beliefs predicted ordering.

In an investigation into belief specificity in OCD symptoms subtypes, Julien *et al.*, (12) found that Responsibility and Threat estimation (RT) predicted rumination scores, Perfectionism and Certainty (PC) predicted checking and precision scores, and ICT predicted impulse phobia scores. On the other hand, Taylor *et al.*, (22) maintain that dysfunctional beliefs play a role in only a subgroup of cases of OCD and, by extension that different models might apply to different subtypes of the disorder. More recently, Wu, Carter (16) and Wu and Cortesi (17) examined associations between the belief domains assessed by the OBQ and OC symptoms in non-clinical student populations. In an examination of the OBQ-87, Wu and Cortesi (17) found responsibility/threat estimation, perfectionism had strong unique relations with OC symptoms Wu and Carter (16) found that both versions of the OBQ subscales were significantly associated with OC symptoms, but not symptoms of panic disorder and depression. However, when they examined the specificity of the OBQ subscales in their association with OC symptoms, they found that most subscales had a moderate positive association with multiple OCD symptoms, with the exception of the PC subscale, which appeared to be more strongly associated with rituals, particularly ordering, than with other OC symptoms.

There is currently no consensus about the extent to which maladaptive beliefs underlie OCD (e.g. 23). Some studies suggest that all of the assessed domains of OCD symptoms predicted by at least one domain of maladaptive beliefs, even when controlling for comorbid symptoms (11,15). For instance, in studies of the OBQ-87, three of the belief domains (tolerance of uncertainty, threat estimation, and perfectionism) found not to discriminate between OCD and AC participants. In Sica *et al.*, (18) study, at least three cognitive domains (tolerance of uncertainty, importance and control of

thoughts, and perfectionism) seem specific to OCD, and Tolin *et al.*'s (15) study endorsed beliefs related to threat estimation, tolerance of uncertainty, importance and control of thoughts and perfectionism, but not inflated responsibility. On the other hand, none or only some of the OBQ domains can claim to be specific to OCD (24, 5), and the ability of these cognitive variables to explain OCD symptoms has been rather disappointing. The problems of overlap among these domains remain, and questions arise as to whether the OBQ measures irrational beliefs in general (5) or if it is better accounted for by negative mood states (25). It also suggested that the cognitions proposed to be relevant to OCD themselves require further explanation (5).

The purpose of the present investigation was to replicate and extend the work of the OCCWG (11) to an Iranian sample of OCD and anxious patients and non-clinical controls. In particular, we sought to examine whether the three OBQ-44 subscales would be associated specifically with OCD (i.e., OCD patients would score higher on these measures than would AC and non-clinical controls). We also aimed to investigate differences in the three groups on a range of demographic variables and to compare group means on OBQ-44 scores. Finally, we aimed to determine correlations between the OBQ-44 subscales and the MOCI, STAI, BAI, and BDI-II, as well as to calculate descriptive statistics and item-total correlations of the OBQ-44 items in OCD, AC and CC groups. In order to be consistent with previous studies that used the OBQ-44-OCCWG, and because the Persian Obsessive Beliefs Questionnaire-44 (POBQ-44) was evaluated in a sample of only 222 students who were not representative of the Iranian population, we elected to use the original OBQ-44 with three factors in the present study.

Materials and Methods

Participants

Three groups of participants were enrolled in the present study: patients with DSM-IV diagnosed obsessive-compulsive disorder (OCs) as their most severe problem, patients with a DSM-IV diagnosed anxiety disorder (ACs) as their most severe problem (including primary diagnoses of GAD, social phobia, PTSD and panic disorder), and community controls (CCs). The OC and AC groups recruited from the Roozbeh Hospital outpatient clinic. The control group included volunteers who recruited from Roozbeh Hospital staff and individuals from the general community. Patients who presented with a neurological

disorder or head injury, a serious medical condition, current or past psychotic disorder, and/or a history of alcohol or other substance abuse excluded. From 156 participants who were considered for this study, 30 participants (9 from the OC group, 12 from the AC group and 9 from the CC group) were excluded. The final sample consisted of 126 participants (68% women), including 39 OCD patients, 46 AC participants, and 41 healthy controls. Participants' mean age was 30.03 years (SD = 9.20). All participants matched on age, sex, education and marital status.

Procedures

All participants individually tested in a psychiatric clinic as well as a Cognitive Behavior Therapy Clinic by a psychiatrist and a clinical psychologist, respectively. The procedure for collecting data from OC and anxious patients occurred in three stages. First, patients diagnosed with a psychiatric clinical interview based on the DSM-IV (26). Second, they completed an unstructured interview for CBT conducted by a clinical psychologist. In the third stage, the patients completed the research questionnaires, which administered by an experienced psychometric an. OCD was the primary diagnosis for OC patients, whereas other anxiety disorders were the primary diagnoses for AC patients. The community participants assessed individually in a single separate session. They completed questionnaires after given a brief set of instructions. They did not screen for psychopathology, except for one short question, which established that they have never been to a psychiatrist because of psychiatric problems or complaints.

All participants were administered a battery of psychological tests, including the Obsessive Beliefs Questionnaire (OBQ-44), the Maudsley Obsessive-Compulsive Inventory (MOCI), the Beck Depression Inventory-Revised (BDI-II), the Beck Anxiety Inventory (BAI), and the State-Trait Anxiety Inventory (STAI). All measures administered during a single testing session.

Measures

Obsessive Beliefs Questionnaire-44-Persian (OBQ-44: OCCWG) (11).

The OBQ-44-Persian consists of 44 belief statements concerning characteristic of obsessive thinking (OCCWG, 8,9). The scale items represent six rationally determined subscales thought to represent the key belief domains of OCD. The subscales are: 1) Responsibility/Threat Estimation (16 items), 2)

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Perfectionism/Certainty (16 items), and 3) Importance/Control of Thoughts (12 items). Respondents indicate their general level of agreement with items on a 7- point rating scale that ranges from (-3) "disagree very much" to (0) "neutral" to (+3,) "agree very much". Item responses transformed to a 1 to 7 scale, and subscale scores calculated by summing across their respective items. The Persian OBQ (POBQ-44) has the excellent internal consistency (Cronbach's $\alpha=.91$) and adequate test-retest reliability ($r=.87$) as assessed in an Iranian student sample (20).

Maudsley Obsessive-Compulsive Inventory (MOCI; Rachman & Hodgson) (7).

The MOCI is a 30-item true-false questionnaire for the assessment of obsessive and compulsive symptoms. Maximum scores for the five scales (total, checking, washing, slowness-repetition, and doubting-conscientious) are 30, 9, 11, 7 and 7, respectively. This inventory was found to have adequate validity and reliability. The test-retest reliability of the MOCI is particularly good ($r = 0.98$). A scoring key for this instrument is available as an appendix in Rachman and Hodgson (1980). This test has been translated into Persian and used in previous studies in Iran (27, 28).

State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Simos) (29).

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 (Spielberger et al., 1983). Only the state subscale (STAI-s) used in the present study. The Persian STAI (PSTAI) has the excellent internal consistency (Cronbach's $\alpha=.90$) and adequate test-retest reliability ($r=.53$), as assessed in Iranian student samples (30).

Beck Depression Inventory-II-Revised (BDI-II; Beck, Steer, & Brown) (31).

The BDI-II is one of the most widely used self-report instruments for measuring the severity of depression. The BDI-II revised to approximate the DSM-IV (American Psychiatric Association, 1994) criteria for major depression (31). The BDI-II contains 21 items, each with a series of four statements describing the severity of depressive symptoms along an ordinal continuum from absent or mild (scored 0) to severe (scored 3). Scores on this measure range from 0 to 63. The Persian BDI-II (PBDI-II) has the excellent internal consistency

(Cronbach's $\alpha=.87$) and adequate test-retest reliability ($r=.73$) as assessed in an Iranian student sample (28).

Beck Anxiety Inventory (BAI; Beck, Epstein, Brown & Steer) (32).

The BAI is a 21-item anxiety symptom checklist that covers anxiety symptoms commonly experienced by clinically anxious people. Scores on this test can range from 0 to 63. The BAI has excellent psychometric properties. The BAI-Persian has the excellent internal consistency (Cronbach's $\alpha=.92$) and test-retest reliability ($r=.87$), as assessed in an Iranian student sample (33).

Results

As shown in Table 1, 126 participants comprising of 39 individual with OCD (OC), 46 individuals with another anxiety disorder (AC) and 41 non-clinical community control (CC) recruited for this study. According to tests of group differences, there was not a significant difference in the number of participants in each sample group. In addition, there were no significant differences found between the three sample groups on a range of demographic variables including marital status, gender or education level. The mean age of the participants in each group (for the total sample, and males and females separately) was also compared and the results revealed that there were no significant differences between the mean ages of the three groups.

Multiple one-way univariate analysis of variance (ANOVA) followed by the Scheffe post hoc tests were conducted to test for differences between the clinical and non-clinical groups on a range of variables including OC symptoms, OCD-relevant beliefs and mood. The Mean score for the three sample groups of OC, AC, and CC for the clinical measures of OBQ-44, MOCI, STAI, BAI, and BDI-II shown in Table 2. Significant differences found between OC, AC, with the controls on these measures. Post hoc tests revealed that both the OC and AC groups reported higher levels of OCD-related beliefs (on the OBQ-44-total) and scored higher on the OBQ-44-RT and OBQ-44-PC compared to the community sample. However, although the clinical groups reported higher levels of OCD-related beliefs, no differences found between the OC and AC group on the OBQ-44-total and the above-mentioned subscales. The OC group scored significantly higher than the AC and CC cohorts on the importance and control of thoughts (ICT) subscale of the OBQ-44, but no differences were found between the latter two groups on this subscale.

Table1. Socio-Demographic variables of the OC, AC, CC groups

Variables	OC (n=39)	AC (n=46)	CC (n=41)	Total (n=126)	F (df)	Statistical comparisons	P- value
Sex (N, %)							
Female	27 (21.4%)	33 (26.2%)	26 (20.6%)	86 (68.3%)	2	$\chi^2= .718$	0.698
Male	12 (9.5%)	13 (10.3%)	15 (11.9%)	40 (31.71%)			
Education (N, %)							
Primary school	4 (3.2%)	7 (5.6%)	5 (4%)	16 (12.7%)	6	$\chi^2= 5.400$	0.494
9th	6 (4.8%)	3 (2.4%)	6 (4.8%)	15 (11.9%)			
High school	17 (13.5%)	15 (11.9%)	11 (8.7%)	43 (34.1%)			
Above high school	12 (9.5%)	21 (16.7%)	19 (15.1%)	52 (41.3%)			
Marriage status N, %)							
Married	18 (14.3%)	22 (17.5%)	23 (18.3%)	62 (50%)	2	$\chi^2= .927$	0.629
single	21 (16.7%)	24 (19%)	18 (14.3%)	63 (50%)			
Age (M, SD)							
Male	30.25 (9.21)	32 (8.48)	27.20 (8.87)	29.6 (8.86)	37	F= 1.062	0.356
Female	30.11 (10.29)	28.82 (8.45)	32.04 (9.63)	30.20 (9.40)	83	F= .853	0.430
Total	30.15 (9.84)	29.72 (8.49)	30.27 (9.54)	30.3 (9.20)	123	F= .043	0.958

OC= Obsessive-compulsive participants; AC= clinically anxious participants (non-OC); CC= Non-clinical control participants

As shown in Table 2, significant differences observed among the three groups on a measure of OCD phenomena (the MOCI and its subscales, with the exception of slowness). As expected, the OCD group reported significantly more overall OC symptoms and scored high on the subscales of checking and washing. However, no differences found between the AC and CC groups on these measures. With regard to the doubting subscale of the MOCI, the difference among the three groups found to be significant, such that the OC group

obtained the highest level of doubting followed by the anxious group, with the community controls reporting the lowest level of doubting. The OC and the AC groups reported significantly more anxiety than the community group. Whereas the two clinical groups reported significantly higher levels of anxiety than the non-clinical group, there were no differences between the OC and AC groups on the BAI and STAI, suggesting that these tools might be useful only in distinguishing clinical from non-clinical cohorts.

Table 2. Comparisons of group mean on the OBQ-44 scores and MOCI, STAI, BAI and BDI-II

Variables	OC (N= 39)	AC (N= 41)	CC (N= 46)	F (df)	Sig.	Scheffe
OBQ-44						
Total	217.69 (44.48)	196.05 (34.45)	166.79 (40.86)	14.208	0.000	OC=AC, AC>CC, OC>CC
RT	75.73 (17.84)	68.71 (15.47)	58.36 (16.39)	10.107	0.000	OC=AC, AC>CC, OC>CC
PC	84.78 (16.83)	79.14 (12.62)	65.74 (15.64)	15.999	0.000	OC=AC, AC>CC, OC>CC
ICT	56.74 (14.58)	48.65 (11.78)	42.49 (12.47)	12.005	0.000	OC>AC, AC=CC, OC>CC
MOCI						
Total	16.51 (4.94)	10.55 (5.22)	7.75 (4.81)	28.070	0.000	OC>AC, AC=CC, OC>CC
Checking	5.03 (2.41)	2.64 (2.04)	1.58 (1.35)	30.262	0.000	OC>AC, AC=CC, OC>CC
Washing	4.76 (2.28)	3.50 (2.22)	2.56 (2.30)	8.930	0.000	OC>AC, AC=CC, OC>CC
Slowness	3.00 (1.68)	2.61 (1.51)	2.76 (1.26)	.688	0.504	-----
Doubting	5.31 (1.66)	3.64 (1.55)	2.17 (1.38)	38.375	0.000	OC>AC, AC>CC, OC>CC
STAI	47.31 (6.20)	48.56 (5.38)	43.82 (4.95)	7.644	0.001	OC=AC, AC>CC, OC>CC
BAI	22.33 (12.48)	16.74 (12.90)	7.64 (10.35)	14.879	0.000	OC=AC, AC>CC, OC>CC
BDI-II	27.40 (11.35)	19.09 (11.87)	8.50 (8.60)	30.843	0.000	OC>AC, AC>CC, OC>CC

OC= Obsessive-Compulsive participants; AC= clinically anxious participants (non-OC); CC= Non-clinical control participants, OBQ= Obsessive Beliefs Questionnaire, RT= Responsibility/Threat Estimation, PC= Perfectionism/Certainty, ICT = Importance/Control of Thoughts, MOCI= Maudsley Obsessive Compulsive Inventory, BAI= Beck Anxiety Inventory, STAI= State-Trait Anxiety Inventory, BDI-II= Beck Depression Inventory-II-Revised

** $P < 0.01$, * $P < 0.05$

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Finally, the OC group reported the highest level of depression followed by the AC group, with the CC group reporting the lowest level of depression. These

findings indicate that there are higher levels of depression in the clinical sample; however, the depression level found to be greater in the OC group.

Table 3. Descriptive statistics and item-total correlations of the OBQ-44 items in groups

Items	OC	AC	CC	F (df=2)	Significant level	Scheffe
1	4.23 (1.88)	4.17 (1.89)	2.61 (1.58)	10.893	0.000	OC=AC, AC>CC, OC>CC
2	5.15 (1.68)	4.80 (1.82)	3.50 (1.88)	9.426	0.000	OC=AC, AC>CC, OC>CC
3	5.59 (1.87)	4.91 (1.96)	3.37 (2.05)	13.621	0.000	OC=AC, AC>CC, OC>CC
4	5.95 (1.41)	5.93 (1.48)	5.00 (1.86)	4.819	0.010	OC=AC, AC>CC, OC>CC
5	5.79 (1.63)	6.00 (1.32)	5.88 (1.25)	0.241	0.786	-----
6	5.77 (1.78)	5.33 (1.51)	4.97 (1.53)	2.429	0.092	-----
7	5.79 (1.58)	5.61 (1.67)	5.20 (2.00)	1.202	0.304	-----
8	5.95 (1.26)	5.29 (1.63)	4.80 (1.67)	5.558	0.005	OC=AC, AC=CC, OC>CC
9	4.97 (2.17)	4.50 (1.89)	3.59 (2.07)	4.826	0.010	OC=AC, AC=CC, OC>CC
10	6.11 (1.18)	6.13 (1.17)	5.66 (1.65)	1.609	0.204	-----
11	5.79 (1.49)	5.61 (1.20)	4.93 (1.62)	4.096	0.019	OC=AC, AC=CC, OC>CC
12	4.77 (2.13)	3.98 (1.96)	2.98 (1.85)	8.251	0.000	OC=AC, AC=CC, OC>CC
13	2.90 (2.31)	2.38 (1.96)	2.12 (1.68)	1.567	0.213	-----
14	6.23 (1.18)	6.00 (1.45)	5.78 (1.49)	1.056	0.351	-----
15	2.84 (2.05)	3.31 (2.00)	2.64 (1.78)	1.325	0.270	-----
16	4.79 (2.03)	4.69 (1.64)	3.63 (1.84)	5.037	0.008	OC=AC, AC>CC, OC>CC
17	4.90 (2.09)	6.13 (6.01)	4.95 (4.95)	1.394	0.252	-----
18	5.36 (1.99)	4.67 (1.93)	3.41 (1.92)	10.323	0.000	OC=AC, AC>CC, OC>CC
19	5.49 (1.48)	4.76 (1.68)	4.05 (1.79)	7.327	0.001	OC=AC, AC=CC, OC>CC
20	5.79 (1.80)	5.57 (1.49)	4.62 (1.84)	5.243	0.007	OC=AC, AC>CC, OC>CC
21	4.69 (2.18)	3.50 (1.83)	3.85 (1.90)	4.002	0.021	OC>AC, AC=CC, OC>CC
22	4.77 (1.88)	4.22 (2.19)	3.56 (1.95)	3.585	0.031	OC=AC, AC=CC, OC>CC
23	5.21 (1.79)	5.39 (1.69)	4.55 (1.89)	2.537	0.083	-----
24	6.13 (1.59)	5.54 (1.60)	4.68 (1.92)	7.281	0.001	OC=AC, AC=CC, OC>CC
25	3.79 (2.45)	2.74 (1.86)	2.20 (1.69)	6.523	0.002	OC=AC, AC=CC, OC>CC
26	5.44 (1.85)	5.28 (1.72)	4.68 (1.85)	1.986	0.142	-----
27	5.36 (2.13)	4.83 (1.76)	4.41 (2.10)	2.257	0.109	-----
28	6.51 (.76)	5.74 (1.54)	5.07 (1.52)	11.518	0.000	OC>AC, AC=CC, OC>CC
29	3.89 (1.96)	2.84 (1.86)	2.51 (1.78)	5.891	0.004	OC>AC, AC=CC, OC>CC
30	4.77 (2.23)	3.24 (1.92)	2.71 (1.79)	11.608	0.000	OC>AC, AC=CC, OC>CC
31	5.87 (1.28)	6.02 (1.27)	5.29 (1.60)	3.211	0.055	-----
32	2.82 (2.15)	2.98 (2.01)	2.68 (1.56)	.251	0.778	-----
33	5.23 (1.66)	4.12 (1.89)	3.80 (1.81)	6.957	0.001	OC>AC, AC=CC, OC>CC
34	4.95 (2.10)	4.31 (2.17)	2.88 (1.94)	10.409	0.000	OC=AC, AC>CC, OC>CC
35	5.21 (2.15)	4.00 (2.22)	2.90 (1.80)	12.388	0.000	OC>AC, AC=CC, OC>CC
36	4.92 (2.17)	4.59 (1.98)	3.34 (1.94)	6.855	0.002	OC=AC, AC>CC, OC>CC
37	5.51 (2.06)	5.64 (1.17)	5.02 (1.62)	1.683	0.190	-----
38	3.67 (2.11)	2.76 (1.87)	2.66 (1.73)	3.420	0.058	-----
39	3.72 (2.10)	3.09 (1.85)	2.37 (1.39)	5.643	0.005	OC=AC, AC=CC, OC>CC
40	4.44 (1.93)	3.87 (2.06)	2.95 (1.77)	6.053	0.003	OC=AC, AC=CC, OC>CC
41	3.76 (2.19)	3.44 (2.07)	2.61 (1.59)	3.684	0.028	OC=AC, AC=CC, OC>CC
42	4.45 (2.32)	4.31 (1.98)	3.68 (1.90)	0.580	0.210	-----
43	4.18 (1.86)	3.61 (1.99)	2.37 (1.51)	10.680	0.000	OC=AC, AC>CC, OC>CC
44	4.69 (2.07)	3.52 (1.89)	2.51 (1.61)	13.711	0.000	OC>AC, AC=CC, OC>CC

OC= Obsessive-Compulsive participants; AC= clinically anxious participants (non-OC); CC= Non-clinical control participants

Given the general lack of difference in OCD-related beliefs between the AC and OC group, a series of ANOVAs conducted on each of the 44 items of the OBQ-44 in order to examine whether the groups differed on particular items. The results are presented in Table 3 and they show that on 21 items, (Out of 21 items 10,10,1 items were RT, PC, and ICT respectively), the OC group scored significantly higher than the CC group, indicating that these items discriminated between OCD patients and non-clinical participants. The OC group, in comparison to the AC sample, scored significantly higher on 7 items (Out of seven items 5 and 2 items were ICT, PC respectively) suggesting that these items represent OCD-specific beliefs held by the OC group and that they are able to discriminate between the two clinical groups. Finally, there was not a significant difference between the three groups on 16 items (Out of 16 items 5, and 6 items were RT, PC and ICT respectively), suggesting that these items represent more general and non-specific dysfunctional beliefs held by the three groups.

Discussion

Our findings demonstrate that the OBQ-44 clearly distinguishes between patients with OCD and non-OCD anxious patients compared to the non-patient group. The OCs and ACs scored significantly higher than CCs on the total score of the OBQ-44 and two of its subscales (RT and PC). OCs scored higher than ACs and CCs on the OBQ-44-ICT subscale, but there was no difference between ACs and CCs on this subscale. These findings suggest that on the Persian version of the OBQ-44, the ICT subscale assessed beliefs that may be specific to OCD. OBQ-44-Persian beliefs related to RT and PC appear to be OCD-relevant, but not OCD-specific. We found that ICT beliefs, but not RT and PC beliefs, were endorsed more strongly by OCD patients than by ACs. Tolin *et al.* (15) found that PC and ICT beliefs, but not RT beliefs, were endorsed more strongly by OCD patients than by ACs. The OCCWG (11) also found that ICT beliefs differed between OCD patients and ACs; however, they found a difference in RT and not for PC. Mirroring the findings with the OBQ-44 then, only ICT has shown across studies to differ between OC patients and AC patients.

Thus, when the present results added to those of previous studies, a pattern emerges suggesting that maladaptive beliefs about the importance of and the need to control one's thoughts might have a more robust

relationship with OCD than do other "obsessive" beliefs. Furthermore, as only ICT beliefs differed between OC patients and AC patients, the present results suggest that the OBQ-44 importance and control of thoughts subscale may have its own predictive validity.

We surprised by the lack of significant findings for responsibility and threat estimation, given the central role of inflated responsibility beliefs in some cognitive models of OCD (34). On the OBQ-44, OCD patients did not endorse responsibility more strongly than did ACs, but they endorsed this belief more strongly than did the non-clinical control group. The data further suggest that the lack of significant difference between OC and AC patients on responsibility not attributed to the presence of GAD, which may be marked by an inflated sense of responsibility. Our finding differs from those of previous studies by the OCCWG (9) and Taylor *et al.* (5), who found a between-group difference for responsibility. The OBQ-44-RT subscale has been shown to differ between OC and AC patients (11) and to predict specific OCD symptoms (11,12,15), but this may be due to the threat estimation items. Indeed, Myers *et al.* (13) also found that overestimation of threat predicted all OC symptoms equally, whereas responsibility was not shown to predict any OC symptoms independently. Meanwhile, in Shams *et al.* (20) five factors named as general, perfectionism and certainty, responsibility, threat estimation and importance and control of thoughts, and complete performance all emerged as separate specific factors in OCD

Sica *et al.*, (18) suggest that in Italian individuals at least three domains (tolerance of uncertainty, control of thoughts and perfectionism) are specific to OCD, whereas importance of thoughts and responsibility barely discriminated clinically anxious individuals from non-clinical ones. Myers *et al.*, (13) reported similar findings in the study of British student participants. They found that the PC and ICT factors were independent predictors of specific OCD symptoms, whereas they concluded that overestimation of threat, which predicted all types of OC symptoms, is likely relevant to multiple anxiety disorders and general anxiety traits. As mentioned above, they further found that responsibility did not predict any OC symptoms when other belief domains accounted for. More research needed to clarify the role of inflated responsibility beliefs in OCD. Thus, there is an emerging body of research suggesting that OCD patients characterized by a belief that thought control is both necessary and

possible, a tendency to use maladaptive forms of thought control, and a high likelihood of failed thought control attempts. This pattern of results is broadly consistent with current cognitive-behavioral theories of OCD (3,36). However, it is limited by the use of self-report measures, which are inherently prone to demand characteristics and idiosyncratic interpretation. Further experimental research may help clarify these findings by manipulating ICT beliefs and by examining the effect of this manipulation on the use of various thought control strategies, as well as the success of such strategies (15).

Significant differences observed between the three groups on the MOCI (total and subscales) except for slowness. The OC group scored significantly higher than the AC patients and CC group on the MOCI (total, washing and checking). However, no differences found between the AC patients and CC group on these measures. With regard to the doubting subscale of the MOCI, a difference between the three groups found to be significant, such that the OC group obtained the highest level of doubting followed by the AC patients, whereas the CC participants reported the lowest level doubting. Historically, doubt has always figured as an important characteristic of OCD (37) but is presently only given a marginal role in cognitive accounts of this disorder. Salkovskis (3) almost appeared to equate doubt with intrusive cognitions.

We used the BDI-II, BAI, and STAI to assess mood and anxiety status. The OC and AC patients reported significantly more anxiety than the community group, but although the two clinical groups reported higher levels of anxiety than the non-clinical group, no differences found between the OC and AC patients on the BAI and STAI. The two measures of anxiety employed in this study suggest that these tools might only be useful in distinguishing clinical from non-clinical cohorts. Finally, the OC patients reported the highest levels of depression, followed by the AC and CC groups, the latter that reported the lowest levels of depression. Studies have reported that between 50% and 100% of OCD patients have a concurrent diagnosis or a history of MDD (38, 39, and 40). More than 60% of patients with OCD present with other psychiatric disorders, or have a lifetime risk for co morbid psychiatric conditions (38)

The results indicated that on 21 items of the OBQ-44, OC patients scored significantly higher than the community group, with these items discriminating between the OC patients and the non-clinical controls. The OC patients, in comparison to the AC group, scored significantly higher on 7 items, suggested that these

items reflected more OCD-specific beliefs held by the OC group and that they are able to discriminate between the two clinical groups. The results described here limited by the relatively small size of the samples. However, we have tried to reduce the impact of this limitation by selecting participants and measures with maximum accuracy and by paying particular attention to the recruitment process.

In conclusion, the current findings highlight dysfunctional beliefs considered as important in the pathogenesis and/or maintenance of OCD. Instruments like the OBQ-44 are undoubtedly beneficial for increasing our knowledge of psychological phenomena across a diversity of ethnic and cultural groups. Further research should clarify how many dimensions of the OBQ-44 are relevant for presentations of OCD in various populations, whether specific beliefs are linked to certain types of obsessive or compulsive symptoms (see 25), and to what extent the OBQ-44 discriminates between individuals with different anxiety disorders. The studies conducted so far supply encouraging data for continuing the investigation of cognitive structures and content in OCD.

References

1. Foa EB, Huppert JD, Leiberg S, et al. The Obsessive-Compulsive Inventory: Development and validation short version. *Psycholol Assess* 2000;14(4):485-96.
2. McKay D, Abramowitz J, Calamari J, et al. A critical valuation of obsessive-compulsive disorder subtypes: Symptoms versus mechanisms. *Clin Psychol Rev* 2004; 24(3):283-313.
3. Salkovskis PM. Obsessional-compulsive problems: A cognitive-behavioral analysis. *Behav Res Ther* 1985; 23(5):571-83.
4. Salkovskis PM, Westbrook D. Behavior therapy, and obsessional ruminations: Can failure be turned into success? *Behav Res Ther* 1989;27(2):149-60.
5. Taylor S, Kyrios M, Thordarson DS, et al. Development and validation of instruments for measuring intrusions and beliefs in obsessive compulsive disorder. In: Frost RO, Steketee G, editors. *Cognitive approaches to obsessions and compulsions: Theory, research, and treatment*. 1st ed. Oxford, UK: Elsevier; 2002: p. 117-37.
6. Rachman S. A cognitive theory of obsessions. *Behve Res Ther* 1997; 36(4):385-401.
7. Rachman SJ, Hodgson R J, editors. *Obsessions and compulsions (Century psychology series)*. 1st ed. New Jersey: Prentice Hall, Inc; 1980: p.
8. Obsessive Compulsive Cognitions Working Group.

- Cognitive assessment of obsessive-Compulsive disorder. *Behav Res Ther* 1997; 35(7):667-81.
9. Obsessive Compulsive Cognitions Working Group. Development and initial validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory. *Behve Res Ther* 2001;39(8):987-1006.
 10. Obsessive Compulsive Cognitions Working Group. Psychometric validation of the Obsessive Beliefs Questionnaire and Interpretation of Intrusions Inventory: Part I. *Behve Res Ther* 2003;41(8):863-78.
 11. Obsessive Compulsive Cognitions Working Group. Psychometric validation of the Obsessive Beliefs Questionnaire and Interpretation of Intrusions Inventory-- Part II: Factor analysis and testing of a belief version. *Behve Res Ther* 2005;43(11):1527-42.
 12. Julien D, O'Connor KP, Aardema F, et al. The specificity of belief domains in obsessive-compulsive disorder subtypes. *Personal and Individ Diffe* 2006;41:1205-16.
 13. Myers SG, Fisher PL, Wells A. Belief domains of the Obsessive Beliefs Questionnaire-44 (OBQ-44) and their specific relationship with obsessive compulsive Symptoms. *J Anxiety Disord* 2008; 22(3):475-84.
 14. Tolin DF, Woods CM, Abramowitz JS. The relationship between obsessive beliefs and obsessive-compulsive symptoms. *Cog Ther Res* 2003; 2:657-69.
 15. Tolin DF, Worshunsky P, Matlby N. Are "obsessive" beliefs specific to OCD? A comparison across anxiety disorders. *Behave Res Ther* 2006; 44(4):469-80.
 16. Wu KD, Carter SA. Further investigation of the Obsessive Beliefs Questionnaire: Factor structure and specificity of relations with OCD symptoms. *J of Anxiety Disord* 2008;22(5):824-36.
 17. Wu KD, Cortesi GT. Relations between perfectionism and obsessive-compulsive Symptoms: Examination of specificity among the dimensions. *J Anxiety Disord* 2009; 23(3):393-400.
 18. Sica C, Cosadeschi D, Sanavio E, et al. A study of the psychometric properties of the obsessive beliefs inventory and interpretations of intrusions inventory on clinical Italian individuals. *J Anxiety Disord* 2004; 188(3):291-307.
 19. Julien D, Careau Y, O'Connor KP, et al. Specificity of belief domains in OCD: Validation of the French version of the Obsessive Beliefs Questionnaire and a comparison across samples. *J Anxiety Disord* 2008; 22(6):1029-41.
 20. Shams G, kharamghadiri N, Esmaili Y, et al. Psychometric properties of the Persian version of the obsessive beliefs questionnaire in an Iranian population, *Acta Med Iran* 2014;52(1):66-75.
 21. Woods CM, Tolin DF, Abramowitz JS. Dimensionality of the Obsessive Beliefs Questionnaire (OBQ). *J Psychopathol Behav Assess* 2004;26(2):113-25.
 22. Taylor S, Abramowitz JS, Makay D, et al. Do dysfunctional beliefs play a role in all type of obsessive-compulsive Disorder? *J Anxiety Disord* 2006;20(1):216-28.
 23. Foa EB, Kozak MJ. DSM-IV field trial: Obsessive-compulsive disorder. *Am J Psychiatry* 1995;152(1):90-6.
 24. Clark DA, Beck AT. Manual for the Clark-Beck Obsessive Compulsive Inventory. San Antonio, TX: Psychol Corp; 2002.
 25. Emmelkamp PMG, Aardema A. Metacognition, specific obsessive-compulsive beliefs and obsessive-compulsive behavior. *Clin Psychol and Psychother* 1999;6(2):139-45.
 26. American Psychiatric Association, editor. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: American Psychiatric Association; 1994.
 27. Ghassemzadeh H, Khamseh A, Ebrahimkhani N. Symptoms of obsessive-compulsive disorder in a sample of Iranian patients. *Int J Soc Psychiatry* 2002;48(1):20-8.
 28. Ghassemzadeh H, Khamseh A, Ebrahimkhani N. Demographic variables and clinical features of obsessive-compulsive disorder in Iran: A second report. In: Ling BE, editors. *Obsessive-compulsive disorder research*. New York: Nova Science Publishers; 2005: p. 243-71.
 29. Spielberger CD, Gorsuch RL, Simos G, et al. Manual for the State Trait Anxiety Inventory. Palo Alto, CA: Consult Psychol Press; 1983: p.
 30. Panahi-Shahri M. Validation and normative data of State-Trait Anxiety Inventory-Persian in Iranian student sample [Dissertation]. Tarbiat Modarres Univ., 1993.
 31. Beck AT, Steer RA, Brown GK, editors. Manual for the Beck Depression Inventory-II. San Antonio, TX: Psychol Corp; 1996.
 32. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: Psychometric properties. *J Consult and Clin Psychol* 1988; 56: 893-897.
 33. Kaviani H, Mousavi AS. Psychometric properties of the Persian version of Beck Anxiety Inventory (BAI) in an Iranian population. *Tehran Univ Med J* 2008;66(2): 136-40.
 34. Salkovskis PM, Forrester E. Responsibility. In: Frost RO, Steketee G, editors. *Cognitive Approaches to Obsessions and Compulsions: Theory, Assessment and Treatment*. Amsterdam, Netherlands: Pergamon/Elsevier Science; 2002: p. 45-61.
 35. Salkovskis PM, Wroe AL, Gledhill A, et al. Responsibility attitudes and interpretations are characteristic of obsessive compulsive disorder. *Behav Res Ther* 2000;38(4):347-72.
 36. Purdon CL, Clark DA. The need to control thoughts. In Frost RO, Steketee G, editors. *Cognitive approaches to obsessions and compulsions: Theory, assessment and*

Primary drug resistance patterns in OCD

- treatment. Oxford, UK: Elsevier; 2002: p. 29-43.
37. Janet P, editor. Les obsessionset psychasthenie. 2nd ed. Paris: Bailliere; 1908.
38. Okasha A, Saad A, Khalili AH, et al. Phenomenology of OCD: A transcultural study. *Compr Psychiatry* 1994;35(3):191-7.
39. Rasmussen SA, Tsuang MT. Epidemiological and clinical findings of sign features to the design of neuropharmacologic studies of obsessive-compulsive disorders a. *Psychopharmacol Bull* 1986; 22:723-33.
40. Tukul R, Polat A, Ozdemir O, et al. Comorbid conditions in obsessive-compulsive disorder. *Compr Psychiatry* 2002; 43(3):204-9.