

Predicting Obsessive Compulsive Disorder Subtypes Using Cognitive Factors

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Objective: Recent studies have emphasized the important role of cognitive beliefs in etiology and maintenance of obsessive-compulsive disorder (OCD). OCD has different subtypes, but the specific role of cognitive beliefs in OCD symptomatology is not clear. The aim of the current study was to determine whether the cognitive factors proposed by Obsessive Compulsive Cognitions Working Group (OCCWG) could specifically predict subtypes of OCD.

Method: The question was investigated in a sample of 208 university students (mean age = 21, SD = 1.6). The target population was selected by cluster sampling. All participants completed two questionnaires including Obsessive Beliefs Questionnaire (OBQ-44) and Obsessive Compulsive Inventory-Revised (OCI-R). Data were analyzed using descriptive statistics and regression analysis.

Results: Regression analysis demonstrated that "responsibility/ threat over estimation" was a significant predictor of obsessive and compulsive behaviors and predicted washing, checking, obsessing, hoarding, and neutralizing subtypes of OCD. Furthermore, "perfectionism and intolerance of uncertainty" was the most significant predictor of ordering and hoarding while "importance/ control of thought" predicted ordering only.

Conclusion: This study found evidence in support of Salkovskis' cognitive theory about the central role of inflated responsibility beliefs in developing different subtypes of OCD. Besides, the results revealed those other cognitive beliefs had less important role in the development of OCD symptoms.

Key words: Beliefs, Cognition, Obsessive Compulsive Disorder

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Obsessive Compulsive Disorder (OCD) is an anxiety disorder, which is characterized by persistent intrusive ideas, thoughts, impulses or images (obsessions) and often results in worry and anxiety and performing compulsive rituals, repetitively. The aim of compulsions is to reduce or alleviate anxiety (1). At least 50% Of the patients have a comorbid disorder like anxiety disorder or unipolar mood disorder (2).

Some researchers believe that everyone experience such unwanted thoughts that provoke anxiety and result in performing behavioral or mental rituals (3). Many individuals experience unwanted intrusive thoughts that appear similar in content to people suffering from OCD (4). New theories about etiology of OCD, like the model of (OCCWG), emphasize the importance of cognitive contents (beliefs and appraisal) and cognitive processes of OCD (5). According to this model, differences between normal people and OCD individuals are not in the thought itself, but how they appraise the occurrence and content of their thoughts, as significant and meaningful, is important. Appraisal is giving meaning or negative judgment to an intrusion

(1). Usually, when such normal intrusions are appraised as personally important, highly unacceptable or immoral, they develop into obsession (6).

Recent cognitive-behavioral researches by the OCCWG have focused on three domains of beliefs including responsibility/ threat overestimation, importance/ control of thought, and perfectionism/ certainty. These cognitive processes that play an important role in etiology and maintenance of OCD are defined as follows: 1) Overestimation of responsibility: Someone believes that he/ she is responsible for causing or preventing a negative event and its outcomes, because of his/ her intrusive thoughts; 2) Overestimation of threat: Someone estimates negative events, or serious consequences of an event to be very probable; 3) Perfectionism: A belief that it is necessary and I must be perfect and make no mistakes; 4) Intolerance of uncertainty: A belief that I must have a 100% guarantee of safety and negative events must not happen; 5) Over-importance of thought: Someone believes that his/ her bad obsessional thoughts can cause a negative event, or having bad thoughts are morally equivalent to performing a bad action; and

6) Control of thought: Someone believes that a complete control of intrusive thoughts is necessary and possible (5, 7 and 8).

The symptoms of OCD are very heterogeneous and there are different subtypes of OCDs. Abramowitz et al. (2009) have indicated five main dimensions of OCD which are as follows: 1) Obsessions about being responsible for causing or failing to prevent harm, checking compulsions and reassurance-seeking; 2) Symmetry obsessions, and ordering and counting rituals; 3) Contamination obsessions, and washing and cleaning rituals; 4) Repugnant obsessions concerning sex, violence, and religion; 5) Hoarding, which are obsessions about acquiring and retaining objects, and associated collecting compulsions". In other words, OCD has different subtypes including washing, checking, obsessing, neutralizing, ordering, hoarding, etc. (2). This raises questions about the specificity of cognitive factors proposed by the OCCWG and OCD symptoms and its subtypes.

Growing research supports the hypothesis that cognitive factors may be more feasible to certain types of OCD (9,10) and it has been suggested that specific OCD subtypes are characterized by specific belief domains(11, 12, 13). Cogle, Lee and Salkovskis indicated that both checking and non-checking OCD groups showed greater responsibility beliefs relative to anxious and non-anxious controls (14) and even First-degree relatives of OCD patients scored significantly higher than controls on the domain of inflated responsibility and overestimation of threat (15). Other studies suggested that perfectionism is an independent predictor of specific OCD symptoms such as ordering, washing and doubting (16, 17). Investigations also showed that ordering and precision have been consistently related to perfectionism (5, 18 and 19). Some studies found that washing compulsion is relative to over-estimating the amount of threat in a situation (20) and perfectionism (21), but not to responsibility (22). OCCWG and Tolin et al. suggested that symmetry and ordering compulsions are more related to perfectionism and uncertainty (5, 23). Besides, the results of studies regarding association between hoarding compulsion and cognitive factors are inconsistent. The relation among hoarding compulsion and issues like perfectionism, (24, 25) control of thoughts (26), responsibility (27), over-estimation of threat (28) and intolerance of uncertainty (29) has been reported. In one study in Iran, it was found that scrupulosity (religious subtype of obsessive-compulsive disorder) is closely related to the 'importance of thoughts and controlling thoughts,' and 'thought-action fusion' (30).

To sum up, there is increasing consensus that cognitive factors are correlated with OCD symptoms and that obsessions and compulsions arise from specific types of dysfunctional beliefs (11). However, few studies have attempted to determine whether the cognitive factors proposed by OCCWG can specifically predict subtypes of OCD (13). The purpose of the present

study was to examine which cognitive factors can specifically predict different subtypes of OCD.

Material and Methods

Participants and Procedure

The target sample was 208 university students, selected by cluster sampling method from those studying at Shiraz University in 2011. Using simple random sampling, we selected four college's including human sciences, engineering, science and law and we selected the sample from the students of two or three classes in these clusters. According to the rule of Thumb, 25 cases is very suitable for each predictors variable.31 Therefore, the number of participants was optimal. The main inclusion criteria were students aged 18 to 30 years. Exclusive criteria were lack of history of psychological disorders, and not being under psychological treatment, according to which fifty cases with psychological disorder history or incomplete questionnaire were excluded from analysis. The presence of psychological disorders was discovered with some questions as follows: "Have you ever had a psychological disorder, referred to a psychologist or a psychiatrist, or did you have any previous mental health hospitalization?" Using non-clinical sample in the etiology of OCD is common in many studies, because some studies have shown a high prevalence of some forms of obsessional symptoms in non-clinical populations (14). Moreover, cognitive models of OCD propose that symptoms develop from normal processes and exist on a continuum of severity (16). Furthermore, selecting the participant from a small range may cause low fake correlation that can bias the results.

Research Design and Statistical Method

This study attempted to find the predictive cognitive factors affecting OCD and its subtypes. In order to collect data, 208 participants were asked to complete the Obsessive Beliefs Questionnaire (OBQ-44) and Obsessive-Compulsive Inventory-Revised (OCI-R). Moreover, a correlational research design was carried out and data were analyzed using stepwise regression analysis.

Measures

Participants completed two psychometric tests: The Obsessive Beliefs Questionnaire (OBQ-44) and Obsessive Compulsive Inventory-Revised (OCI-R).

Obsessive Beliefs Questionnaire (OBQ-44)

OBQ-44, as a self-report questionnaire, was developed by OCCWG. It has 44 Likert based questions and assesses different types of cognitions, like threat estimation, responsibility, perfectionism, importance of thoughts, control of thoughts and need for certainty. Internal consistency (Cronbach's coefficient alpha) was in a range from 0.89 to 0.95 (8). Cronbach's coefficient alpha in Iranian sample was 0.92 and criterion validity showed a correlation of 0.57 and 0.50 with Obsessive

Compulsive Inventory- Revised (OCI-R) and Maudsley Obsessive Compulsive Inventory (MOCI) (32).

Obsessive Compulsive Inventory-Revised (OCI-R)

Obsessive Compulsive Inventory-Revised, developed by Foa et al. (33) is a self-report Likert based questionnaire, with 18 items, that measures OCD symptoms. The revised version included six subscales (washing, obsession, hoarding, ordering, checking and neutralizing), with three items in each subscale. Cronbach alpha coefficient ranged from 0.81 to 0.93 for the whole questionnaire and from 0.57 to 0.91 for subscales. In addition, this version has suitable discriminative and convergent validities (33). Cronbach alpha coefficient in Iranian sample ranged from 0.50 to 0.72 while the confirmatory factor analysis confirmed the six factors of original version too (34).

Ethics Issues

According to ethics principles, all participants were free to participate in research and they were allowed to stop filling the questionnaires and leave the research at any moment. For privacy reasons, the participants were not required to write their names.

Results

Descriptive Statistics

Nearly 51% of the participants were male and 49% were female with the age range of 18 to 30 years (mean age = 21; SD =1.6). The mean and standard deviation of the variables used in the analysis are depicted in Table 1. Also, the correlation coefficients for the potential OCD symptoms and three potential OCD-related cognitions were computed. All of OCD subtypes (washing, obsessing, checking/ doubting, mental neutralizing, ordering, hoarding and general OCD) were positively correlated with belief domain responsibility/ threat overestimation. 'Importance/ control of thoughts' was also positively correlated with all OCD subtypes except hoarding. However, only the correlation of hoarding and mental neutralizing with perfectionism/ intolerance of uncertainty was not significant. Table 2 demonstrates the measured correlation coefficients between OCI-R and OBQ-44 subscales.

Regression Analyses

To evaluate whether the cognitive factors, proposed by OCCWG could specifically predict subtypes of OCD, we performed a stepwise multiple linear regression analysis for each of OCD subtypes separately as a dependent variable with three independent variables:

1. Responsibility/ threat overestimation;
2. Importance/ control of thought; and
3. Perfectionism/ Certainty.

The result revealed one step for washing, checking, obsessing, and neutralizing, and it uncovered that responsibility and overestimation of threat were significant predictors of these obsessive and

compulsive behaviors. Analysis with hoarding and ordering subtypes showed two steps. Meanwhile, ordering obsession was predicted by perfectionism/ intolerance of uncertainty and importance/ control of thought, and hoarding was predicted by responsibility/ threat overestimation and perfectionism/ certainty (Table 3).

Discussion

The purpose of this study was to determine whether the cognitive factors proposed by OCCWG, could specifically predict subtypes of OCD. It was found that responsibility/ threat overestimations were significant predictors of most of OCD's subtypes including washing, checking, obsessing, hoarding and neutralizing. Only, ordering obsession was predicted by perfectionism/ intolerance of uncertainty and importance/ control of thought. Hoarding was also predicted by responsibility/ threat overestimation and perfectionism/ certainty.

In line with our findings, Jones and Menzies reported that danger expectancies were the most likely mediators of washing-related behavior in obsessive-compulsive disorder (20); and Salkovskis pointed out that responsibility has an important role in washing obsession (22). However, another study revealed that perfectionism is more important in this kind of obsession (25). A study found that obsessing could be predicted by importance/ control of thoughts and perfectionism/ certainty beliefs (35). According to our results, responsibility/ threat overestimation and perfectionism/ certainty can predict hoarding. Our findings are consistent with a number of studies (27, 28). Our results, which considered responsibility/ threat overestimation as a predictor of checking, were supported by some other studies (18). Some studies also confirmed the results of our research about mental neutralizing (35). Prediction of general OCD by responsibility/ threat overestimation was also consistent with some other findings (14, 5). Our results on ordering OCD revealed that importance/ control of thought and perfectionism/ certainty predicted this kind of OCD. This is also in harmony with results of some new studies which considered perfectionism as an important predictor of ordering (35, 36). Evidence in favor of these findings can also be seen in studies that utilized experimental methods (36) and questionnaire based methods (37, 38) in clinical and non-clinical cases. The differences observed in the results of various studies, attempting to investigate the predictors of OCD, may be due to methodological or sample differences; such differences could also be due to a mediator variable which affected the results.

These data revealed that unlike the other two predictors, responsibility/ threat overestimation can explain most of OCD subtypes variances. In other words, the remaining variance is too small to be predicted by other predictors. Although perfectionism/

uncertainty and importance/ control of thought were significantly correlated with all OCD subtypes, most of OCD subtypes could not be predicted by these two factors. There may be some reasons for this. Probably, these are common cognitive factors in other types of anxiety disorders too, so they may not be the distinct and specific predictor of OCD's subtypes. For example, perfectionism in eating disorders (39) or intolerance of uncertainty in general anxiety disorders (40) could also have key roles, so that these cognitive factors correlate with OCD although they are not specific. Another reason refers to type of the model. These three cognitive predictors may follow a more complicated model. It seems that beliefs about over importance and control of thoughts, intolerance of uncertainty, and overestimation of threat (but not perfectionism) overlap inflated responsibility and responsibility may cover the mentioned beliefs. Simos (39) argues that the belief that makes intolerance of uncertainty intolerable is hyper- responsibility. Responsibility is also important in the control of thoughts and beliefs, because the person considers himself responsible for his own thoughts and the consequences of not controlling them. Finally the results of this study are consistent with the researches that showed inflated responsibility beliefs are significantly higher in OCD patients and serve as a significant predictor of obsessive compulsive symptoms. As it was mentioned earlier, while it is proposed that OCD subtypes may be characterized by specific cognitive bias¹⁶, most previous studies have focused on association between OCD in general and cognitive impairment and not its subtypes so it would be important to analyze the causes of different types of OCD symptoms separately. The present study examined the information aon the relationship between cognitive factors and different types of OCD.

Limitations

The present study had a number of limitations that should be considered. First, the sample was limited to university students that can reduce generalizability of the results. We may not be able to generalize our findings to cover other populations or clinical patients, because our data were obtained from a non-clinical sample. Second, the data were collected via self-report inventory. The participants might make mistakes in remembering the material covered by the study. Therefore, there is the possibility of response biases. Third, because of a large sample size, it was not possible to rule out probable clinical individuals by means of a structured or semi-structured clinical diagnostic instrument. They were only asked whether they had a history of psychiatric disorder or treatment. It is recommended that future studies evaluate nonstudent healthy samples and/ or clinical individuals. Moreover, because of the existence of comorbidity between OCD and some other psychiatric disorders like depression and anxiety, using a reliable diagnostic

interview to rule out such patients may result in more accurate findings.

Conclusion

The current study showed the significance of responsibility and overestimation of threat as the most important predictor of different subtypes of OCD, and found evidence to support Salkovskis' cognitive theory about the central role of over responsibility beliefs in OCD. These findings have some theoretical and clinical implications such as developing the understanding of OCD predictors, preventing their occurrence and treatment of disease using cognitive behavioral therapy. This could also help clinicians to pay greater attention to a specific cognition which has closer ties with these specific symptoms.

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Conflict of Interest

None declared

Table1. Means and Standard Deviation of main study Variables

variable	Mean	Std. Deviation
Responsibility/ Threat overestimation	63.93	13.29
Perfectionism/ Intolerance of uncertainty	69.49	13.74
Importance/ Control of thoughts	44.44	11.41
Washing	3.17	2.61
Obsession	4.23	2.84
Hoarding	3.65	2.48
Ordering	4.75	2.84
Checking/ doubting	3.13	2.72
Mental neutralizing	2.35	2.39
General OCD	21.31	11.69

Table2. Correlation Matrix between OCI-R and OBQ-44 Subscales

Variables	Responsibility/ Threat Estimation	Importance/ Control of Thought	Perfectionism/ Certainty
Washing	0.327**	0.293**	0.178**
Obsession	0.414**	0.324**	0.245**
Checking/ doubting	0.333**	0.308**	0.286**
Mental neutralizing	0.223**	0.211**	0.119
Ordering	0.344**	0.365**	0.364**
Hoarding	0.312**	0.119	0.122
General OCD	0.447**	0.373**	0.305**

* P<0/05 ** P<0.01

OCI-R: Obsessive Compulsive Inventory-Revised

OBQ-44: Obsessive Beliefs Questionnaire

Table3. Prediction of OCD Subtypes Based on Cognitive Factors Proposed by OCCWG Using Stepwise Multiple Regression

Predictor(Steps):	Responsibility/ Threat ver estimation					Importance/ Control of Thought					Perfectionism/ Certainty				
	R ²	B	β	t	p	R ²	B	β	t	p	R ²	B	β	t	p
OCD Subtypes															
Washing*	0.11	0.06	0.33	4.97	0.001	-	-	-	-	-	-	-	-	-	-
Obsession*	0.17	0.09	0.41	6.53	0.001	-	-	-	-	-	-	-	-	-	-
Checking/ doubting*	0.11	0.07	0.33	5.07	0.001	-	-	-	-	-	-	-	-	-	-
Mental neutralizing*	0.05	0.04	0.22	3.28	0.001	-	-	-	-	-	-	-	-	-	-
Hoarding**	0.10	0.08	0.45	4.87	0.001	-	-	-	-	-	0.12	-0.04	-0.19	-2.13	0.03
Ordering***	-	-	-	-	-	0.17	0.06	0.23	3.03	0.03	0.13	0.05	0.23	2.98	0.03
General OCD*	0.20	0.39	0.45	7.17	0.001	-	-	-	-	-	-	-	-	-	-

* 1 step (1.Responsibility/ Threat overestimation)

** 2 step (1.Responsibility/ Threat overestimation 2.Perfectionism/ Certainty)

*** 2 step (1.Perfectionism/ Certainty 2. Importance/ Control of thought)

OCCWG :Obsessive Compulsive Cognitions Working Group

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