Research Article

Structural Associations between Cognitive Beliefs and Obsessive-Compulsive Symptoms

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Abstract

Background and objectives: According to the cognitive model, OCD is characterized by maladaptive beliefs. The aim of present investigation was study structural associations between cognitive beliefs include thought action fusion (TAF), responsibility and the overestimation of threat (RT), importance and control of thoughts (ICT), perfectionism and intolerance of uncertainty (PC) and obsessive-compulsive symptoms include cleaning, checking, hoarding and order.

Methods: Three hundred sixty seven students was selected by cluster randomize sampling from Mazandaran University of Iran and accomplished obsessive beliefs questionnaire(OBQ) and thought action fusion scale(TAFS) and obsessive and compulsive inventory revised (OCI-R). The fitness of proposed models was analyzed by Structural Equation Modeling (SEM).

Results: The finding showed fitness of a model that TAF have direct relation with RT and RT have direct relation with cleaning and checking and indirect relation from ICT and PC with cleaning, checking and order. In sum, these beliefs are more related to obsessive checking and cleaning than obsessive order and hoarding.

Conclusion: The results of this study show that TAF by other cognitive beliefs related with OCD symptoms and also RT as important mediator variable and also directly have relationship with cleaning and checking symptoms. Possible explanations for these findings are discussed, as well as presented suggestions for future research.

Introduction

In cognitive theories about obsessive-compulsive disorder (OCD) explain the role of the different cognitive beliefs and the relationship between them has been highlighted as the main causes of this disorder. According to the cognitive models, OCD is characterized by maladaptive beliefs about the nature of thoughts, the likelihood of danger, an inflated sense of responsibility, an excessive need for certainty, and perfectionism [1].

Extending the theoretical work of Rachman et al. [1-3] empirically derived the following three domains of dysfunctional beliefs considered to underlie OCD symptoms: (1) Inflated Responsibility/ Overestimation of threat (RT). Individuals with OCD evidence exaggerated estimates of the probability and costs of negative events and believe themselves to be personally responsible for causing or preventing any disastrous consequences associated with obsessional thoughts. (2) Beliefs about the importance of, and need to control, intrusive thoughts (ICT). Individuals with OCD believe that the mere presence of intrusive thoughts indicates that such thoughts are very meaningful. They also believe that complete control over such intrusions is both necessary and possible. (3) Perfectionism and intolerance of uncertainty (PC). Individuals with OCD show inability to tolerate mistakes or imperfection, as well as the strong need for a guarantee of safety [4].

Thought-Action Fusion (TAF) is the tendency of individuals to assume that certain thoughts either imply the immorality of their character or increase the likelihood of catastrophic events. The relationship between TAF and Obsessive-Compulsive Disorder (OCD) symptoms was verified by different studies [5,6]. TAF is one of the critical cognitive distortions in OCD because of two reasons: firstly, if an individual with OCD believes that thinking an upsetting event increases the possibility of its occurrence in reality (TAF-Likelihood), he or she may engage in some acts to prevent the possible negative consequence. Secondly, if the individual believes that having intrusive

thoughts and engaging in negative acts are morally equivalent (TAF-Morality), he or she feels distress for having such thoughts. In other words, these TAF biases might increase both distress and likelihood of neutralization acts to take place; in consequence, these biases increase OCD symptoms [5].

RT causes using the strategies of thought control that intensifies the obsessive thoughts (Bailey, Wu, Valentinera, McGrath). RT could strengthen the need to do things perfectly (perfectionism) and the need to control unwanted thoughts. Therefore RT with mediator cognitive beliefs associated with thoughts control and perfectionism is associated with obsessive-compulsive symptoms [7,8].

A clear relationship between OCD symptoms and obsessive beliefs would be demonstrated if three patterns were observed: first, that all variants of OCD symptoms (e.g., washing, checking, ordering) are associated with at least some form of obsessive belief (generality); second, that the different obsessive beliefs relate to the different symptoms of OCD in a meaningful way (congruence), and third, that OCD patients endorse "obsessive" beliefs more strongly than do patients with other anxiety disorders (specificity) [9]. It seems that in addition to direct effects of dysfunctional beliefs on OC symptoms, they are also having indirect effects from interact with one another to influence OC symptoms. For example, a highly elevated sense of

personal responsibility should strengthen beliefs about the need to act perfectly, and also reinforce beliefs about the importance of controlling one's unwanted thoughts [7].

The purpose of this investigation was study structural associations between cognitive beliefs include TAF, RT, ICT, PC and obsessive-compulsive symptoms include cleaning, checking, hoarding and order. From study prior investigations three models proposed, model 1 as main model and other models as competitor models. In main proposed model assumed that TAF have direct relation with RT and RT have direct relation with cleaning and checking and indirect relation from ICT and PC with cleaning, checking, hoarding and order. In model 2 TAF have direct relation with RT, RT have indirect relation from ICT and PC with cleaning, checking, hoarding and order. In model 3 TAF have direct relation with RT, and RT, ICT and PC have directly relation with cleaning, checking, hoarding and order. The fitness of proposed models was analysed by Structural Equation Modelling (SEM).

Method

Participants

Three hundred sixty seven undergraduate students (208 females) with randomize cluster sampling were selected from various departments of Mazandaran University. The age of the samples ranged from 18 to 33 years with a mean of 23.41 (SD = 3.26).

Measures

Thought–Action fusion scale: A 19-item self-report measure designed to measure TAF beliefs. Respondents are asked to rate the extent to which they agree/disagree with each of 19 statements, on a 5-point scale. In an obsessional sample, the scale has been shown to have a two-factor structure, with some items relating to Moral TAF, and others to Likelihood TAF [6,10] conclusions that the TAF scale has good internal consistency (Cronbach's alpha = 0.88) and correlates with measures of obsessional problems. Three months test-retest correlation of the TAF total score was being 0.52 [10]. Cronbach's alpha in this study was 83 and the three-factor structure found by the original study was confirmed in the present study by a confirmatory factor analysis.

Obsessive compulsive inventory-revised (OCI-R): The OCI-R is an 18-item self-report questionnaire on which respondents rate the degree to which they have been bothered or distressed by 18 common symptoms of OCD in the past month on a scale from 0 (not at all) to 4 (very much). Widely used in research with nonclinical samples, the OCI-R assesses six symptom domains: (a) washing, (b) checking/doubting, (c) obsessing, (d) neutralizing, (e) ordering, and (f) hoarding. Subscale scores range from 0 to 12 [7] found the OCI-R to possess good psychometric properties (alphas ranged from 0.81 to 0.93 across samples) and adequate test–retest reliability (0.57 – 0.91 across samples) [4,11] studied the validation of Persian version of OCI-R in a student sample. Results revealed satisfactory internal consistency as measured by Cronbach's alpha coefficient (.50.72). Moreover, in present study Cronbach's alpha coefficients have ranging from 0.55 to 0.77 and the six-factor structure found by the original study was confirmed by a confirmatory factor analysis.

Obsessive beliefs questionnaire (OBQ): The OBQ is a 44-item self-report questionnaire developed to assess a variety of dysfunctional beliefs (derived from leading cognitive theories) thought to underlie OCD symptoms [1]. Three factor analytically derived subscales correspond to the following domains of dysfunctional beliefs: (a) overestimates of threat and responsibility for harm, (b) importance and

control of intrusive thoughts, and (c) perfectionism and the need for certainty. Participants rate their agreement with each of 44 statements from 1 (disagree very much) to 7 (agree very much). The instrument possesses good validity, internal consistency, and test–retest reliability, and has been widely studied in clinical and nonclinical samples [1,12] studied the validity and reability of Persian version of OBQ, results revealed satisfactory internal consistency as measured by Cronbach's alpha coefficient (ranging from 0.82 to 0.92). In addition, in this study Cronbach's alpha coefficients have ranging from 0.55 to 0.77 and three-factor structure found by the original study was confirmed by a confirmatory factor analysis.

Results

Structural equation modelling

The fitness of measurement models was analysed by confirmatory factor analysis and the fitness of proposed models was analysed by Structural Equation Modelling (SEM). SEM was done by using the item covariance matrix and maximum likelihood estimation by means of AMOS 22. The latent variables were the four belief variables (TAF, ICT, PC, and RT) and four OC symptom variables (checking, hoarding, ordering and washing). Belief variables were permitted to be correlated with one another, because previous research indicates that they are inter-correlated [1]. The belief variables were used to predict each of the OC symptom variables. The latter were not permitted to be correlated with one another, because such inter correlations can be accounted for by assuming that the symptoms are caused by a common set of belief variables [8].
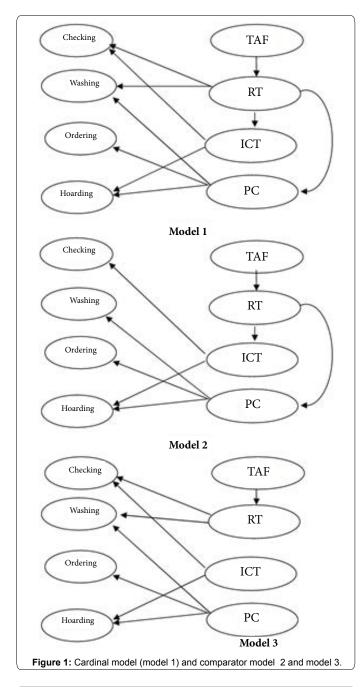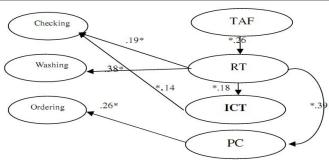
Measurement models

The maximum likelihood (ML) method was used to determine the fit of the proposed structural equation models to the data. The first indicator for each latent variable was constrained to a factor loading of 1 to serve as a reference variable and set the metric. The following criteria were used to test the models' fit: chi-square to degrees of freedom ratio ($x2/df$), After determining the appropriate measurement model, the structural equation model was tested for the 3 model.

Prior to investigating the links between beliefs and symptoms, we evaluated the measurement models of the OBQ and OCI-R and TAFS. For the OBQ, a model consisting of three correlated latent variables was specified (i.e., ICT, PC and RT). This model had a good fit according to fit indices: $x2/df = 1.27$, Root Mean Square Error of Approximation (RMSEA) = 0.02, Comparative Fit Index (CFI) = 0.90, Goodness of Fit Index (GFI) = 0.83, Incremental Fit Index (IFI) = 0.90. The correlations among the latent variables ranged from 0.58 to 0.68 ($ps<0.01$). To evaluate the measurement model of the OCI-R, a model consisting of six correlated latent variables was specified (checking, hoarding, etc.) where each of the 18 OCI-R items loaded on only one factor. This model had a good fit on all indices: $x2/df = 1.27$, RMSEA = 0.02, CFI = 0.96, GFI = 0.95, IFI = 0.96. The correlations among the six latent variables ranged from 0.47 to 0.73 ($ps<0.01$). Also, for the TAFS, a model consisting of three correlated latent variables was specified. This model had a good fit according to fit indices: $x2/df = 1.12$, RMSEA = 0.03, CFI = 0.95, GFI = 0.93, IFI = 0.90. The correlations among the latent variables ranged from 0.58 to 0.68 ($ps<0.01$). Thus, the results generally suggested that OCI-R, OBQ and TAFS measurement models had an acceptable fit to the data.

Comparison fitness of models

Firstly, fitness of model 1 was studied from SEM. Finding showed

Figure 1: Cardinal model (model 1) and comparator model 2 and model 3.

Model 1

Model 2

Model 3

Figure 2: Standardized path co-efficient for final model of relationships between dysfunctional beliefs and obsessive-compulsive symptoms (*All *p*s < 0.0001).

Models	RMSEA	IFI	CFI	GFI	CMIN/df
Model 1	0.03	0.90	0.90	0.93	1.30
Model 1(revised)	0.02	0.90	0.90	0.93	1.29
Model 2	0.03	0.85	0.84	0.77	1.45
Model 3	0.04	0.84	0.82	0.80	1.49

Table 1: Fit indices of model 1 and comparator models model 1 and model 3.

that path coefficients of paths RT ➝ Hording, PC ➝ Hording, PC Washing, PC ➝ Checking weren't significant. Therefore these paths removed from model 1 and SEM was repeated for revised model 1. Results of comparison fitness of proposed models that was summarized in Table 1 revealed that the revised model 1 provided a better fitness to the data. A standardized path coefficient for final model of relationships between dysfunctional beliefs and obsessive-compulsive symptoms was presented in Figures 1 and 2.

Discussion

In this study was examined the interactions among dysfunctional beliefs and their relations with obsessive-compulsive symptoms include cleaning, checking, hoarding and order. As well as the results of this study show that TAF have direct relation with RT, and RT have both direct relation with cleaning and checking and indirect relation from PC with order. This finding is approximately consistent with results of some correlation studies [8,13] but in these researches the role of TAF didn't study. The results of present study show that TAF by other cognitive beliefs related with OCD symptoms and also RT as important mediator variable directly have relationship with cleaning and checking symptoms. In sum, these beliefs are more related to obsessive checking and cleaning than obsessive order and hoarding. Lopatka and Rachman proposed that OCD patients think that their thoughts about unpleasant events increase likelihood of them and they are responsible for these events because of having such thoughts [2] believes that this excessive responsibility forms by TAF. Over evaluation of threat and excessive responsibility cause using control thoughts strategies that itself increases OCD symptoms. In other hand, excessive responsibility causes increase need to doing tasks and works perfectly (perfectionism) for achieve certainty that the person is no responsible of defects in doing.

The implication of this research is that the cognitive beliefs appear more linked to symptoms of obsessive cleanliness and checking than order and hoarding. This finding is consistent with results [14] that found in their study obsessive beliefs are more associated with checking and cleaning to other symptoms such as hoarding and order. This finding to some extent confirms that hoarding symptom has less congruence with other symptoms of OCD and this has led to in new classification of mental disorders (DSM5) hoarding disorder be considered as a distinct disorder. It seems this matter partly is true about order symptom. Of course, require further research, particularly in clinical samples, to determine the difference in the pathology of these symptoms.

The limitation of this study is to conduct research in a sample of normal students and non-controlling for other variables was possible relevant in this respect. So it is recommended in future studies the cognitive beliefs are studied in clinical samples, especially OCD patients and other disorders. Also is suggested using other methods such as experimental research, and also control some probable moderator variables such as other cognitive beliefs.

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