

## Original Article

# Cognitive schemas and symptoms of obsessive-compulsive disorder: a model with the mediating role of intolerance of uncertainty

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## Abstract

**Introduction:** The aim of present study was to investigate the mediating effect of intolerance of uncertainty in the relationship between cognitive schemas and symptoms of obsessive-compulsive disorder in Khayyam University staff and its effect on their practice.

**Methods:** This study was cross-sectional research conducted by a correlation method. The statistical population included all staff of Khayyam University in the academic year of 2018-2019 and the sample size was 200 students selected by a proportional stratified sampling method. The questionnaires used in this study included Obsessive-Compulsive Inventory-Revised (OCI-R), Young Early Maladaptive Schema Questionnaire-short form (75 questions) and Intolerance of Uncertainty Scale (IUS). To analyze the data, the structural equation method and Amos-22 software were used.

**Results:** The results showed that mediating model of intolerance of uncertainty in the relationship between the early maladaptive schemas and symptoms of obsessive-compulsive disorder in the University staff has a good fit.

**Conclusion:** All pairwise relationships of variables were significant, meaning that there was a positive and significant relationship between the early maladaptive schemas and symptoms of obsessive-compulsive disorder in the University staff and between early maladaptive schemas and intolerance of uncertainty, and between intolerance of uncertainty and obsessive-compulsive symptoms in the University staff.

**Keywords:** Adjustment Disorders; Obsessive-Compulsive Disorder; Personnel; Uncertainty.

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## Introduction

Early life experiences and experiences of coexistence with parents lead to the formation of dysfunctional structure of self and a kind of worldview that predisposes one to obsession (1).

people with obsessive-compulsive disorder have beliefs similar to those with intolerance of uncertainty, which can be attributed to their early maladaptive schemas. It is thought that these incorrect assessments to stem from the assumptions of maladaptation

that have been acquired over a lifetime. Early maladaptive schemas typically stem from dissatisfaction with basic needs, especially childhood emotional needs. Early maladaptive schemas are an influential pattern of memories, emotions, and cognitions that a person has acquired throughout life. When the early maladaptive schemas are triggered, people usually experience high levels of emotion such as extreme anger, anxiety, depression, or even guilt (2).

Phillips et al., describe that Early maladaptive schema are credible representations of unpleasant childhood experiences because early maladaptive schemas are formed in early life. These schemas appear at the behavioral and cognitive level after activation and increase the likelihood of developing psychological disorders (3).

Khosravani et al., conducted a study entitled "Early maladaptive schemas in patients with obsessive-compulsive disorder, bipolar disorder and schizophrenia." The results showed that patients with obsessive-compulsive disorder, bipolar disorder and schizophrenia had higher scores than healthy individuals. Patients with obsessive-compulsive disorder had higher scores than those with schizophrenia or bipolar disorder (4).

Nahanghi, conducted that people with obsessive-compulsive disorder have higher levels of early maladaptive schemas and use maladaptive strategies and disturbed metacognitive beliefs in the face of adverse events (5).

Mokhber Dezfouli et al., conducted a model which had a direct and significant effect on obsessive-compulsive disorder, and dysfunctional cognition mediated significantly the relationship between early maladaptive schemas and obsessive-compulsive disorder (6). Gillett et al., showed

how understanding the role of intolerance of uncertainty can be helpful in developing new psychotherapy strategies to improve the treatment outcomes of obsessive-compulsive disorder and generalized anxiety disorder (7). Sohn et al., showed that people with obsessive-compulsive disorder have higher metacognition scores and intolerance of uncertainty than the control group (8). Considering the significant role of mediating variables in the relationship between early maladaptive schemas and obsessive-compulsive symptoms in hospital staff, the present study was conducted to examine one of these mediating variables, namely intolerance of uncertainty. The main hypothesis is that intolerance of uncertainty is a significant mediator in the relationship between early maladaptive schemas and symptoms of obsessive-compulsive disorder in Khayyam university staff.

## **Methods**

The present study was a descriptive cross-sectional study. The statistical method of the research is path analysis method. The statistical population of the present study was total number of staff of Khayyam university (Campus 1 and Campus 2) in the academic year of 2018-2019. Proportional stratified sampling method was used in this study. Accordingly, the subjects were selected based on their field of study. The sampling method is stratified sampling in which the subjects were selected based on the field of study. From this statistical population, 200 people were selected as the statistical sample and has proposed the following rule of thumbs for sample selection and studies using the path analysis method: The minimum sample size for each variable was 5, with a ratio of 10 to 1 being more appropriate and a ratio of 20 to 1 is considered more desirable. Since there are 8 variables observed in the present study, based on the ratio of 20 to 1, a sample of 160 people was counted; But a minimum sample size of

200 was necessary and defensible. Therefore, based on the above opinions, in this study, a sample size of 200 was considered. The obtained data were collected in SPSS-21 and Amos-22 software first analyzed by descriptive statistics of frequency, percentage, mean, standard deviation, skewness and kurtosis. In the present study, the Obsessive-Compulsive Inventory-Revised (OCI-R), Young Schema Questionnaire-short form (75 questions) and Intolerance of Uncertainty Scale (IUS) were used. Then, Pearson correlation coefficient and structural equation modeling were used to evaluate the results of the research hypotheses. All data were analyzed in SPSS-21 and Amos-22 software.

#### A- Obsessive-Compulsive Inventory-Revised (OCI-R):

It is an 18-item inventory derived from the 84-item version of the OCI. Participants rate their distress and discomfort they have experienced with OCD symptoms over the past month on a 5-point Likert scale ranging from 0 (not at all) to 4 (severely or very severely) OCI-R evaluates six factors of obsessive-compulsive disorder including 1- washing, 2- checking, 3- ordering, 4- obsessing, 5- hoarding, 6- neutralization. Each of these factors or subscales includes three items of this questionnaire. Foa et al., reported internal consistency of 0.81 for the general score and between 0.34 and 0.93 for its subscales. Its test-retest reliability with two-week interval was reported from 0.74 to 0.91 (9). The Persian version of this questionnaire was reviewed by Ghassemzadeh et al., In their study, alpha was calculated to be 0.85 for the total score and between 0.77 and 0.86 for the subscales. Also, the reliability of the retest method during two weeks was 0.75 for the total score and between 0.62 and 0.76 for the subscales (10).

#### B- Young Early Maladaptive Schema Questionnaire-short form (75 questions):

Seventy and five items of this questionnaire were developed by Whittal et al., to evaluate 15 early maladaptive schemas. Its questions are scored on a 6-point Likert scale (1- It is completely false about me 2- It is almost false about me 3- It is somewhat true about me rather than to be false 4- It is slightly true about me 5- It is almost true about me, 6- It is completely true about me. Each scale has 5 items that measure the type of early maladaptive schema.

These 15 areas include abandonment, mistrust/abuse, defectiveness/shame, social isolation/alienation, failure, dependence/competence, vulnerability to harm and illness, enmeshment/ undeveloped self, emotional deprivation, entitlement/grandiosity, insufficient self-control/self-discipline, subjugation, self-sacrifice, emotional inhibition, and unrelenting standards/hyper-criticalness. The reliability and validity of this tool have been proven in several studies. In a study conducted to determine the reliability and discriminative power of this questionnaire in a Dutch population and the split-half reliability coefficient was obtained between 0.87 and 0.68 and the test-retest coefficient with six-month interval was obtained at 0.83. Whittal et al., reported Cronbach's alpha coefficient above 0.8 and good validity for all subscales (11). In Iran, the reliability of this questionnaire with the help of Cronbach's alpha for all schemas from 0.76 to 0.93 has been obtained. Its reliability was calculated to be 0.94 by Cronbach's alpha method and its validity was calculated to be 0.34 by correlation analysis with irrational beliefs test (12). The Persian version of the questionnaire was standardized on a sample of 513 Iranian students and reported internal consistency in 15 subscales from 0.79 to 0.93 (12).

#### C- Intolerance of uncertainty Scale (IUS):

This scale measures the rate of unacceptability of uncertainty and ambiguity that causes failure, stress and inability to do work. This scale has 27 items that are answered on a 5-point Likert scale (never, rarely, sometimes, often, always) (never = 1, always = 5). The total score of this scale varies from 27 to 135. Baher and Dougas reported a Cronbach's alpha coefficient of 0.94 for this scale and they reported its test-retest coefficient with five-week interval at 0.78.

In the study of Hamidpour, Cronbach's alpha, it was equal to 0.88 and the reliability of the retest at 3 weeks was equal to 0.76 for this scale. The French version of this test had an internal consistency of 0.91 and a reliability coefficient of retesting with a interval of four weeks of 0.78 (13). All data collected in SPSS-21 and Amos-22 software.

## Results

According to the data analysis, 66 (31.1%) were male and 131 (61.8%) of the respondents were female and Unanswered was 3(1.5%). According to the data analysis,. Also, 74 people (34.9%) of the respondents were 10-20 years old, 118 people (55.66%) were 21-30 years old, 5 people (2.35%) were 31-40 years old and 3 people (1.5%) were Unanswered. %).

According to the Marital status were single, 168(79.2%), married, 29(13.7%) and Unanswered, 3(1.5%).

Distribution of subjects based on field of study were Accounting, 32(15.1%), Architecture 37(17.5%), Psychology 24(11.3%), Computer 24(11.3%), English language 20(9.4%), Mechanic 21(9.9%), Civil Engineering 18(8.5%), Electronic 9(4.2%), Sports Science 7(3.3%), Persian literature 4(1.9%), Physics 4(1.9%). The distribution of demographic characteristics of subjects is shown in the Table 1:

Table 1. The distribution of demographic characteristics of subjects

| Gender             | f   | %     |
|--------------------|-----|-------|
| Male               | 66  | 31.1  |
| Female             | 131 | 61.8  |
| Unanswered         | 3   | 1.5   |
| Total              | 200 | 100   |
| Age group          | f   | %     |
| 10-20              | 74  | 34.9  |
| 21-30              | 118 | 55.66 |
| 31-40              | 5   | 2.35  |
| Unanswered         | 3   | 1.5   |
| Total              | 200 | 100   |
| Marital status     | f   | %     |
| single             | 168 |       |
| married            | 29  |       |
| Unanswered         | 3   |       |
| Total              | 200 |       |
| Field of study     | f   | %     |
| Accounting         | 32  | 15.1  |
| Architecture       | 37  | 17.5  |
| Psychology         | 24  | 11.3  |
| Computer           | 24  | 11.3  |
| English language   | 20  | 9.4   |
| Mechanic           | 21  | 9.9   |
| Civil Engineering  | 18  | 8.5   |
| Electronic         | 9   | 4.2   |
| Sports Science     | 7   | 3.3   |
| Persian literature | 4   | 1.9   |
| Physics            | 4   | 1.9   |
| total              | 200 | 100   |

Table 2, presents the descriptive indices of research variables including values of skewness and kurtosis, mean and standard deviation. As seen in Table 2, descriptive indices of research variables including values of skewness, mean and standard deviation are reported for Symptoms of obsessive-compulsive disorder in hospital staff are 23.21 and 11.01, respectively.

In the present study, a structural model was examined. First, the correlation matrix of these variables is presented in Table 3.

According to Table 3, it can be seen the variables of intolerance of uncertainty, disconnection/ rejection, impaired autonomy

Table 2. Descriptive indicators of research variables

| Variable  | Mean  | SD    | Skewness | Kurtosis |
|---|-------|-------|----------|----------|
| Rejection   | 59.42 | 23.91 | 0.961    | 0.977    |
| Emotional deprivation   | 12.73 | 6.83  | 0.816    | -0.101   |
| Abonnement  | 14.61 | 6.89  | 0.449    | -0.742   |
| Mistrust/misuse   | 12.42 | 6.32  | 0.807    | -0.207   |
| Social isolation  | 10.82 | 5.64  | 1.293    | 1.564    |
| Defectiveness and shame   | 8.83  | 5.27  | 1.714    | 1.512    |
| Impaired autonomy and performance                                     | 38.91 | 17.69 | 1.282    | 1.282    |
| Failure   | 9.43  | 5.06  | 1.147    | 0.445    |
| Dependence/incompetence   | 9.39  | 5.47  | 1.618    | 1.316    |
| Vulnerability to harm and illness                                     | 9.69  | 5.78  | 1.646    | 1.385    |
| Enmeshment/undeveloped self   | 10.38 | 5.23  | 1.126    | 0.972    |
| Other directedness  | 25.61 | 9.62  | 0.772    | 0.62     |
| Subjugation   | 10.44 | 5.91  | 1.287    | 1.022    |
| Self-sacrifice  | 15.17 | 5.56  | 0.137    | -0.554   |
| overvigilance and inhibition  | 28.5  | 9.61  | 0.221    | -0.272   |
| Emotional inhibition  | 12.43 | 5.8   | 0.703    | -0.079   |
| Unrelenting standards   | 16.06 | 5.9   | 0.21     | -0.492   |
| Impaired limits   | 27.72 | 9.61  | 0.374    | 0.133    |
| Entitlement   | 15.21 | 5.79  | 0.238    | -0.601   |
| Insufficient self-control/self-discipline                             | 12.51 | 5.18  | 0.607    | 0.088    |
| Intolerance of uncertainty  | 71.64 | 22.13 | 0.423    | -0.201   |
| Symptoms of obsessive-compulsive disorder in Khayyam university staff | 23.11 | 11.01 | 0.649    | 0.394    |

and performance, other-directedness, overvigilance and impaired limits have a significant relationship with obsessive-compulsive symptoms in Khayyam university staff and the value of these relationships are equal to 0.51, 0.46, 0.34, 0.32, 0.27 and 0.28, respectively, which are significant at the level of 0.01. It can also be seen that the variables of disconnection /

rejection, impaired autonomy, other-directedness, overvigilance and impaired limits have a significant relationship with intolerance of uncertainty and the value of relationships are equal to 0.63, 0.60, 0.49, 0.42 and 0.48, respectively, which are significant at the level of 0.01.

Table 3. Correlation matrix of research variables

| Row   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8 |
|---|---------|---------|---------|---------|---------|---------|---------|---|
| 1-Symptoms of obsessive-compulsive disorder in Khayyam university staff | 1       |         |         |         |         |         |         |   |
| 2-Intolerance of uncertainty  | **0.515 | 1       |         |         |         |         |         |   |
| 3-Disconnection/rejection   | **0.466 | **0.630 | **0.423 | 1       |         |         |         |   |
| 4-impaired autonomy and performance                                     | **0.345 | **0.559 | **0.431 | **0.726 | 1       |         |         |   |
| 5-other-directedness  | **0.321 | **0.492 | **0.354 | **0.707 | **0.702 | 1       |         |   |
| 6-overvigilance   | **0.275 | **0.425 | **0.370 | **0.582 | **0.482 | **0.586 | 1       |   |
| 7-impaired limits   | **0.280 | **0.480 | **0.260 | **0.633 | **0.531 | **0.546 | **0.627 | 1 |



The fit indices of the structural model are presented in Table 4. As this table show, the fit indices of the structural model indicate the appropriate fit of the model. Most of the indices in the model are in the acceptance range, so the structure of the research model is confirmed.

Table 5, presents the mediating effect of intolerance of uncertainty in the relationship between the variables of disconnection / rejection schema domain, impaired autonomy and performance, other directedness schema domain, overvigilance schema domain, and impaired limits scheme domain and the variable of symptoms of obsessive-compulsive disorder in Khayyam university staff through testing the Sobel test.

According to Table 5, it can be seen that the indirect effect of the disconnection / rejection variable on the obsessive-compulsive disorder variable is significant through intolerance of uncertainty ( $p < 0.05$ ,  $\beta = 0.151$ ). The indirect effect of the variable of

Table 4. Structural model fit indices

| Fit indices | Acceptable range | Value   |
|-------------|------------------|---------|
| $\chi^2$    | -                | 604.936 |
| $\chi^2/df$ | Less than 3      | 1.945   |
| SRMR        | less than 0.08   | 0.102   |
| CFI         | Larger than 0.90 | 0.901   |
| IFI         | Larger than 0.90 | 0.903   |
| RMSEA       | Less than 0.10   | 0.069   |

impaired autonomy and performance on the variable of obsessive-compulsive symptoms is not significant through intolerance of uncertainty ( $p > 0.05$ ,  $\beta = 0.064$ ). The indirect effect of other-directedness variable on the obsessive-compulsive disorder variable through intolerance of uncertainty is not significant ( $p > 0.05$ ,  $\beta = -0.167$ ). The indirect effect of overvigilance on obsessive-compulsive disorder variable through intolerance of uncertainty is also not significant ( $p > 0.05$ ,  $\beta = 0.025$ ). The indirect effect of the impaired limits on the obsessive-compulsive disorder variable was not significant through intolerance of uncertainty ( $p > 0.05$ ,  $\beta = 0.032$ ).

Table 5. The mediating effect of intolerance of uncertainty in the relationship between schema domains and symptoms of obsessive-compulsive disorder in Khayyam university staff

| Independent variable              | Mediating variable         | Dependent variable               | Standard coefficients | T      | P     |
|-----------------------------------|----------------------------|----------------------------------|-----------------------|--------|-------|
| Disconnection/rejection           | intolerance of uncertainty | symptoms of obsessive-compulsive | 0.151                 | 1.662  | 0.048 |
| Impaired autonomy and performance | intolerance of uncertainty | symptoms of obsessive-compulsive | 0.064                 | 0.710  | 0.238 |
| Other-directedness                | intolerance of uncertainty | symptoms of obsessive-compulsive | -0.167                | -0.744 | 0.228 |
| overvigilance                     | intolerance of uncertainty | symptoms of obsessive-compulsive | 0.025                 | 0.464  | 0.321 |
| Impaired limits                   | intolerance of uncertainty | symptoms of obsessive-compulsive | 0.032                 | 0.163  | 0.435 |

## Discussion

The results showed that mediating model of intolerance of uncertainty in the relationship between the early maladaptive schemas and symptoms of obsessive-compulsive disorder in Khayyam university staff has a good fit. Most of the indicators are in the model acceptance range, so the structure of the hypothetical research model is confirmed. In this study, the relationship between early maladaptive schemas and symptoms of obsessive-compulsive disorder in hospital staff was significant. These results are consistent with previous research including Khosravani et al., (4).

In this study, the relationship between early maladaptive schemas and intolerance of uncertainty was significant, which is consistent with a study conducted by Besharat et al., (14). Also, the findings obtained in this study showed that there is a significant relationship between intolerance of uncertainty and obsessive-compulsive symptoms in hospital staff, which is in line with the findings obtained by Tolin et al., (1). Explaining the significance of the main hypothesis of this research, it can be said that schemas, as the deepest psychological levels, guide information processing. In this regard, even when there is evidence to reject the schemas, many people distort the information or confirm the validity of the original incompatible schemas (15).

People with obsessive-compulsive disorder have an extreme need for certainty when they are in ambiguous and uncertain situations, and they experience significant distress until they have sufficient certainty, and this distress causes disability in doing their tasks and activities (16).

In addition, it can be stated that obsessive-compulsive patients have an incorrect initial assessment of the threat, which includes overestimating the probability of the threat and its negative consequences. In addition,

inaccurate secondary assessment occurs in which patients underestimate their ability to cope with the threat. Both the initial threat assessment and the secondary vulnerability assessment are based on certain dysfunctional beliefs that arise from early maladaptive schemas. Considering the relationship between these variables, it can be stated that the variable of intolerance of uncertainty is a significant mediator in the relationship between early maladaptive schemas and symptoms of obsessive-compulsive disorder in hospital staff because early maladaptive schemas are the source of intolerance and score of these variables have been high in many previous studies in people with obsessive-compulsive disorder in hospital staff (17). Hence, it seems that with increasing frightening stimuli, the disturbing thoughts become turbulent and obsessive actions are used to reduce the disturbing thoughts. These people become anxious when faced with ambiguous and threatening situations and use maladaptive cognitive-behavioral strategies to reduce the emotional effect of anxiety or to prevent frightening events, and these maladaptive strategies increase and perpetuate anxiety and the person assesses the symptoms of anxiety as a risk and makes extensive efforts to reduce or avoid it, and doing these obsessive actions to reduce anxiety causes the person to be unable to perform appropriate activities (18).

In explaining the significance of the main hypothesis of this research, it can be stated that schemas, as the deepest psychological levels, guide information processing. In this regard, even when there is evidence to reject the schemas, many people distort the information or confirm the validity of the early maladaptive schemas (19).

In other words, these schemas appear after activation and distort beliefs (20). For example, the belief that “whatever happens, I am to blame” results in obsessive beliefs. Also, the belief that “if I do not take action

when predicting danger, I will be to blame for any consequences” provides the basis for obsessive beliefs. These beliefs guide negative thoughts on a more obvious level (e.g., I cannot get things done). On the other hand, it can be said that obsessive-compulsive patients have an incorrect initial assessment of the threat, which includes overestimating the probability of the threat and its negative consequences. In addition, inaccurate secondary assessment occurs in which patients underestimate their ability to cope with the threat. Both the primary threat assessment and the secondary vulnerability assessment are based on certain dysfunctional beliefs that arise from primary maladaptive schemas. Given the relationship between these variables, it can be said that the variable intolerance of uncertainty is a significant mediator between early maladaptive schemas and symptoms of obsessive-compulsive disorder in hospital staff because early maladaptive schemas are the source of intolerance and on the other hand this score. Two variables have been high in many previous studies in people with obsessive-compulsive disorder in hospital staff.

## Conclusion

Early maladaptive schemas are an influential pattern of memories, emotions, and cognitions that a person has acquired throughout life. When the early maladaptive schemas are triggered, people usually experience high levels of emotion such as extreme anger, anxiety, depression, or even guilt. Although emotions have a biological basis, people are able to influence the way of expressing these emotions. Considering the significant role of mediating variables in the relationship between early maladaptive schemas and obsessive-compulsive symptoms in hospital staff, the present study was conducted to examine one of these

mediating variables, namely intolerance of uncertainty. Since various studies have shown high score of this variable in patients with obsessive-compulsive disorder in hospital staff, we tried to examine the relationship between this variable and early maladaptive schema to see if it can be the source of intolerance of uncertainty in people with obsessive-compulsive disorder. The research results confirmed this hypothesis. Thus, it can be stated that intolerance of uncertainty is a significant mediator in the relationship between early maladaptive schemas and obsessive-compulsive symptoms in hospital staff. We hope that this study will be an approach to other similar studies that will investigate the role of other mediating variables in the relationship between early maladaptive schemas and obsessive-compulsive symptoms in hospital staff.

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