

# The Role of Fusion Beliefs and Metacognitions in Obsessive–Compulsive Symptoms in General Population

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## ABSTRACT

**Objective:** The aim of the current study was to investigate the role of fusion beliefs and metacognitions in obsessive–compulsive symptoms in the general population.

**Methods:** A sample of 200 students of Kharazmi University was selected from various faculties and completed the following questionnaires: Metacognitions Questionnaire-30 (MCQ-30), Thought-Fusion Instrument (TFI) and Maudsley Obsessive Compulsive Inventory (MOCI). Data was analyzed using Pearson correlation and multiple regression analysis.

**Results:** The study showed that thought-fusion beliefs and metacognitive beliefs were positively correlated with obsessive-compulsive symptoms. There were also positive correlations between subscales of thought-fusion beliefs and metacognitive beliefs and obsessive-compulsive symptoms. In regression analysis, MCQ subscales, cognitive self-consciousness and Thought Action Fusion scale were the strongest predictors of obsessive-compulsive symptoms.

**Conclusion:** Results of this study support the metacognitive model of OCD and showed that people's thought-fusion beliefs have important role in obsessive–compulsive symptoms.

## 1. Introduction

Obsessive-compulsive disorder (OCD) is characterized by unwanted recurrent and persistent obsessions and/or compulsions (American Psychiatric Association, 2000). It has been proposed that non-clinical individuals have thoughts whose content is similar to obsessions (Freeston, Rhéaume, & Ladouceur, 1996; Rachman, 1997, 1998; Salkovskis, 1999). These thoughts have been variously identified by authors as “cognitive intrusions”, “normal obsessions”, “obsessional thoughts”, and “intrusive thoughts”. Evidences show that 80 to 90 percent of non-clinical samples in the general populations are experiencing unwanted intrusive thoughts similar to obsessions (Rassin, Muris, Schmidt, & Merckelbach, 2000; Zucker, Craske, Barrios, & Holguin, 2002; Rachman, & de Silva, 1978).

Intrusive thoughts would be experienced by a majority of individuals, but would develop into obsessions only for a minority (Rachman, 1997). Cognitive model of OCD proposes that the interpretation (appraisal) of the presence and content of intrusive thoughts (ITs) will determine whether they escalate into obsessions (Freeston, Rhéaume, Ladouceur, et al., 1996; Salkovskis, 1999, Wells, 2009). The appraisal of ITs is in accordance with pre-existing dysfunctional attitudes or beliefs, which are relatively enduring assumptions held by an individual (Obsessive Compulsive Cognitions Working Group (OCCWG), 1997).

Hence, the crucial difference between people with OCD and non-clinical individuals would be the presence of OCD-related dysfunctional beliefs. In the absence of OCD-related beliefs, intrusive thoughts are ignored more easily, preventing escalation into obsessions (Salkovskis, 1989).

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During the last decade, original appraisal-belief-models have been extended to incorporate abnormal meta-cognitive processing in OCD (Wells, 2000; Wells & Matthews, 1996). The OCCWG (2001, 2003) has emphasized the importance of thoughts and control of thoughts as dimensions of dysfunctional metacognition in people with OCD.

Metacognition can be defined as “internal cognitive factors that control, monitor and appraise thinking. It can be subdivided into metacognitive knowledge” (e.g. “I must worry in order to cope”), experiences (e.g. “a feeling of knowing”) and strategies (e.g. ways of controlling thoughts and protecting beliefs”) (Wells, 2009). Wells (1997, 2000) and Wells and Matthews (1994) proposed a model of obsessive-compulsive symptoms in which two domains of metacognitive belief are emphasized: (1) Beliefs concerning the meaning and power of thoughts and (2) Beliefs about rituals. The first set of beliefs have been termed “fusion beliefs” and three types of fusion have been proposed: Thought-Action Fusion (TAF), the belief that a thought alone can cause a person to carry out, or is equivalent to, an action, Thought-Event Fusion (TEF), the belief that having a thought can cause an event or means that an event has happened, and Thought-Object Fusion (TOF), the belief that thoughts or feelings can be transferred into objects.

These beliefs are activated by normally occurring intrusions and lead intrusions to be appraised as dangerous or important. The second domain, beliefs about rituals, guides responses to this appraisal and has two components: (1) Declarative beliefs about the need to carry out rituals (e.g. “I need to perform my rituals otherwise I will never have peace of mind”); (2) A plan or program for monitoring and controlling action. Part of this plan is a goal that is indicated by a stop criterion or “stop signal” (Wells, 2009; Myers, Fisher, & Wells, 2007).

The term thought-fusion belief was originally used by Rachman (1993), who named incidents where OCD-patients equated thoughts with actions as thought-action fusion. In the metacognitive model (Wells, 1997, 2000, 2009), intrusions trigger metacognitive beliefs about the intrusions` meaning and importance, especially TEF, TAF and TOF. The intrusions will then be appraised according to these metacognitive beliefs, and lead to a negative appraisal and a feeling of threat. This triggers negative feelings (primary anxiety, but also guilt, anger, depression etc.) and a need for neutralization (covert or overt action). Excessive avoidance of potential triggers is also common. Different types of neutralization exist, e.g. overt checking, washing, ordering, repeating, rumination, counting, controlling one’s mind (Wells, 1997, 2009).

Several studies have supported the relationship between metacognitions and obsessive-compulsive symptoms in both non-clinical (e.g. Sica et al., 2007; Wells & Papageorgiou, 1998) and clinical samples (Solem et al., 2010b). This relationship remained significant, even when controlling for worry (e.g. Myers, Fisher, & Wells, 2009a), responsibility (e.g. Gwilliam, Wells, & Cartwright-Hatton, 2004), and perfectionism (e.g. Solem, Haland, Vogel, Hansen, & Wells, 2009a). Further support for the metacognitive model has come from a case series study (Fisher & Wells, 2008) and experimental studies (Fisher & Wells, 2005a; Myers, Fisher, & Wells, 2009b).

Gwilliam et al. (2004) did a correlational and multiple regression analysis of the relationship between obsessive-compulsive symptoms, metacognitions, and responsibility in a non-clinical sample. Consistent with each model, they found positive inter-correlations between all measures. Partial correlational analysis showed that the correlation between responsibility and obsessive-compulsive symptoms was dependent on metacognitions, while the relationship between metacognitions and obsessive-compulsive symptoms was not dependent on responsibility. The same results were demonstrated by Emmelkamp and Aardema (1999), Myers and Wells (2005), and Myers et al. (2009a). The main finding was that metacognitions emerge as an independent predictor of obsessive-compulsive symptoms, while responsibility seemed dependent on metacognitions.

Shirinzadeh Dastgiri, Nateghian And Goudarzi (2010) investigated the correlation between thought-action fusion beliefs and obsessive-compulsive symptoms, and also compare thought-action beliefs among patients with obsessive-compulsive disorder, generalized anxiety disorder, and normal people. Results of the above study indicated that the OCD and GAD patients differed from normal participants on thought-action fusion beliefs. It is suggested that TAF is not specific to OCD, but also prevalent in other anxiety disorders.

Many studies have examined the relationship between metacognitive beliefs; psychological disorders thought fusion (Wells, 2009). Fusion of thought firstly was discovered in working with pure obsession. Later this structure in addition to various forms of anxiety disorders were identified in other disorders (Rachman & Schaefer, 1999). Therefore, understanding the role of thought fusion in the emergence and persistence of psychological disorders may be useful in designing effective interventions for the treatment of obsessive-compulsive disorder (Rachman, 1997). Considering these points, the aim of present study was to investigate the role of thought fusion beliefs and metacognitions in OCD symptoms in a sample of general population.

## 2. Methods

A sample of 220 undergraduate students of Kharazmi University (100 boys and 100 girls) was selected. The mean age of the Participants' was 21.4 years (SD=1.9; range: 18–30 years). The participants were selected by cluster sampling method from six different faculties of Kharazmi University. Among the different classes, one class was selected randomly and completed the self-report questionnaires. The exclusion criteria included lack of obvious mental disorder symptom, according to the participants' self-reports.

### Measures

#### Metacognitions Questionnaire (MCQ)

The MCQ-30 is an abbreviated version of the Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997) which assesses a range of metacognitive beliefs, judgments, and monitoring tendencies considered important in metacognitive theory (e.g. Wells, 2000). The MCQ-30 consists of 30 items related to beliefs about worry and intrusive thoughts (Wells & Cartwright-Hatton, 2004). Participants were asked to indicate, on a 4-point scale (1="do not agree", 2="agree slightly", 3="agree moderately", and

4="agree very much"), and the degree of accord with a series of statements.

#### Scores for the following scales were obtained

(1) Positive Beliefs About Worry (e.g. "Worrying helps me to get things sorted out in my mind" and "I need to worry in order to get things done"); (2) Negative Beliefs About the Uncontrollability of Thoughts and Corresponding Danger (e.g. "Worrying is dangerous for me" and "My thoughts interfere with my concentration"); (3) Cognitive Confidence (e.g. "I have a poor memory" and "I am easily distracted"); (4) Negative Beliefs About Thoughts in General, including superstition, punishment and responsibility (e.g. "Not being able to control my thoughts is a sign of weakness" and "If a bad thing happens which I have not worried about, I feel responsible"); and (5) Cognitive Self-Consciousness (e.g. "I think a lot about my thoughts" and "I am constantly aware of my thinking"). The measure was found to yield good internal consistency and convergent validity. Test-retest implies the MCQ-30 is reliable and valid for the measurement of intrusive thoughts (Wells & Cartwright-Hatton, 2004). In Iran, Cronbach coefficient was reported as 0.91 for the total scale and within 0.71 to 0.87 for its subscales (Shirinzadeh Dastgiri, 2008). In this study, Cronbach's al-

**Table 1.** Means, standard deviations, and one-tailed Pearson product-moment correlations of variables.

	1	2	3	4	5	6	7	8	9	10	11	M	SD
Thought action fusion	1											135.5	105.9
Thought event fusion	0.50**	1										235.6	99.9
Thought object fusion	0.42**	0.70**	1									191.1	95.8
Thought fusion total	0.76**	0.84**	0.81**	1								562.8	239.1
Positive beliefs about worry	0.10	0.14*	0.11**	0.14*	1							12.9	5.7
Uncontrollability and danger	0.29**	0.30**	0.30**	0.39**	0.08	1						13.4	3.7
Cognitive confidence	0.30**	0.19**	0.24**	0.29**	0.09	0.51**	1					11.3	4.1
Need to control thoughts	0.28**	0.41**	0.40**	0.44**	0.24**	0.56**	0.31**	1				15.4	3.4
Cognitive self-consciousness	0.11	0.35**	0.26**	0.27**	0.24**	0.26**	0.04**	0.43**	1			16.4	3.7
MCQ-T	0.32**	0.42**	0.39**	0.46**	0.60**	0.69**	0.57**	0.73**	0.58**	1		68.6	13.7
MCOI	0.20**	0.19**	0.18**	0.26**	0.21**	0.24**	0.14*	0.27**	0.30**	0.37**	1	9.3	4.5

\*\* P<0.01 \* P<0.05.

**Table 2.** Multiple regressions summary for obsessive-compulsive symptoms.

	Unstandardized B	Coefficients Std. Error	Standardized coefficients Beta	t	Sig.	R	R <sup>2</sup>
(Constant)	2.687	1.380		1.947	0.053		
X1=Cognitive self-consciousness	0.345	0.081	0.285	4.242	0.000	0.30	0.09
X2=Thought action fusion	0.008	0.003	0.176	2.621	0.009	0.35	0.12

Dependent Variable: MCOI

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Predictors in the Model: (Constant), Thought Action Fusion, cognitive self-consciousness.

pha for the total MCQ-30 was 0.80 and for the subscales of positive beliefs about worry, uncontrollability and danger, cognitive confidence, need for control of thought and cognitive self-consciousness were respectively 0.78, 0.75, 0.83, 0.63, and 0.53.

### The Thought Fusion Instrument (TFI)

This instrument was developed originally by Wells, Gwilliam, and Cartwright-Hatton (2001) to assess beliefs about thoughts across “fusion” domains that are considered relevant in the metacognitive formulation and treatment of obsessive-compulsive disorder. This 14-item instrument on a single scale captures three fusion content domains. These domains are Thought Event Fusion (TEF: “My thoughts alone have the power to change the course of events”), Thought Action Fusion (TAF: “If I have thoughts about harming someone, I will act on them”), and Thought Object Fusion (TOF: “My memories/thoughts can be passed into objects”). The Cronbach’s alpha as reported by Gwilliam, Wells, & Cartwright-Hatton (2004) and Myers & Wells (2005) was 0.89. In Iran, Shirinzadeh Dastgiri (2008) reported a Cronbach’s alpha of 0.91 for the total scale and 0.70 to 0.87 for the subscales. At the present study, Cronbach’s alpha for the total TFI scale (0.87) and for subscales of thought-action fusion (0.72), thought-event fusion (0.77), and thought-object fusion (0.75) were acceptable.

### Maudsley Obsessive-Compulsive Inventory (MOCI) (Hodgson & Rachman, 1977):

The MOCI comprises 30 true-false items (e.g. “I spend a lot of time every day checking things over and over again”) which pertain to obsessive-compulsive symptoms. MOCI total scores range between 0 and 30. The higher total score, the more severe the OCD symptoms. The instrument yields total obsessionality score and four subtotal scores: checking, cleaning, slowness, and doubting. The MOCI has adequate reliability ( $\alpha=0.83$ ) Coefficient alphas for subscale of MOCI is checking

( $\alpha=0.84$ ), cleaning ( $\alpha=0.69$ ), slowness ( $\alpha=0.60$ ), and doubting ( $\alpha=0.50$ ). The total score is significantly correlated with other OCD assessments. In Iran, Dadfar (1997) has reported reliability of the scale as 0.84. The convergent validity with Yale Brown obsessive-compulsive scale (0.87) was acceptable. Mohammadkhani and Farjad (2009) have been reported 0.75 using Cronbach’s alpha for the total scale.

### Statistical analysis

To investigate the relationship between the TFI, MCQ-30 and the MOCI, Pearson’s correlations were computed. In order to determine the contributions of thought fusion and metacognitive beliefs in prediction of obsessive-compulsive symptoms, a stepwise multiple regression analysis was carried out. The predictors variables included in the analysis were thought fusion subscales and metacognitions subscales and the predicted variable was the MOCI total. At the first step of regression analysis, the predicted variable was the MOCI total score, and the predictor variables were the MCQ-30 subscales. The TFI subscales were entered in step two.

### 3. Results

Results of the Pearson’s correlations and descriptive statistics for all questionnaire variables and Pearson product moment correlations among all variables of interest (i.e. MOCI, thought fusion instrument subscales and metacognitions subscales) are presented in Table 1. As shown in Table 1, there were significant positive correlations between TFI total score ( $r=0.41$ ,  $P<0.01$ ) and the MCQ-30 total score ( $r=0.37$ ,  $P<0.01$ ) and obsessive-compulsive. The significant positive correlation between total scores of TFI and MCQ and obsessive-compulsive symptoms indicates that greater severity of thought fusion and metacognitive beliefs was associated with greater obsessive-compulsive symptoms.

Results of the Pearson's correlations among TCQ subscales and obsessive-compulsive symptoms showed that there were a significant positive correlations between thought action fusion, ( $r=0.21$ ,  $P<0.01$ ), thought-event fusion, ( $r=0.20$ ,  $P<0.01$ ) and thought-object fusion, ( $r=0.19$ ,  $P<0.01$ ) subscales and obsessive-compulsive symptoms. Therefore, the increase in reported of TAF, TEF, and TOF were associated with greater obsessive-compulsive symptoms.

Moreover, results of the Pearson's correlations among the metacognitions subscales and obsessive-compulsive symptoms showed that there are a significant positive correlations between cognitive self-consciousness ( $r=0.30$ ,  $P<0.01$ ), Negative Beliefs About need to control of thoughts ( $r=0.19$ ,  $P<0.01$ ), negative beliefs about the uncontrollability of thoughts, ( $r=0.24$ ,  $P<0.01$ ) positive beliefs about worry, ( $r=0.21$ ,  $P<0.01$ ), cognitive confidence ( $r=0.14$ ,  $P<0.01$ ) subscales and obsessive-compulsive symptoms. As shown in Table 1, the highest correlation was observed between MCQ-30 self-consciousness subscale and MOCI total score ( $r=0.30$ ) and uncontrollability and danger subscale score ( $r=0.24$ ).

Based on the relationships between thought fusion and metacognitive beliefs, the results showed that there was a significant positive correlation between total score of metacognitions questionnaire and thought fusion instrument ( $r=0.48$ ,  $P<0.01$ ). As shown in Table 1, significant positive correlations was observed between MCQ-30 and thought event fusion scale ( $r=0.48$ ), thought action fusion ( $r=0.42$ ), and thought-object fusion ( $r=0.39$ ). Among MCQ-30 subscales, the highest correlation was observed between negative beliefs about need to control of thoughts ( $r=0.45$ ), uncontrollability and danger subscale ( $r=0.39$ ) and TFI total score.

Results of the regression equation and overall summaries for the final step are shown in Table 2. The multiple R was 0.35 and significant ( $F_{197,2}=20.2$ ,  $P<0.001$ ). The regression equation would be  $Y=2.687+0.345x_1+0.008x_2$ .

#### 4. Discussion

This study investigated the relationship between thought fusion beliefs and metacognition and obsessive-compulsive symptoms in a non-clinical sample. Results showed a significant positive correlation between total scores of thought fusion beliefs and metacognitive beliefs with obsessive-compulsive symptoms. There was significant positive correlation between thought fusion beliefs and metacognitive subscales and total scores of obsessive-compulsive symptoms. This finding is consistent with results of other studies (Wells, 2009; Cartwright-Hutton & Wells, 2004; Wells, & Papageorgiou, 1998; Janeck, Calamari, Riemann, & Heffelfinger, 2003; Gwilliam, et al., 2004; Marino, Lunt, & Negy, 2008; Shirinzadeh Dastgiri, 2008; Pourfaraj, 2009).

According the results, there was significant positive correlation between thought-fusion beliefs, metacognitive beliefs and obsessive-compulsive symptoms. These findings are also consistent with the metacognitive model (Wells, 2000, 2009) and cognitive models of OCD (Rachman, 1997; Purdon, & Clark, 1999; Salkovskis, 1999), which suggested that fusion beliefs are related to obsessive-compulsive symptoms.

According to cognitive theory of obsessive-compulsive disorder (Rachman, 1997) obsessional thoughts are viewed as stimuli that may provoke automatic thoughts, when they have some meaning to the individual. People with extreme responsibility for their thoughts can experience more distress and make catastrophic misinterpreta-

Table 3. Continued (Excluded Variables).

Model		Beta In	t	Sig.	Partial correlation	Collinearity statistics tolerance
2	Uncontrollability and danger	0.132 <sup>c</sup>	1.921	0.056	0.136	0.932
	Positive beliefs about worry	0.132 <sup>c</sup>	1.841	0.067	0.130	0.858
	Cognitive confidence	0.082 <sup>c</sup>	1.178	0.240	0.084	0.908
	Need to control thoughts	0.137 <sup>c</sup>	1.801	0.073	0.128	0.761
	Thought-event fusion	0.015 <sup>c</sup>	.182	0.855	0.013	0.661
	Thought-Object fusion	0.051 <sup>c</sup>	.671	0.503	0.048	0.775

Dependent variable: MCOI.

Predictors in the model: (Constant), Thought action fusion, cognitive self-consciousness.

tion of thoughts (Maurice et al., 2001). This misinterpretation of thoughts makes the intrusive thoughts obsessional.

Zucker, Craske, Barrios and Holguin (2002) argue that thought-action fusion is a kind of cognitive bias that is very common among non-clinical and lead to increasing responsibility for intrusive thoughts. As a result, it can be considered as a vulnerability factor for clinical obsessions (Rachman, 1997). These beliefs may seem bizarre but they are simply exaggerations of beliefs that many people hold in some form (Wells, 2009).

Based on cognitive models, people who have strong thought fusion beliefs, tend to interpret their thoughts as irrational (Shafraan, Thordarson, & Rachman, 1996). According to this theory, extreme responsibility and magical thinking are common among people with a high score in thought fusion beliefs scale. Cognitive avoidance or suppression of thought, often used as a coping mechanism for avoid of anxiety aroused by the intrusive thought (Rassin, Muris, Schmidt, & Merckelbach, 2000). However, suppression of thought leads to an increase in intrusive thoughts (Racine, Merckelbach, Muris, & Schmidt, 2001). Therefore, people who have high fusion beliefs consider their intrusive thoughts as significant and preoccupied with them, which eventually lead to the more persistence of fusion beliefs (Marino, Lunt, & Negy, 2008).

The result of this study also showed that there is a significant positive correlation between obsessive-compulsive symptoms and metacognitive beliefs. Several studies support the causal role of metacognition in the development and persistence of psychological disorders, especially obsessive-compulsive disorder (Wells & Papageorgiou, 1998; Fisher & Wells, 2005; Wells & Matthews, 1996).

At the same time, metacognitive beliefs about cognitive self-consciousness and beliefs about the uncontrollability of worry and positive beliefs about worry, have strongly correlated with obsessive-compulsive symptoms non-clinical populations. These findings are consistent with other studies (Cartwright-Hutton & Wells, 1997; Wells & Cartwright-Hutton, 2004; Wells & Papageorgiou, 1998; Gwilliam, et al., 2004; Cohen & Calamari, 2004; Sica et al., 2007).

Hermans, Martens, De Cort, Pieters, and Eelen (2003) compared individuals with OCD with no anxious control participants and found differences on several metacognitive belief dimensions. Participants with OCD held higher negative beliefs about the uncontrollability and danger of mental events, reported beliefs that are more negative about the harmful consequences that might follow from having specif-

ic thoughts, monitored their thoughts more frequently, and had lower confidence in their cognitive abilities.

According to the metacognitive model, metacognitive beliefs are important factors that affect the individual's response to the thoughts, beliefs, and thus in vulnerable people, a combination of positive metacognitive beliefs and negative metacognitive beliefs lead to involvement in cognitive-intentional syndrome. It consists of excessive conceptual processing in the form of worry and rumination, and intentional bias in the form of fixating attention on threat-related stimuli, termed "threat monitoring" and coping behaviors in the form of trying to sound and appear "normal" and including thought control strategies such as thought suppression and behaviors such as behavioral, cognitive, and emotional avoidance (Wells, 2009).

These findings have implications in the prevention and treatment of OCD. Given the positive relationship between metacognitive beliefs and fusion beliefs with the severity of obsessive-compulsive symptoms, identifying and modifying these beliefs can be useful for prevention of obsessive-compulsive disorder in vulnerable individuals.

The research findings should be considered with regard to its limitations. First, the correlational nature of study makes it difficult to interfere in casual conclusions about the findings. Second, this study was conducted on non-clinical sample, so one should be cautious about generalizing the results to clinically OCD patients. The use of self-report questioners is another limitation of present study that should be considered.

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