

Comparison of metacognitive model among obsessive-compulsive disorder, generalized anxiety disorder and healthy subjects

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ABSTRACT: To test the hypothesis that metacognitions might be different among patients with obsessive-compulsive disorder (OCD), patients with generalized anxiety disorder (GAD), and healthy subjects (HS) were studied. Patients with OCD (n = 50), patients with GAD (n = 50), and HS (n = 50) were assessed with the Thought Fusion Instrument (TFI), Beliefs about Rituals Inventory (BARI) and Stop Signals Questionnaire (SSQ). Descriptive analysis used for data frequency, mean and standard deviation, Also ANOVA and Tukey HSD test were calculated. Results showed that Thought Fusion, Beliefs about Rituals Inventory and Stop Signals in each group has differed significantly from others.

Keywords: metacognitive model, obsessive-compulsive, healthy subjects.

INTRODUCTION

Metacognition is the process of “thinking about thinking,” knowing about “what we know” and “what we don’t know” (Wells and Matthews, 1996). It refers to the psychological structures, knowledge, events, and processes that are involved in the control, modification, and interpretation of thinking (Fisher and Wells, 2008). According to Wells’ theory of Self-Regulatory Executive Function (S-REF) (Wells, 2000; Wells and Matthews, 1994), metacognition is a major factor in the development and progression of psychopathology. The basic assumption of this approach posits that, in psychiatric disorder, beliefs represent the metacognitive component guiding the activity of thinking and coping. Individuals have positive and negative beliefs about thinking that influence appraisals, but also, they have implicit procedural metacognitions that create plans or programs that drive cognition and action. This metacognitive element is thought to be a major factor contributing to maladaptive response styles, which in turn favors the development and persistence of psychopathology. Consistent with the S-REF model, research on metacognition has investigated generalized anxiety disorder (Wells and Carter, 2001), posttraumatic stress disorder (Holeva et al., 2001), psychosis (Morrison and Wells, 2003), and depression (Papageorgiou and Wells, 2003). Furthermore, metacognition has been investigated in specific anxiety disorders, for example, obsessive-compulsive disorder (OCD) and panic disorder (PD) (Wells and Papageorgiou, 1998). Studies using nonclinical samples (Gwilliam et al., 2004; Myers and Wells, 2005; Myers et al., 2008; Tosun and Irak, 2008), experimental manipulations (Fisher and Wells, 2005), and patient group comparisons (Janeck et al., 2003) demonstrate relationships between OCD symptoms and metacognitive beliefs. Metacognitive functioning in OCD has been widely investigated. Patients with OCD are characterized by marked negative beliefs about worry, which is related to the severity of obsession, and show high need to control thoughts, as noticed by Moritz et al, (2010). This latter dimension has also been identified by Solem et al (2009) as a critical element enforcing obsessive-compulsive symptoms, thus considered a potential therapeutic target to reduce symptoms. Another aspect of metacognition linked to OCD is cognitive confidence. Both Hermans et al (2008) and Wells and Papageorgiou, (1998) demonstrated that patients with OCD

have a lack of confidence in their cognitive functioning (memory, attention, concentration), contributing to the mistrusting of their perceptions, augmenting doubts, and consequently, negative evaluations concerning the efficiency of their memory and attention. Thus, these mechanisms might augment the checking compulsions. A study conducted by Morrison and Wells, (2003) highlights the presence of higher levels of dysfunctional metacognition in patients with PD when compared with healthy subjects (HS). The patients with PD show significant higher levels of negative beliefs about uncontrollability and danger of thoughts and greater beliefs about the need to control thoughts. Thus, these studies suggest that metacognition can be considered an important element contributing to the dysfunctional cognition characterizing both OCD and PD symptoms, which should be considered when treating the disorder (Janeck et al., 2003).

On the other hand, Wells (1995, 2009) developed the metacognitive model of generalized anxiety disorder (GAD), and this model focuses on the role of metacognitive beliefs (i.e., thoughts about thinking) in the development and maintenance of emotional disorders. The metacognitive model will be discussed in greater depth later in this review, but briefly, this model suggests that positive beliefs about the benefits of worry (e.g., "Worrying helps me cope") and negative beliefs about the danger and uncontrollability of worry (e.g., "My worrying is bad for me") are associated with pathological worry. Increased awareness of the significance of metacognition contributed to the development of the metacognitive theory of GAD (Wells 1995, 2009). This model will be outlined, before considering whether the cognitive processes, the metacognitive model, describes are relevant for child and adolescent worry. The main focus of the model has been on the metacognitive factors associated with pathological worry in adults with GAD. Wells (1995, 2009) hypothesized that worry is maintained by metacognitive beliefs concerning the benefits and dangers of worrying. Initially, worry is triggered as a coping response by an intrusive thought (e.g., "What if I get cancer?") and is primarily focused on a range of issues including physical health, social, or financial concerns. In this study, we aimed to investigate the metacognitive model among obsessive-compulsive disorder, generalized anxiety disorder and healthy subjects in a clinical and non-clinical Iranian sample.

MATERIALS AND METHODS

Methods

Participants

Patients selected from these centers: private clinic of doctor Mazderany (Sari city), Imam Reza Hospital and a private clinic of doctor Bagheri (Amol city), private clinic of doctor Kaka Soltani and Taleghani Hospital (Chalus city), Noushahr and Kelardasht Hospital, which included 150 subjects (50 subjects with generalized anxiety disorder and 50 subjects with obsessive compulsive disorder) based on inclusion and exclusion criteria; inclusion criteria are:

- Having OCD and GAD diagnostic criteria according to DSM-IV-TR
- Age minimum 25 years and maximum 40 years
- Having at least a high school education

And exclusion criteria are:

- Having psychotic symptoms or suicidal thoughts
- Having a personality disorder, neurological illness or narcotic substance abuse
- Receiving medication or other psychological interventions when entering the study

Gender of obsessive-compulsive disorder (OCD) was 14 men and 36 women (n=50), generalized anxiety disorder (GAD) was 14 men and 36 women (n=50) and healthy subjects (HS) was 30 men and 20 women (n=50).
Measures

The Thought Fusion Instrument (TFI; Wells and Cartwright, 2001): This is a 14 item self-report measure assessing metacognitive beliefs about the meaning and power of thoughts. It was designed to measure the three types of thought-fusion implicated in the metacognitive model: Thought-Action Fusion (TAF; e.g., "If I have thoughts about harming someone I will act on them"), Thought- Event Fusion (TEF; e.g., "My thoughts alone have the power to change the course of events") and Thought-Object Fusion (TOF; e.g., "My feelings can be transferred into objects.") Gwilliam et al, (2004) reported good internal consistency with a Cronbach's alpha of .89 for the scale. Corrected item-total correlations ranged from .35 to .78 (Gwilliam, 2001). The TFI significantly correlated with measures of related concepts (the Metacognitions Questionnaire-30 (MCQ-30; Wells and Cartwright-Hatton, 2004) and the Thought-Action Fusion Scale(TAF; Shafran et al., 1996) (Gwilliam et al., 2004). The amount of variance shared with these questionnaires (30.25% and 20.25%, respectively) suggests the TFI is measuring a related but distinct construct. Test-retest reliability over 3 months was acceptable with a coefficient of .69 (Myers, 2008).

Beliefs about Rituals Inventory (BARI; Wells & McNicol, 2004): this questionnaire has 12 items assessing positive beliefs about rituals. The measure gives a definition and examples of rituals and then asks respondents how much they agree with 12 items beginning with the phrase “I need to perform my rituals, otherwise. . .” (e.g., “. . .I will be unable to relax”; “. . .I will do something I regret.”) McNicol and Wells (in preparation) reported a Cronbach’s alpha of .86 and corrected item-total correlations ranging from .39 to .65 for this measure. 3-month test–retest reliability was acceptable with a coefficient of .70 (Myers, 2008).

Stop Signals Questionnaire (SSQ): This is a 12 item self-report measure that assesses the importance of certain criteria in deciding to stop carrying out rituals. In forming the questionnaire a list of unhelpful stop signals prevalent in OCD based on case-material, was constructed. The questionnaire defines stop signals and presents a list of 12 of them. It asks respondents to rate how important each of these signals are for stopping their rituals on a 5 point scale (0 = not at all important and 4 = extremely important). The items begin with the stem “An important signal of when I can stop my rituals is when. . .” and example items are “. . .I have replaced the intrusive thought with a positive image” and “. . .I have performed my rituals in the correct order.” All the items represent stop signals that according to the metacognitive model do not help patients develop a flexible and more functional relationship to their thoughts and feelings. They describe internal feelings or idiosyncratic rules rather than more objective criteria for guiding behavior.

Exploratory principal components factoring was carried out on the measure. Based on the screen plot a one or three factor solution was possible. For this initial use of the SSQ we used the one factor solution, which accounted for 45.5% of the variance, to assess the contribution of stop signals as a whole. Internal consistency for the scale was good ($\alpha = .89$) and corrected total item correlations ranged from .48 to .67. 3-month test–retest reliability was acceptable with a coefficient of .63 (Myers, 2008).

Analysis

Descriptive analysis used for data frequency, mean and standard deviation, Also ANOVA and Tukey HSD test were calculated.

RESULTS AND DISCUSSION

Results

Result showed that Thought Fusion has significance differences among obsessive-compulsive disorder, generalized anxiety disorder and healthy subjects (Table 1). Tukey HSD test showed that Thought Fusion in each group has differ significantly from others (generalized anxiety vs. obsessive-compulsive disorder: $F=0.016$; generalized anxiety vs. healthy subjects: $F=0.09$; obsessive-compulsive disorder vs. healthy subjects: $F= 0.03$) (Table 2).

Table 1. Thought Fusion analysis of variance among OCD, GAD and HS groups

Variable (Thought Fusion)	SS	df	MS	F	Sig
Between groups	19885.7	2	95442.8		
Within groups	7649967.7	147	52040.6	21.8	0.01
Total	7840853.4	149			

Table 2. Results of post hoc Tukey test for Thought Fusion

Dependent variable	Groups	Mean difference	Standard error	Sig
Thought Fusion	generalized anxiety vs. obsessive-compulsive disorder	83.27	45.8	0.016
	generalized anxiety vs. healthy subjects	17.28	45.4	0.09
	obsessive-compulsive disorder vs. healthy subjects	65.98	45.6	0.03

Beliefs about Rituals Inventory have significance differences among obsessive-compulsive disorder, generalized anxiety disorder and healthy subjects (Table 3). Tukey HSD test showed that Beliefs about Rituals Inventory in each group has differ significantly from others (generalized anxiety vs. obsessive-compulsive disorder: $F=0.000$; generalized anxiety vs. healthy subjects: $F=0.000$; obsessive-compulsive disorder vs. healthy subjects: $F= 0.000$) (Table 4).

Table 3. Beliefs about Rituals Inventory analysis of variance among OCD, GAD and HS groups

Variable (Beliefs about Rituals Inventory)	SS	df	MS	F	Sig
Between groups	9628	2	4814		
Within groups	10554.7	147	71.8	67.05	0.000
Total	20182.7	149			

Table 4. Results of post hoc Tukey test for Beliefs about Rituals Inventory

Dependent variable	Groups	Mean difference	Standard error	Sig
Beliefs about Rituals Inventory	generalized anxiety vs. obsessive-compulsive disorder	-12.75	1.7	0.000
	generalized anxiety vs. healthy subjects	6.58	1.6	0.000
	obsessive-compulsive disorder vs. healthy subjects	19.3	1.6	0.000

Stop Signals have significance differences among obsessive-compulsive disorder, generalized anxiety disorder and healthy subjects (Table 3). Tukey HSD test showed that Stop Signals in each group has differ significantly from others (generalized anxiety vs. obsessive-compulsive disorder: $F=0.000$; generalized anxiety vs. healthy subjects: $F=0.000$; obsessive-compulsive disorder vs. healthy subjects: $F= 0.020$) (Table 4).

Table 5. Stop Signals analysis of variance among OCD, GAD and HS groups

Variable (Stop Signals)	SS	df	MS	F	Sig
Between groups	8112.25	2	41.6.12		
Within groups	16897.2	147	114.9	35.7	0.000
Total	25109.5	149			

Table 6. Results of post hoc Tukey test for Stop Signals

Dependent variable	Groups	Mean difference	Standard error	Sig
Stop Signals	generalized anxiety vs. obsessive-compulsive disorder	-11.9	2.15	0.000
	generalized anxiety vs. healthy subjects	17.7	2.13	0.000
	obsessive-compulsive disorder vs. healthy subjects	5.8	2.14	0.020

Discussion

The findings of this study suggest that Thought Fusion among OCD, GAD and normal subjects has significant difference. The theoretical explanation of this theory based on Wells, can be said to be obsessive-compulsive led to activation of metacognition (Thought Fusion). Introduced beliefs at this level include beliefs about the importance, meaning, and thinking. Beliefs about the power and meaning of the thoughts and feelings of the metacognition theory refers to think interlinking that in this case, the boundary between thought and action, thought and event, and thought and object is destroyed. Activation of this inefficient metacognition by obsessive thoughts cause unwanted negative evaluation and intrusive thoughts as threatening symptoms. This estimate is in to turn trigger negative emotions that are mainly in the form of anxiety. The result is consistent with results Wells and Matthews (1996), Gwilliam et al (2004), Rassin et al (1999) and Myers and Wells (2005).

Other findings from this study suggest that among Beliefs about Rituals Inventory and Stop Signals in OCD, GAD and normal subjects there is a significant difference. Activation of metacognitive beliefs causes that annoying cognition evaluated as a negative sign of danger. Negative evaluation of intrusive cognitions in turn may also lead to emotions such as guilt and anger. The severity and nature of the individual emotional responses influenced his Beliefs about Rituals Inventory and benefits them to reduce anxiety. When negative metacognitive beliefs are activated thoughts worry the person doing the evaluation is negative. The result is consistent with results Solem et al (2010), Fisher and Wells (2009) and Jneck et al (2003).

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