

Metacognitive Functions in Obsessive Compulsive Disorder in a Turkish Clinical Population: The Relationship Between Symptom Types and Metacognition Subdimensions

Ozan Pazvantoglu¹, Ayhan Algul², Mehmet Alpay Ates², Gokhan Sarisoy¹, Servet Ebrinc³, Cengiz Basoglu³, Mesut Cetin³

ÖZET:

Klinik bir Türkiye örnekleminde obsesif-kompulsif bozuklukta üstbilişsel işlevler; belirti tipiyle üstbiliş boyutlarının ilişkisi

Amaç: Çalışmamızın amaçlarından biri, obsesif-kompulsif bozukluk (OKB) hastalarının sahip oldukları işlevsel olmayan üstbilişler açısından sağlıklı kontrollerden farklı olup olmadığını araştırmaktır. Diğer amaç ise obsesif-kompulsif belirti türleri ile üstbiliş alt boyutları arasındaki ilişkiyi araştırmaktır.

Yöntem: OKB tanısı konan 52 hasta ile 65 sağlıklı kontrol Üstbiliş Ölçeği-30 (ÜBÖ-30) ile değerlendirilmiştir. Ölçek skorları student-t testi ile karşılaştırılmış ve istatistiksel anlamlılığın etki değeri hesaplanmıştır. Ayrıca hasta grubuna Maudsley Obsesif Kompulsif Semptom Listesi (MOKSL) ve Beck Anksiyete Envanteri (BAE) uygulanmış, her iki ölçek skorları ile ÜBÖ-30 skorları arasındaki ilişki Pearson korelasyon analizi ile ortaya koyulmuştur.

Bulgular: OKB hastalarının ÜBÖ-30 toplam skorları sağlıklı kontrollere göre orta etki büyüklüğü derecesinde ($p < 0.0001$, etki değeri=0.74) daha yüksekti. Alt ölçeklerden ise "kontrol edilemezlik ve tehlike" ($p < 0.0001$, etki değeri=0.95) ve "düşünceleri kontrol ihtiyacı" ($p < 0.0001$, etki değeri=0.84) alt boyutları OKB hastalarında büyük etki değeri derecesinde daha yüksek bulundu. ÜBÖ-30'un ve MOKSL'nin alt ölçekleri arasında en yüksek korelasyonlar "kuşku/kararsızlık" belirti tipi skorları ile "kontrol edilemezlik ve tehlike" ($r=0.48$) ve "düşünceleri kontrol ihtiyacı" ($r=0.47$) alt boyut skorları arasında idi. Ayrıca BAE skorlarının bu iki ölçek skorlarıyla gösterdiği en yüksek korelasyonlar da bu alt ölçekler ile idi (sırasıyla; $r=0.46$, $r=0.55$, $r=0.66$).

Sonuç: OKB hastalarında işlevsel olmayan üstbilişler yüksek oranda mevcuttur. Özellikle bazı üstbiliş boyutları ("kontrol edilemezlik ve tehlike" ve "düşünceleri kontrol ihtiyacı") OKB'de daha merkezi öneme sahiptir. Bazı obsesif-kompulsif belirti tipleri (kuşku/kararsızlık) bu üstbilişler ile daha yaygın ve güçlü ilişki gösterirler. Çalışmamız, ülkemizde OKB ve üstbilişler arasındaki ilişkiyi araştıran ilk çalışmadır ve OKB hastalarının üstbilişsel süreçlerinin daha iyi anlaşılmasına katkı sağlayabilir.

Anahtar sözcükler: Obsesif-kompulsif bozukluk, üstbiliş, MCQ-30, üstbiliş boyutları, Türkiye örnekleme

Klinik Psikofarmakoloji Bülteni 2013;23(1):65-71

ABSTRACT:

Metacognitive functions in obsessive compulsive disorder in a Turkish clinical population: the relationship between symptom types and metacognition subdimensions

Objective: One of the aims of this study was to investigate whether or not patients with obsessive-compulsive disorder (OCD) differ from healthy controls in terms of their dysfunctional metacognitions. Another aim was to investigate the relationship between obsessive-compulsive (O-C) symptom types and subdimensions of metacognition.

Methods: Fifty-two patients diagnosed with OCD and 65 healthy controls were evaluated using the Metacognitions Questionnaire-30 (MCQ-30). Scale scores were compared using the Student-t test, and effect sizes of statistical significance were calculated. Additionally, the Maudsley Obsessive-Compulsive Symptoms Inventory (MOCI) and Beck Anxiety Inventory (BAI) were applied, and the correlations between the scores from these scales and the MCQ-30 were tested using Pearson correlation analysis.

Results: MCQ-30 total scores in OCD patients compared to healthy controls were higher to a medium degree ($p < 0.0001$, effect size=0.74). "Uncontrollability and danger" ($p < 0.0001$, effect size=0.95), and "need to control thoughts" ($p < 0.0001$, effect size=0.84) subscales were higher in patients with OCD patients with a large effect size. The highest correlations between subscales of MCQ-30 and MOCI scores were between "doubt/indisiveness" symptom type scores and "uncontrollability and danger" ($r=0.48$) and "need to control thoughts" ($r=0.47$) subscale scores. In addition, the highest correlations between BAI score and subscales of these scales (MCQ-30 and MOCI) were between the same subscales (respectively; $r=0.46$, $r=0.55$, $r=0.66$).

Conclusions: Dysfunctional metacognitions were quite high in OCD patients. Certain metacognition subdimensions ("uncontrollability and danger" and "need to control thoughts") are of central importance in OCD. Some obsessive compulsive symptom types ("doubt/indisiveness") exhibit a more common and substantial relationship with these metacognitions. Our study is the first to investigate the relationship between OCD and metacognitions in Turkey and may contribute to a better understanding of metacognitive processes in OCD patients.

Key words: Obsessive compulsive disorder, metacognition, MCQ-30, subdimensions of metacognition, Turkish sample

Bulletin of Clinical Psychopharmacology 2013;23(1):65-71

¹M.D., Assist. Prof., Ondokuz Mayıs University, Faculty of Medicine, Department of Psychiatry, Samsun - Turkey

²M.D., Assoc. Prof., GATA Haydarpaşa Training Hospital, Istanbul - Turkey

³M.D., Prof., GATA Haydarpaşa Training Hospital, Istanbul - Turkey

Yazışma Adresi / Address reprint requests to: Ozan Pazvantoglu, Ondokuz Mayıs Üniversitesi Tıp Fakültesi, Psikiyatri AD, Samsun - Turkey

Elektronik posta adresi / E-mail address: ozanpazvantoglu@gmail.com

Gönderme tarihi / Date of submission: 19 Ekim 2012 / October 19, 2012

Kabul tarihi / Date of acceptance: 27 Ocak 2013 / January 27, 2013

Bağınıtı beyanı:

O.P., A.A., M.A.A., G.S., S.E., C.B., M.C.: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemişlerdir.

Declaration of interest:

O.P., A.A., M.A.A., G.S., S.E., C.B., M.C.: The authors reported no conflict of interest related to this article.

INTRODUCTION

The concept of metacognition encompasses psychological processes involving the significance, changing and control of thoughts (1). To put it another way, it may be defined as “an individual’s knowledge of what he knows, thoughts about what he thinks or observation of his own cognitive process” (2). This faculty is important in being able to use cognitive processes functionally and compatibly. In the model proposed by Wells and Matthews, problems with metacognitions contribute to the development and persistence of psychopathologies (3).

According to the metacognitive model of obsessive compulsive disorder (OCD), individuals with this disorder possess dysfunctional beliefs (metacognitions) about the importance of obsessive thoughts and their consequences (4). For example, “Thinking about doing something means doing it, and is just as dangerous “ (fusion of thought and action) or “If I cannot control an idea that worries me and it then happens, that is my fault” (excessive worry about controlling ideas and exaggerated feelings of responsibility). On the other hand, some dysfunctional metacognitions are positive ideas about obsessive symptoms and thus contribute to the persistence of those symptoms (“My worrying about cleanliness and constantly washing my hands protects me from disease, and are therefore necessary”).

Since the development of the concept and model of metacognition, OCD and generalized anxiety disorder have been some of the most commonly studied anxiety disorders in this area. Some of these studies have involved non-clinical populations (2,5,6,7), while others have compared OCD patients with other patient groups or healthy controls (8,9,10,11). One of the first studies on the subject showed a correlation between obsessive-compulsive (O-C) symptoms in a non-clinical sample made up of university students and dysfunctional metacognitions (5). That study also established that different O-C symptoms were correlated to various degrees with different metacognitive dimensions. Another study with a non-clinical sample showed that O-C symptoms were strongly and particularly

correlated with two dimensions of metacognition (“negative beliefs about uncontrollability of thoughts and danger” and “beliefs about the need to control thoughts”) (6). In studies with patients, OCD patients are reported to have more dysfunctional metacognitions compared to healthy controls (8-11). These studies performed with clinical patient samples have also shown that the metacognitions “uncontrollability and danger” and “need to control thoughts” play a central role in OCD (9,11). One such study found a correlation with “indecisiveness” metacognition in particular, but none with certain O-C types (doubting, slowness) and compulsions (11). In another study, obsessions were found to be related to various metacognitive dimensions (uncontrollability and danger, need to control thoughts and cognitions, particularly perception) while compulsions exhibited no correlation with metacognitions (10).

Although the international literature contains several studies investigating the role of metacognitions in O-C symptoms (or OCD), to the best of our knowledge only two studies have to date been performed in this field in Turkey (7,12). However, both of these studies were performed with non-clinical populations (university students). In one, the metacognitions exhibiting the highest correlation with both O-C symptoms and anxiety levels were the “uncontrollability and danger” and “need to control thoughts” dimensions (12). Moreover, the authors concluded that some O-C symptoms had more specific metacognitive predictors. On the other hand, they also recommended that these results also be tested in a clinical population. Another study conducted in our country investigated metacognitions correlated with O-C symptoms in university students and whether these exhibited intercultural variation (7). According to the results of that study, “using anxiety about controlling thoughts” was found to be more specific the Turkish sample.

One of the aims of our study was to investigate whether OCD patients differ from healthy controls in terms of their dysfunctional metacognitions. Another aim was to investigate the relationship between O-C symptoms and metacognition

subdimensions.

Our first hypothesis was that OCD patients have a higher degree of dysfunctional metacognitions than healthy controls. The other was that O-C symptom types are correlated with different metacognition subdimensions.

METHOD

Participants

Fifty-two patients currently or previously diagnosed with OCD and attending the psychiatry clinic during the study period were included. Patients with additional psychiatric disease, including anxiety disorders, or who had received structured psychotherapy in the past were excluded. The mean age of the participants was 34.4 ± 9.5 years, and 33 (63.5%) were female. The mean length of time spent in education was 11.4 ± 3.2 years, mean age at onset of disease was 26.0 ± 8.3 years and mean duration of disease 8.4 ± 8.5 years. Sixty-five healthy individuals with no previous or current psychiatric disorder were also included. These consisted of hospital staff and their relatives. The mean age of the control group was 35.1 ± 9.5 years, and 35 (53.8%) were female, and mean length of time spent in education was 12.1 ± 3.5 years. The patient and control group diagnostic and differential evaluations were performed with diagnostic interviews based on the DSM-IV.

Measurement Tools

Metacognitions Questionnaire-30 (MCQ-30):

The original scale was developed by Cartwright-Hatton and Wells (13). Wells and Cartwright-Hatton (1) later produced a 30-item short form (MCQ-30). Tosun and Irak adapted the scale to Turkish and established its validity and reliability (2). The internal consistency co-efficient (Cronbach's Alpha) for the original scale was 0.93 for the whole scale, with subscales ranging between 0.72 and 0.93. In the Turkish-language version the co-efficient was 0.86 for the whole scale, with subscales ranging between 0.70 and 0.85. Like the original scale, the

Turkish-language version consists of five conceptually different but inter-correlated factors. These are: 1-Positive beliefs regarding worry, i.e. positive beliefs that worry will assist with plan making or problem solving and is a desired characteristic; 2-Uncontrollability and danger, i.e. the belief that worry cannot be controlled and that this is a dangerous situation; 3-Cognitive security, i.e. a person's lack of confidence in his memory and attention capacities; 4-Need to control thoughts, i.e. a person's thinking that he personally is responsible and will be punished for harmful consequences resulting from his inability control certain thoughts (such as superstition, punishment and responsibility) and 5-Cognitive self-consciousness i.e. a person's constant preoccupation with his own thought processes. Every item in the MCQ-30 is answered on a 4-point Likert scale, from (1) "I definitely disagree" to (4) "I definitely agree." Possible scores from the scale range from 30 to 120, with higher scores showing dysfunctional metacognitive activity of a pathological type.

Maudsley Obsessive Compulsive Inventory

(MOCI): Developed by Hodgson and Rachman (14) in 1977, the scale seeks to investigate the severity and type of O-C symptoms. The original version of the scale, adapted into Turkish by Erol and Savaşır (15), contains 30 items and four subscales (cleaning, checking, slowness, doubting). Seven items were added to the Turkish-language version, which also contained all the subscales of the original scale, and these seven constitute a further subdimension, "rumination." This handicap, which some authors (6) regarded as a deficiency of the original version, was thus introduced in the Turkish-language version. The internal consistency co-efficient for the whole of the original scale is 0.88, with the subscales ranging between 0.84 and 0.50. In the Turkish-language version, the co-efficient for the whole scale is 0.86, with subscales ranging between 0.61 and 0.65. Every item in the scale is answered "true/false." Possible scores from the scale range from 0 to 37, and higher scores indicate elevated O-C symptoms. In our study, the levels of O-C symptom subtypes were determined by this scale.

Beck Anxiety Inventory (BAI): The original version of the scale was developed by Beck et al. (16). This scale was subsequently adapted into Turkish by Ulusoy et al. (17). It is a 21-item 3-point Likert scale self-report measure. The test-retest co-efficient of the original test is 0.75, and that of the Turkish-language version 0.93. High total scores from the scale, which evaluates the cognitive, emotional and physical symptoms of anxiety, show that the individual has elevated anxiety.

Statistical Analysis

Variables exhibited normal distribution. The chi square tests and Student's t-test were used for the analysis of sociodemographic characteristics, and Pearson correlation analysis was used to analyze the correlation between metacognition scale subdimensions and O-C symptom types. A correlation coefficient (r) of ≤ 0.24 indicated no relationship or a weak relationship, 0.25 to 0.49 indicated a moderate relationship, 0.50-0.74 showed a good relationship and ≥ 0.75 indicated a very good relationship. In order to obtain a more reliable result in the comparison of patient and control group metacognition scores, the effect size was calculated using Cohen's method; d values of 0.2-0.5 were regarded as "small effect size," 0.5-0.8 as "medium effect size" and those greater than 0.8 as "large effect size." This value is calculated by this formula;

$$d = \frac{\text{the difference between the means}}{\sqrt{\frac{\text{the sum of the standard deviations}}{2}}}$$

The significance limit was set at 0.95 ($p < 0.05$) and data were analyzed using SPSS.16.0.

RESULTS

No statistically significant difference was determined between the patient and control groups in terms of age and length of time spent in education. The proportion of women in the patient group was greater than that in the control group, though the difference was not statistically significant.

Since the MCQ-30 total and subscale scores were normally distributed, Student's t test was used in comparing the two group means. The OCD group mean MCQ-30 total score was significantly higher than that of the control group ($p < 0.0001$, Cohen's $d = 0.74$). In terms of subdimensions, the uncontrollability and danger ($p < 0.0001$, Cohen's $d = 0.95$) and need to control thoughts ($p < 0.0001$, Cohen's $d = 0.84$) subscale scores in particular, as well as the cognitive confidence subscale score ($p = 0.48$, Cohen's $d = 0.37$), were significantly higher compared to those of the control group. However, no significant difference was determined between the patient and control group positive belief or cognitive self-consciousness scores.

The relationship between O-C symptoms and metacognition subdimensions was analyzed using the Pearson correlation test. Doubting/ indecisiveness O-C symptom subscale scores exhibited moderate degrees of correlation with all of the MCQ-30 subdimensions, while other O-C symptom type scores exhibited correlations with one or two metacognition subdimensions. However, the "cleanness" subscale symptom scores were not correlated with any metacognition subdimension. On the other hand, the highest correlations (moderate level) between the MCQ-30

Table 1: Patient and control group MCQ-30 subscale and total scores

	Patient group (n=52) Mean±S.D	Healthy control group (n=65) Mean±S.D	t value	Effect size (Cohen d)
Positive beliefs	13.76±5.49	12.41±4.23	1.506	0.27 [†]
Uncontrollability and danger	17.76±4.43	13.69±4.13	5.129**	0.95 ^{†††}
Cognitive confidence	14.40±4.44	12.72±4.50	2.017*	0.37 [†]
Need to control thoughts	16.86±3.90	13.61±3.77	4.555**	0.84 ^{†††}
Cognitive self-consciousness	17.86±3.94	16.78±4.03	1.455	0.27 [†]
MCQ-30 total	80.67±15.31	69.23±15.26	4.023**	0.74 ^{††}

* $p < 0.05$, ** $p < 0.0001$; [†]small effect size, ^{††}medium effect size, ^{†††}large effect size

Table 2: Pearson correlation coefficients between patients' O-C symptom scores, metacognition scores and anxiety scores

	MOCI-Control	MOCI-Cleanness	MOCI-Slowness	MOCI-Doubting/ Indecisiveness	MOCI-rumination	MOCI-Total	BAI
MCQ-30- Positive beliefs	0.09	0.08	0.09	0.40**	0.12	0.21	0.36*
MCQ-30-Uncontrollability and danger	0.36**	0.21	0.30*	0.48***	0.40**	0.50***	0.56***
MCQ-30-Cognitive confidence	0.04	0.19	0.10	0.31*	0.14	0.27*	0.32
MCQ-30-Need to control thoughts	0.23	0.25	0.27	0.47***	0.23	0.42**	0.66***
MCQ-30-Cognitive self-perception	0.36**	0.14	0.31*	0.30*	0.38**	0.35*	0.37*
MCQ-30-Total	0.30*	0.25	0.30*	0.58***	0.36**	0.48***	0.63***
BAI	0.28	0.26	0.18	0.46**	0.44**	0.58***	-

MCQ-30: Metacognitions Questionnaire-30, MOCI: Maudsley Obsessive-Compulsive Inventory, BAI: Beck Anxiety Inventory

*p<0.05, **p<0.01, ***p<0.001

subdimensions and MOCI subscales were between the “doubting/indecisiveness” symptom type scores and “uncontrollability and danger” ($r=0.48$) and “need to control thoughts” ($r=0.47$) subdimension scores.

In addition, the highest correlations (good level) between OCD patients' Beck anxiety inventory scores and MCQ-30 dimensions were between the “uncontrollability and danger” ($r=0.55$) and “need to control thoughts” ($r=0.66$) subscales. On the other hand, the highest correlations- moderately to - between Beck anxiety inventory score and MOCI subscales were the “doubting/indecisiveness” symptom type scores ($r=0.46$).

DISCUSSION

Our study was intended to investigate the level of dysfunctional metacognitions in OCD patients in a Turkish sample. It was hypothesized that OCD patients have greater dysfunctional metacognitions than healthy controls. On the basis of our results, this hypothesis was statistically confirmed with a moderate effect size. In terms of subdimensions, the most important (degree of size effect) differences were in the “uncontrollability and danger” and “need to control thoughts” subdimensions. Additionally, OCD patients had greater dysfunctional metacognitions associated with “cognitive confidence” compared to the healthy controls, but although the difference was significant, the effect

size was small.

There are only two previous studies in Turkey in this area (7,12). In contrast to our study, these were performed with non-clinical populations (university students). One of these studies investigated O-C symptom-associated metacognitions and whether these vary between cultures. It determined that “worry about controlling thoughts” was more specific to the Turkish sample (7). According to the results of that study, the responsibility/expectation of danger and perfectionism/precision subdimensions were correlated with O-C symptoms in both Canadian and Turkish samples, while “using anxiety about controlling thoughts” was particular to the Turkish sample. Looked at from that perspective, different metacognitions may be correlated with OCD in different cultures. On the other hand, the tools used to evaluate metacognition in that scale were different (Obsessive Beliefs Scale and Thought Control Scale) to those in ours, with different subdimensions. This makes it difficult to compare our findings. In our study, the subdimensions of metacognition most correlated with O-C symptoms were “uncontrollability and danger” and “need to control thoughts.” The common characteristic of these is that they both concern control of thoughts and associated anxiety over this. In addition, these two are the subdimensions exhibiting the highest anxiety severity in our study. In conclusion, although different tools were employed, our findings are of a

parallel nature to those of Yorulmaz et al. (7). Excessive importance attached to control of thoughts and a high level of associated anxiety are similar findings in both studies. It is methodologically significant that the other study with a Turkish sample (12) used the same evaluation tools (MCQ-30 and MOCI) as studies performed in other cultures and our own study, and represents an advantage in terms of the comparability of the results. In this study, the participants were divided into “below threshold-clinical group” and a “control group” on the basis of their scores from the scale administered, and dysfunctional metacognition scores between the two were then compared. All metacognition scores apart from “cognitive confidence” were significantly higher in the below-threshold clinical group. Additionally, the metacognitions exhibiting the highest correlation with both O-C symptoms and anxiety levels were the “uncontrollability and danger” and “need to control thoughts” dimensions. The authors therefore suggested that these metacognitions were central to O-C symptoms and mediated the correlation between anxiety and obsessions. Cucchi et al. (11) also reported that the same metacognition dimensions differed from the healthy controls with the highest size effects. In conclusion, in agreement with previous studies (6,9,11), our findings indicate that metacognitions associated with the “uncontrollability of thoughts” and “need to control thoughts” dimensions were also the metacognitions with the most important role in OCD.

Secondly, our study was intended to reveal the metacognition dimensions exhibiting a correlation with different O-C symptoms. It was hypothesized that O-C symptom types were associated with different metacognitions. This hypothesis was tested by analyzing the correlations between O-C symptom subtype scores and metacognition subdimension scores (Pearson correlation analysis). According to our results, “doubting/indecisiveness” type symptoms were significantly correlated, in varying degrees (moderate level) with all metacognition dimensions, but “cleanness” type symptoms exhibited no correlation with any metacognitive dimension.

One study (12), performed in Turkey and using the same evaluation tool in the measurement of O-C symptoms as our own, has reported, following regression analysis, that all O-C symptom subtypes acted as more than one cognitive predictor, and that these varied according to symptom subtypes. That study, performed with a non-clinical population, also showed that the “need to control thoughts” subdimension predicted all O-C symptom types. In our study, however, the “uncontrollability of thoughts” subdimension of metacognition exhibited a significant correlation with all O-C symptom subtypes in OCD patients. Bearing in mind that these two cognitive subdimensions are thought to be of central importance in OCD (or O-C symptoms), as previously mentioned, these findings are compatible with one another and support the hypothesis. Similarly to our study, Cucchi et al. have concluded that “indecisiveness” symptoms are correlated with all metacognition subdimensions (11). However, O-C symptoms were evaluated using the Yale-Brown scale in that study. In that scale, in contrast to the MOCI used by us, “doubting” and “indecisiveness” symptoms are separate subdimensions. It is therefore difficult to compare the results in that regard. Another study that used yet another measurement tool in the evaluation of O-C symptoms (the Padua Inventory) reported that the symptom types exhibiting the widest correlation with metacognitions were “controlling” and “obsessive thoughts.” (5). In our study, these symptom types only exhibited a correlation with the “uncontrollability and danger” and “cognitive self-consciousness” metacognition subdimensions. In conclusion, while “doubting/indecisiveness” symptoms are correlated with all metacognition subdimensions, other O-C symptom types are either correlated with some metacognitions or else with no metacognitive dimension (cleanness subtype). On the other hand, “uncontrollability and danger” metacognitions are correlated with all O-C symptom types.

The results of this study may be summarized as follows;

- OCD patients have greater dysfunctional metacognitions compared to healthy controls.

- The metacognitions that play a central role in OCD are the “uncontrollability and danger and “need to control thoughts” dimensions.
- O-C symptoms of the “doubting/indecisiveness” type belong to the symptom group that exhibits the widest correlation with dysfunctional metacognitions.
- The “uncontrollability and danger” metacognition dimension exhibited a correlation with all O-C symptom types.

LIMITATIONS

Our study is limited by the sample number being lower than those of previous studies with non-clinical samples. However, the fact that ours was performed with a patient population may be seen to enhance the value of our findings. Because the measurement tools we used were of the self-

reporting kind, the general limitations of such scales may have been reflected in our findings.

CONCLUSIONS

Our findings are compatible with those of previous studies in this field in different cultures. They are also in agreement with studies performed in Turkey with non-clinical populations. Ours is the first study in Turkey to investigate the relationship between OCD and metacognitions. It may therefore contribute to a better understanding of the metacognitive processes in OCD patients. The metacognitive dimensions particularly identified (“uncontrollability of thoughts” and “need to control thoughts”) should be borne in mind in psychotherapeutic approaches based on these results. Metacognitive interventions specific to O-C symptom subtypes should also be planned.

References:

1. Wells A, Cartwright-Hatton S. A short form of the metacognitions questionnaire: properties of the MCQ 30. *Behav Res Ther* 2004;42(4):385-96.
2. Tosun A, Irak M. Adaptation, Validity, and Reliability of the Metacognition Questionnaire-30 for the Turkish Population, and its Relationship to Anxiety and Obsessive-Compulsive Symptoms. *Turkish Journal of Psychiatry* 2008;19(1):67-80.
3. Wells A, Matthews G. Modelling cognition in emotional disorder: the S-REF model. *Behav Res Ther* 1996;34(11-12):881-8.
4. Gwilliam P, Wells A, Cartwright-Hatton S. Does meta-cognition or responsibility predict obsessive-compulsive symptoms? A test of the meta-cognitive model. *Clin Psychol Psychot* 2004;11(2):137-44.
5. Wells A, Papageorgiou C. Relationships between worry, obsessive-compulsive symptoms and meta-cognitive beliefs. *Behav Res Ther* 1998;36(9):899-913.
6. Myers SG, Wells A. Obsessive-compulsive symptoms: the contribution of metacognitions and responsibility. *J Anxiety Disord* 2005;19(8):806-17.
7. Yorulmaz O, Gençöz T, Woody S. Vulnerability factors in OCD symptoms: cross-cultural comparisons between Turkish and Canadian samples. *Clin Psychol Psychot* 2010;17(2):110-21.
8. Janeck AS, Calamari JE, Riemann BC, Heffelpinger SK. Too much thinking about thinking? metacognitive differences in obsessive-compulsive disorder. *J Anxiety Disord* 2003;17(2):181-95.
9. Hermans D, Martens K, de Cort K, Pieters G, Eelen P. Reality monitoring and metacognitive beliefs related to cognitive confidence in obsessive-compulsive disorder. *Behav Res Ther* 2003;41(4):383-401.
10. Moritz S, Peters M, Larøi F, Lincoln T. Metacognitive beliefs in obsessive-compulsive patients: a comparison with healthy and schizophrenia participants. *Cogn Neuropsychiatry* 2010;15(6):531-48.
11. Cucchi M, Bottelli V, Cavadini D, Ricci L, Conca V, Ronchi P, Smeraldi E. An explorative study on metacognition in obsessive-compulsive disorder and panic disorder. *Compr Psychiat* 2012;53(5):546-53.
12. Irak M, Tosun A. Exploring the role of metacognition in obsessive-compulsive and anxiety symptoms. *J Anxiety Disord* 2008;22(8):1316-25.
13. Cartwright-Hatton S, Wells A. Beliefs about worry and intrusions: the metacognitions questionnaire and its correlates. *J Anxiety Disord* 1997;11(3):279-96.
14. Hodgson RJ, Rachman S. Obsessional-compulsive complaints. *Behav Res Ther* 1977;15(5): 389-95.
15. Erol N, Savasir I. The Turkish version of Maudsley obsessive-compulsive inventory. The book of the national congress of psychiatry and neurological sciences, 19-23 September 1988, Ankara, GATA press, 1988, p107-14.
16. Beck AT, Epstein N, Braun G, Steer RA. An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology* 1988;56(6): 893-7.
17. Ulusoy M, Şahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: Psychometric properties. *J Cogn Psychother* 1998;12(2):163-72.