
The relationship of cognitive confidence to OCD symptoms

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Abstract

The role of metamemory and metacognition in Obsessive-Compulsive Disorder (OCD) symptoms and checking was examined in a student sample, using the Memory And Cognitive Confidence Scale (MACCS; Nedeljkovic & Kyrios, 2007). Confirmatory factor analysis supported the MACCS’s previously reported structure, and hierarchical regression supported its relationship to OCD symptom severity over-and-above depression and other OCD-related beliefs. Specifically, general confidence in memory was found to be a unique predictor of overall OCD severity. Implications for theory and research are discussed.
Introduction

Obsessive-compulsive disorder (OCD) is a highly disabling anxiety disorder characterized by persistent and recurrent obsessive thoughts, images, or impulses, and by compulsive and ritualized behaviors (APA, 2000). The high levels of doubt, uncertainty and repetitiveness that characterize OCD have led to suggestions that cognitive deficits are involved in the disorder. Neuropsychological theories have proposed that the repetitive and perseverative nature of the symptoms, as well as the constant doubts, reflect the individuals' inability to remember or monitor previously conducted actions (see Otto, 1992 for review). To this end, a number of studies have examined neuropsychological functioning in a range of domains such as verbal and non-verbal memory, and executive function (e.g., Savage et al., 2000; Purcell, Maruff, Kyrios & Pantelis, 1998). However, findings from many such studies have been inconsistent (Geisberg & McKay, 2004), leading researchers to investigate the role of perceptions and beliefs about one’s memory and thinking processes (i.e., meta-memory) in OCD, rather than memory *per se*.

Metacognitive factors - individual’s beliefs about, and perceptions of their cognitive and thinking processes - have been placed as a central element in a number of cognitive theories of OCD (Purdon & Clark, 1994, 1999; Wells & Purdon, 1999). One such factor, meta-memory has received increasing attention in OCD research (see Muller & Roberts, 2005 for a review), in particular in its relevance to checking compulsions (e.g. Rachman, 2002). Recent theory and research have implicated meta-memory factors in OCD and checking (Rachman, 2002; Radomsky, Gilchrist, & Dussault, 2006; van den Hout & Kindt, 2003b) Deficits in meta-memory (e.g., lowered memory confidence) have been consistently noted among OCD patients (Tuna, Tekcan, & Topcuoglu, 2003), OCD-checkers (McNally & Kohlbeck, 1992) and sub-clinical checkers (Rubenstein, Peynircioglu, Chambless, & Pigott, 1993). Rachman (2002) described
meta-memory as a necessary component in the maintenance of checking symptoms, with several subsequent studies offering experimental evidence for a vicious cycle between repetitive checking and lowered memory confidence (Coles, Radomsky, & Horng, 2006; Radomsky, et al., 2006; van den Hout & Kindt, 2003b).

While lowered memory confidence is widely recognised as being associated with OCD, particularly with respect to checking compulsions, it has recently been proposed that judgments of lowered confidence reflect a more general belief of inferior cognitive functioning among individuals with OCD. For instance, the revised Metamemory and Cognitive Confidence Scale (MACCS; Kyrios, 1998; Nedeljkovic & Kyrios, 2007), which assesses general beliefs about memory and related processes, was found to be associated with OCD symptoms in a student sample, predicting symptoms over-and-above mood and anxiety. This scale also differentiated individuals with OCD from community controls, with such differences remaining when controlling for depression and anxiety, but not when OCD-symptoms were controlled.

Nedeljkovic and Kyrios (2007) found meta-memory to be multifaceted. Four specific domains were identified, relating to confidence in general memory, decision-making, concentration, and beliefs that one must have perfect cognitive functioning. While there has been some support for the relevance of some of these beliefs in OCD in previous research by Cartwright-Hutton and Wells (1997), they have been conceptualised as representing a unidimensional construct. Such findings indicate that while intercorrelated, the four belief domains may represent specific dimensions of meta-cognition that show distinct patterns of association with OCD symptoms and OCD related beliefs. Therefore, in this study we aimed to provide (1) further evidence for the validity of the four factor structure of the proposed meta-memory model using Confirmatory Factor Analysis (CFA); and (2) to further examine the
relationship of the MACCS to OCD symptoms and other OCD-relevant beliefs. CFA takes a hypothesis-testing rather than exploratory approach to the analysis of data (Byrne, 2001). In the current study, the proposed multidimensional construct of meta-memory was tested against the alternative unidimensional model. It was expected that the multidimensional meta-memory model would provide a better fit than a unifactorial model, confirming the multifaceted nature of meta-memory.

It was further anticipated that the MACCS scale and subscales would correlate significantly with scores on measures of OCD symptoms, mood and anxiety and OCD-relevant beliefs. It was hypothesised that MACCS subscales would significantly predict OCD symptoms over and above depressive and anxiety symptoms and other OCD related beliefs.

Method

Participants

There were 250 student participants (206 females) in this study ($M$ age=21 years, $SD=7.24$, range 16 - 62 years). The use of non-clinical samples in research on OCD is a common practice and can be justified by the numerous findings of the similarity in the content and type of OC phenomena across clinical and non-clinical populations (Burns, Keortge, Formea, & Sternberger, 1996), consistent with modern conceptualizations of OCD as a dimensional construct.

Measures

The Memory And Cognitive Confidence Scale (MACCS; Kyrios, 1998; Nedeljkovic & Kyrios, 2007) consists of 28 items rated on a 5-point Likert scale (1=“strongly disagree”;}
5=“strongly agree”). The scale has been found to have four subscales assessing beliefs about general memory abilities, confidence in decision-making abilities, confidence in one's ability to focus or concentrate, and high standards about one's cognitive performance (Nedeljkovic & Kyrios, 2007). The scale and subscales have been shown to have good test-retest reliability and internal consistency in clinical, student and community samples (Nedeljkovic & Kyrios, 2007).

The Obsessive Beliefs Questionnaire-Revised [OBQ-44: Obsessive Compulsive Cognitions Working Group (OCCWG), 2005] is a 44-item questionnaire that assesses beliefs associated with OCD. The OBQ-44 assesses three cognitive domains: Importance and Control of Thoughts, Perfectionism/Intolerance for Uncertainty and Responsibility/Threat Estimation. The responses are provided on a 7-point scale ranging from 1=“strongly disagree” to 7=“agree very much”. All scales have been shown to relate strongly to OCD symptom measures as well as to measures of anxiety, depression and worry (OCCWG, 2005; Tolin, Worhunsky, & Maltby, 2006).

The Frost Indecisiveness Scale (FIS Frost & Shows, 1993; Steketee, Frost, & Kyrios, 2003) is a 15 item questionnaire assessing attitudes and fears about decision-making. Only the full-scale score was utilised in the current study, as the focus was on the overall difficulties with decision-making. Responses are on a 5 point scale, with high scores indicating greater difficulties with decision-making. The convergent validity of the FIS scale has been demonstrated with respect to measures of compulsive checking, doubting, obsessionality, hoarding, procrastination and an aspect of perfectionism relating to concern over mistakes.

The Beck Depression Inventory-II (BDI-II, (Beck, Steer, & Garbin, 1988) is a 21-item self-report measure assessing the presence of depressive symptoms over the 2-week period
preceding the assessment. Items are rated on a 4-point scale. The BDI has demonstrated criterion validity with patients with mood disorders obtaining higher scores than patients with anxiety, adjustment or other disorders (Beck, Steer, & Brown, 1996). The measure has been shown to have high internal consistency in clinical and non-clinical student samples, as well as good test–retest reliability at a one-week period (Beck, et al., 1996).

The *Beck Anxiety Inventory* (BAI; Beck, Epstein, Brown, & Steer, 1988; Beck & Steer, 1991) is a 21-item self-rated measure of the severity of anxiety in adults and adolescents. The items describe anxiety-related neurophysiological symptoms (e.g., “numbness or tingling”), subjective symptoms (e.g., “unable to relax”), panic symptoms (e.g., “feelings of choking”) and autonomic symptoms (e.g., “feeling hot”). Ratings are obtained on a 4-point scale. The scale has been shown to exhibit high internal consistency in patients with anxiety disorders (Beck, Epstein et al., 1988; Beck, Steer et al., 1988), good test–retest stability ($r=0.75$, after one week following initial administration; Beck, Epstein et al., 1988; Beck, Steer et al., 1988) and validity (see Beck & Steer, 1991).

The *self-report Yale-Brown Obsessive Compulsive Scale* (YBOCS, Goodman, Price, Rasmussen, & Mazure, 1989) contains 12 items that measure the severity of OCD symptoms (Baer, Brown-Beasley, Source, & Henriques, 1993). Five of the items refer to obsessions, five refer to compulsions with the two remaining questions measuring distress and neutralisation efforts associated with the symptoms. Severity ratings for each item are indicated on a 0-4 point scales representing ‘no symptoms’ through to ‘extreme symptoms’. In addition to a grand total, subtotals can be calculated for obsessions (sum of items 1-5) or compulsions (6-10). The scale has demonstrated reliability and validity and compares favourably to the interview measure
The relationship of standardly used to assess OCD symptoms in treatment outcome research (Steketee, Frost, & Bogart, 1996).

Procedure

All individuals received detailed study information and gave written consent before participating in the study. Participants completed the questionnaires in groups of 10–15.

Results

Analysis was performed using SPSS version 14.0 and AMOS 6. Some MACCS items had large skewness and kurtosis ratios (>3) and transformation did not improve normality. However, studies have found that parameter estimates remain valid in SEM even when the data are not normal (see, McDonald & Ho, 2002), and therefore the CFA was undertaken using raw variables. All cases had Cook’s distance values of less than 1 and hence were retained for the analyses. A small number of missing values (<1%) were substituted with the series mean.

Before conducting the CFA, a parcelling procedure was undertaken for the 15-item confidence in general memory sub-scale. Parcelling involved creating several measures of the latent general memory confidence variable thereby reducing measurement error (for discussion see, Russell, Kahn, Spoth, & Altmaier, 1998). The items were rank-ordered on the basis of the magnitude of their factor loadings in the previous analysis (Nedeljkovic & Kyrios, 2007), and the five items with highest loadings were distributed to a parcel each. Then the following five items were each assigned to the parcels in the reverse order (starting with lowest to the highest) and so forth until all the items were distributed across the five parcels. This equalises the average
loadings of each parcel such that the five parcels reflect the underlying construct to an approximately equal degree.

A CFA was then undertaken to examine the goodness of fit of the proposed model to the data relative to a unifactorial model. In accordance with recommendations (Hu & Bentler, 1999; Quintana & Maxwell, 1999), the following fit indices were used: the Standardised Root-Mean-Square Residual ($SRMR$; values of 0.08 or less are desirable), the Comparative Fit Index ($CFI$, Bentler, 1990, values of 0.95 or greater are desirable), and the Root Mean Squared Error of Approximation ($RMSEA$, Steiger, 1990, values of 0.06 or less are desirable). The Chi square index was not used due to its high sensitivity to violations of normality and sample size.

The unifactorial model did not fit the data well, $CFI=0.65; RMSEA=0.15$ [90% CI=0.14, 0.16], $SRMR=0.12$. In contrast, the initial test of the four-factor model resulted in a good fit to the data, $CFI=0.95; RMSEA=0.06$ [90% Confidence interval (CI)=0.05, 0.07]; $SRMR=0.06$. Examination of modification indices suggested no salient strains in the four-factor solution, except for the covariance between residuals associated with items 3 and 25. Given the consistency of this outcome with the results of Nedeljkovic and Kyrios (2007) and the frequent necessity to model non-random effects in scale analysis (Brown, White, Forsyth, & Barlow, 2004), the solution was re-specified, with the residuals for the items 3 and 25 allowed to correlate. The final model had very good fit statistics with $CFI=0.96; RMSEA=0.05$ [90% confidence interval=0.04, 0.06]; $SRMR=0.05$. All of the loadings of the measured variables on the latent variables were statistically significant (p<0.001; see Table 1).

___________________________________________

Insert Table 1 here

___________________________________________
Following selection of the four-factor model, the relationship with other measures was examined. To improve normality, square root transformations were used to transform the symptom measures (BDI-II, BAI, Y-BOCS), the OBQ total and importance of thoughts, and the MACCS General subscale. An examination of the inter-correlations among the MACCS dimensions revealed that confidence in general memory, decision-making and concentration abilities were significantly intercorrelated ($r=0.49 - 0.60, p<0.01$). Perfectionistic standards were less related to the other subscales ($r=0.08$ to $0.20$ with other scales).

The associations between the MACCS scales and symptom and belief measures were examined (see table 2). The MACCS dimensions recorded low, but significant correlations with OCD symptom severity, including the obsessions and compulsions subscales. The only exception was the lack of an association between compulsive symptoms and perfectionistic standards in cognitive abilities and between compulsive symptoms and confidence in concentration ($r=0.11$, for both scales). All of the MACCS scales correlated with mood and depressive symptoms ($r=0.19$ to $0.47$, $p<0.05$), while moderate correlations (ranging from $0.20$ to $0.65$, $p<0.05$) were noted between the MACCS scales and OCD-relevant beliefs. Notably, the highest correlation was between perfectionistic expectations of one’s memory (MACCS) and perfectionism/uncertainty (OBQ). There were moderate correlations with indecisiveness (FIS; see Table 2), with the highest relationship between indecisiveness and confidence in decision-making (MACCS).

Hierarchical regression was employed to determine if confidence in memory factors predicted OCD symptoms over-and-above depression, anxiety and other OCD relevant beliefs.
The results indicated significant improvement after the addition of the confidence in memory scales, with the scales contributing a further 3% of the variance in OCD symptoms beyond that afforded by depression and anxiety symptoms and other OCD-relevant beliefs. Examination of beta coefficients indicated that confidence in general memory was a significant unique predictor of OCD symptoms contributing 2% of the variance in the OCD symptoms.

Discussion

This study aimed to support the multifaceted nature of a measure of meta-memory proposed in Nedeljkovic and Kyrios (2007), and to further examine the relationship between confidence in memory and OCD severity. Results supported the hypothesised multidimensional model of meta-memory, incorporating dimensions of confidence in general memory, decision-making and concentration abilities, and perfectionistic standards about cognitive performance, with all scales showing satisfactory internal consistency. The meta-memory factors related to OCD beliefs and symptoms, with higher relationships between meaningfully related subscales (e.g., the FIS and MACCS decisiveness; OBQ-perfectionism and MACCS perfectionism). More importantly, meta-memory factors, particularly confidence in general memory, predicted OCD severity over and above anxiety, depression and other OCD-relevant beliefs.

The four-factor structure of the MACCS received further support and was found to be preferable to the unifactorial model. This offers further evidence that distinctions can be made between confidence in different processes and abilities. Furthermore, the present results suggest an extension of previous models of meta-memory or meta-cognition (Cartwright - Hutton &
The relationship of Wells, 1997; Nelson & Narens, 1990), whereby there are meta-cognitive beliefs surrounding a set of cognitive processes including executive functions (e.g., attention/concentration; decision-making). This study suggests that such beliefs can be reliably measured and that they are relevant to mood, anxiety and OCD symptoms. Indeed, previous research has suggested that OCD and other anxiety disorders are related to low confidence in memory and executive processes (Frost, Lahart, Dugas, & Sher, 1988; Frost & Shows, 1993). While items relating to these variables were included in Carthwright-Hutton and Wells’ (1997) cognitive confidence subscale, this is the first measure in which these meta-cognitive beliefs are represented as separate factors, allowing for a more detailed examination of the relevance and associations of various aspects of cognitive confidence with OCD and related disorders. Particular aspects of meta-memory may be more specific to general OCD symptom severity, while some might be uniquely associated with specific OCD symptom types or dimensions. For example, in the present results, confidence in general memory abilities was found to contribute uniquely to OCD symptom severity over-and-above the effects of depression, anxiety and other OCD beliefs. We previously reported a unique relationship between confidence in concentration abilities and checking symptoms, independent of depression, anxiety or other OCD beliefs (Nedeljkovic & Kyrios, 2007), consistent with literature supporting an association between meta-memory and checking compulsions (Rachman, 2002; Radomsky, et al., 2006; van den Hout & Kindt, 2003a, 2003b, 2004). Determining the specificity of the relationship between particular beliefs and specific symptoms could lead to an improved understanding of the processes involved in the development and maintenance of OCD, and lead to development of more individually tailored treatment interventions.

The present results are consistent with recent models of OCD, which have emphasized the central role of meta-cognitive processes (i.e., factors that monitor and control thinking itself)
in the maintenance of OCD symptoms (Clark & Purdon, 1993; Wells, 1997; Wells & Mathews, 1994). Such models have argued that general beliefs about the functioning of the mind (e.g., memory, thought control, problem-solving) are integral in guiding information processing and may impact on the appraisals made of specific situations as well as the subsequent responses (Wells & Purdon, 1999). It has been suggested that meta-cognitive beliefs such as attitudes about making decisions (Frost & Gross, 1993), and the importance of controlling one’s thoughts (Purdon & Clark, 1997) drive the dysfunctional appraisals of specific situations, leading to maladaptive responses to such situations (e.g., checking “to be sure”; attempting to suppress or eliminate thoughts). Meta-memory beliefs may act in a similar fashion, leading to dysfunctional behaviours (e.g., compulsive checking). In the present study, the dimensions of meta-memory were significantly related to other OCD-relevant meta-cognitive and cognitive beliefs (e.g., importance of controlling one’s thoughts, responsibility, perfectionism and indecisiveness). However, meta-memory factors were also shown to be partially independent of these beliefs in contributing to OCD. Therefore, metamemory beliefs may be an important additional set of beliefs involved in OCD symptoms.

The present study has several limitations, including its cross-sectional nature and use of non-clinical cohorts. While analogue participants experience OCD phenomena and related beliefs, examination in clinical cohorts could further validate the relationship between metacognitive beliefs and OCD. Possible explanations for the weak association between some of the MACCS subscales and OCD severity could include the restricted range of scores on the OCD measure in the current non-clinical sample. Furthermore, the cross-sectional nature of the study precludes claims regarding causality. As demonstrated by experimental studies, confidence in memory is likely to both result from, and maintain, OCD-symptoms. Further experimental
methods are needed to tease out the differential role of a range of cognitive beliefs in OCD (i.e., confidence in decision-making and in concentration).

The present study supported the validity of the proposed multidimensional meta-memory measure and replicated previous findings supporting its relevance to OCD. When considered in the context of previous research on meta-memory, cognitive-behavioural theories of OCD and findings from Nedeljkovic and Kyrios (2007), the current study supports the role of meta-memory factors in OCD and their integration as an important cognitive domain in OCD.
References


Table 1

Factor Loadings for the CFA

<table>
<thead>
<tr>
<th>Measure and variable</th>
<th>b</th>
<th>SE</th>
<th>z</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACCS-GEN&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEN 1</td>
<td>0.78</td>
<td>0.04</td>
<td>18.60</td>
<td>0.91*</td>
</tr>
<tr>
<td>GEN 2</td>
<td>0.78</td>
<td>0.05</td>
<td>16.71</td>
<td>0.86*</td>
</tr>
<tr>
<td>GEN 3</td>
<td>0.74</td>
<td>0.04</td>
<td>17.67</td>
<td>0.89*</td>
</tr>
<tr>
<td>GEN 4</td>
<td>0.71</td>
<td>0.04</td>
<td>16.48</td>
<td>0.85*</td>
</tr>
<tr>
<td>GEN 5</td>
<td>0.64</td>
<td>0.04</td>
<td>15.38</td>
<td>0.81*</td>
</tr>
<tr>
<td>MACCS-DEC&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIMS Item 14</td>
<td>0.67</td>
<td>0.06</td>
<td>11.81</td>
<td>0.69*</td>
</tr>
<tr>
<td>CIMS Item 32</td>
<td>0.28</td>
<td>0.02</td>
<td>15.44</td>
<td>0.63*</td>
</tr>
<tr>
<td>CIMS Item 11</td>
<td>0.27</td>
<td>0.02</td>
<td>12.33</td>
<td>0.71*</td>
</tr>
<tr>
<td>CIMS Item 4</td>
<td>0.75</td>
<td>0.06</td>
<td>11.53</td>
<td>0.67*</td>
</tr>
<tr>
<td>CIMS Item 24</td>
<td>0.31</td>
<td>0.02</td>
<td>15.71</td>
<td>0.84*</td>
</tr>
<tr>
<td>MACCS-CON&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIMS Item 29</td>
<td>0.94</td>
<td>0.06</td>
<td>14.94</td>
<td>0.79*</td>
</tr>
<tr>
<td>CIMS Item 10</td>
<td>0.26</td>
<td>0.02</td>
<td>12.89</td>
<td>0.82*</td>
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<tr>
<td>CIMS Item 15</td>
<td>0.88</td>
<td>0.06</td>
<td>14.05</td>
<td>0.74*</td>
</tr>
<tr>
<td>CIMS Item 12</td>
<td>0.25</td>
<td>0.02</td>
<td>12.03</td>
<td>0.70*</td>
</tr>
<tr>
<td>MACCS-PER&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIMS Item 38</td>
<td>0.99</td>
<td>0.09</td>
<td>10.85</td>
<td>0.83*</td>
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<tr>
<td>CIMS Item 36</td>
<td>0.23</td>
<td>0.03</td>
<td>8.40</td>
<td>0.60*</td>
</tr>
<tr>
<td>CIMS Item 3</td>
<td>0.49</td>
<td>0.09</td>
<td>5.81</td>
<td>0.42*</td>
</tr>
<tr>
<td>CIMS Item 25</td>
<td>0.58</td>
<td>0.09</td>
<td>6.66</td>
<td>0.47*</td>
</tr>
</tbody>
</table>


<sup>a</sup>Confidence in General Memory; <sup>b</sup>Confidence in Decision-making ability; <sup>c</sup>Confidence in Concentration abilities; <sup>d</sup>Perfectionistic Expectations of Memory

GEN 1 - 5 = item parcels from the MACCS-GEN
Table 2
Means and reliabilities of the MACCS total and subscales, and correlations with OCD, mood and anxiety symptoms and OCD-related beliefs (n=250)

<table>
<thead>
<tr>
<th></th>
<th>MACCSa</th>
<th>MACCSS-GENb</th>
<th>MACCSS-DECc</th>
<th>MACCSS-CONd</th>
<th>MACCSS-PERe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach α</td>
<td>0.93</td>
<td>0.93</td>
<td>0.86</td>
<td>0.85</td>
<td>0.70</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>68.58 (18.07)</td>
<td>33.54 (11.35)</td>
<td>12.73 (4.41)</td>
<td>10.39 (3.74)</td>
<td>11.91 (3.54)</td>
</tr>
<tr>
<td>Correlations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YBOCSf</td>
<td>0.31*</td>
<td>0.32*</td>
<td>0.19*</td>
<td>0.20*</td>
<td>0.17*</td>
</tr>
<tr>
<td>Obsessions</td>
<td>0.28*</td>
<td>0.28*</td>
<td>0.16*</td>
<td>0.24*</td>
<td>0.12*</td>
</tr>
<tr>
<td>Compulsions</td>
<td>0.23*</td>
<td>0.23*</td>
<td>0.19*</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td>BDI-IIG</td>
<td>0.37*</td>
<td>0.31*</td>
<td>0.30*</td>
<td>0.33*</td>
<td>0.19*</td>
</tr>
<tr>
<td>BAIh</td>
<td>0.47*</td>
<td>0.41*</td>
<td>0.36*</td>
<td>0.35*</td>
<td>0.22*</td>
</tr>
<tr>
<td>OBQi (total)</td>
<td>0.50*</td>
<td>0.39*</td>
<td>0.39*</td>
<td>0.30*</td>
<td>0.51*</td>
</tr>
<tr>
<td>Responsibility</td>
<td>0.50*</td>
<td>0.43*</td>
<td>0.36*</td>
<td>0.39*</td>
<td>0.29*</td>
</tr>
<tr>
<td>Perfectionism</td>
<td>0.44*</td>
<td>0.30*</td>
<td>0.36*</td>
<td>0.20*</td>
<td>0.65*</td>
</tr>
<tr>
<td>Importance/controlof thoughts</td>
<td>0.36*</td>
<td>0.30*</td>
<td>0.31*</td>
<td>0.20*</td>
<td>0.30*</td>
</tr>
<tr>
<td>FISj</td>
<td>0.60*</td>
<td>0.45*</td>
<td>0.72*</td>
<td>0.44*</td>
<td>0.26*</td>
</tr>
</tbody>
</table>

Note: aMemory and Cognitive Confidence Scale; bConfidence in General Memory; cConfidence in Decision-making ability; dConfidence in Concentration abilities; ePerfectionistic Expectations of Memory; fYale-Brown Obsessive Compulsive Scale; gBeck Depression Inventory-II; hBeck Anxiety Inventory; iObsessive Beliefs Questionnaire; jFrost Indecisiveness Scale.

*Significance determined at Sidak adjusted alpha < 0.01.
Table 3

Hierarchical Regression Analysis Predicting OCD severity from the MACCS scale

(n=250)

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>R²</th>
<th>R² change</th>
<th>F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BDI-IIa, BAIb OBQc</td>
<td>0.26</td>
<td>0.26</td>
<td>28.88**</td>
</tr>
<tr>
<td>2</td>
<td>4 MACCSd subscales</td>
<td>0.29</td>
<td>0.03</td>
<td>2.45*</td>
</tr>
</tbody>
</table>

Coefficients after Step 2

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Std β</th>
<th>t</th>
<th>Sr²</th>
</tr>
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<tbody>
<tr>
<td>BDI-II</td>
<td>0.24</td>
<td>3.10*</td>
<td>0.03</td>
</tr>
<tr>
<td>BAI</td>
<td>0.10</td>
<td>1.45</td>
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<tr>
<td>OBQ total</td>
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<td>4.74*</td>
<td>0.07</td>
</tr>
<tr>
<td>MACCS-GENe</td>
<td>0.17</td>
<td>2.26*</td>
<td>0.02</td>
</tr>
<tr>
<td>MACCS-DECf</td>
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<td>-1.71</td>
<td>0.01</td>
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<tr>
<td>MACCS-CONg</td>
<td>-0.08</td>
<td>-1.10</td>
<td>0.01</td>
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<tr>
<td>MACCS-PERh</td>
<td>-0.11</td>
<td>-1.62</td>
<td>0.01</td>
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</tbody>
</table>

Note: aBeck Depression Inventory-II; bBeck Anxiety Inventory; cObsessive Beliefs Questionnaire; dConfidence in Memory Scale; eConfidence in General Memory; fConfidence in Decision-making ability; gConfidence in Concentration abilities; hPerfectionistic Expectations of Memory. ** p<.01; * p<.05. Sr² = semipartial correlation coefficient.