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Symptom dimensions in obsessive–compulsive disorder: prediction of cognitive-behavior therapy outcome

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Rufer M, Fricke S, Moritz S, Kloss M, Hand I. Symptom dimensions in obsessive–compulsive disorder: prediction of cognitive-behavior therapy outcome.

Objective: A significant number of patients with obsessive–compulsive disorder (OCD) fail to benefit sufficiently from treatments. This study aimed to evaluate whether certain OCD symptom dimensions were associated with cognitive-behavioral therapy (CBT) outcome.
Method: Symptoms of 104 CBT-treated in-patients with OCD were assessed with the clinician-rated Yale-Brown Obsessive–Compulsive Scale symptom checklist. Logistic regression analyses examined outcome predictors.
Results: The most frequent OCD symptoms were aggressive and contamination obsessions, and compulsive checking and cleaning. Patients with hoarding symptoms at baseline ($n = 19$) were significantly less likely to become treatment responders as compared to patients without these symptoms. Patients with sexual and religious obsessions tended to respond less frequently, although this failed to reach statistical significance ($P = 0.07$). Regression analyses revealed that higher scores on the hoarding dimension were predictive of non-response, even after controlling for possible confounding variables.
Conclusion: Our results strongly indicate that in-patients with obsessive–compulsive hoarding respond poorly to CBT.

Key words: behavior therapy; obsessive–compulsive disorder; treatment failure; treatment outcome

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Significant outcomes

- OCD in-patients with hoarding symptoms were significantly less likely to respond to multimodal cognitive behavior therapy than those without hoarding symptoms.
- OCD in-patients with sexual and religious obsessions tended to respond slightly less frequently.
- Regression analyses revealed that higher mean scores on the hoarding dimension predicted poorer response to CBT in OCD in-patients, even after controlling for obsessive–compulsive symptom severity, depression and concomitant medication.

Limitations

- Approximately 70% of the patients of this study received antidepressants (mostly SSRIs) in addition to CBT.
- No information can be given regarding personality disorders in our sample.
- The study lacks follow-up data that would be valuable in evaluating the predictive value of OCD symptom dimensions for long-term CBT outcome.

Introduction

Obsessive–compulsive disorder (OCD) is a very heterogeneous condition manifesting itself through many different symptoms. In order to reduce the heterogeneity, several previous OCD outcome studies have examined mutually exclusive subgroups of patients such as 'checkers' or 'washers'. However, to subdivide patients into such subgroups is problematic because monosymptomatic patients are rare, the recruitment of sufficient sample sizes is therefore impractical, and it might be difficult to generalize the results of such studies to patients seen in clinical practice. Moreover, classifying patients on the basis of a predominant subtype does not overcome the clinical effects of overlap (1). Therefore, recent research has paid particular attention to factor analyzed symptom dimensions that may be present in different combinations in any given patient. Since Bear (2) reported the first factor analytic study of the Yale-Brown Obsessive–Compulsive Scale (Y-BOCS) (3), several factor-analytic studies have reduced OCD symptoms to a few clinically meaningful symptom dimensions. Recently, Mataix-Cols et al. (4) critically reviewed the evidence supporting a multidimensional model of OCD. The authors identified 12 factor analytic studies involving more than 2000 patients with OCD and found that the most consistent factorial solutions were those of four or five dimensions (such as symmetry/ordering, hoarding, contamination/cleaning, aggressive obsessions/checking, sexual/religious obsessions). Some evidence suggests that these symptom dimensions differ with regard to genetic factors (5), neurobiological findings (6, 7), and comorbidity (8) [for a more detailed review of the literature, see (4)].

Only few studies have evaluated the possible association of OCD symptom dimensions and treatment response. In a recent outcome study, 153 out-patients with OCD were assessed with the severity scale and the symptom checklist of the self-rating version of the Y-BOCS (9). The following five symptom dimensions, identified in a previous study (8), were used: symmetry/ordering, hoarding, contamination/cleaning, aggressive/checking and sexual religious obsessions. Patients were treated in a randomized controlled design either with computer guided behavior therapy or with clinician guided behavior therapy or with relaxation (a psychological placebo for OCD). It was found that i) dropping out of the trial was predicted by higher scores on the hoarding dimension, ii) patients with hoarding symptoms showed a statistical trend to be less likely to respond to behavior therapy than those without hoarding symptoms, and iii) higher scores on the 'sexual/religious obsessions' dimension significantly predicted poorer behavior therapy outcome. Another study of the same symptom dimensions identified higher scores on the hoarding dimension as a predictor of poorer outcome following treatment with serotonin reuptake inhibitors (SRIs) (8).

In contrast to the dimensional approach (which means that each patient can score on one or more symptom dimensions), other studies used a categorical approach (subdividing patients into groups, such as 'checkers' or 'washers') and reported that 'hoarders' improved less after cognitive-behavior therapy (CBT) (10) or multimodal treatment (11). Predominant obsessions (12, 13) and checking compulsions (14) were reported in other studies of OCD to be predictors of poor CBT outcome. However, most studies found no differences in CBT outcome between patients with washing and checking compulsions (9, 10, 15).

To summarize, although some studies have found that specific OCD symptoms are predictors of response to CBT, the evidence is not conclusive. Empirical data on this issue are sparse, and some of the previous studies used different methods (such as categorical and dimensional models of OCD) and different instruments [such as self rated Y-BOCS, clinician rated Y-BOCS, and Obsessive–Compulsive Inventory (16)]. To further clarify the predictive value of OCD symptom dimensions for CBT outcome, we conducted the present prospective outcome study in a clinical setting with a relatively large sample of 104 in-patients with OCD.

Aims of the study

The main aim was to evaluate, by using the well-established clinician rated Y-BOCS severity scale and symptom checklist, whether certain OCD symptom dimensions were associated with response to CBT. Based on previous findings, we hypothesized that higher scores on the 'hoarding' and the 'sexual/religious obsessions' dimension would predict poorer CBT response.

Material and methods

Patients

Written informed consent was obtained from all patients before their inclusion in the study. One hundred and four consecutive adult in-patients with the primary diagnosis of OCD took part in the study. The diagnosis of OCD was confirmed by using the German version of the Mini International

Neuropsychiatric Interview for DSM-IV and ICD-10, a reliable and valid structured diagnostic interview (17, 18). A further inclusion criterion was a Y-BOCS score of at least 16 (or 11 for patients suffering from obsessions only). Exclusion criteria were current or past schizophrenic or other psychotic disorder, organic mental disorder, and acute risk of suicide. No other comorbid disorders resulted in study exclusion as it was intended to evaluate a representative clinical sample of OCD in-patients. Fifty-eight patients (56%) fulfilled the criteria for one or two comorbid axis I disorders. The most frequent diagnoses were current episodes of major depression ($n = 46$, 44% of all patients), dysthymia ($n = 7$, 7%), and anxiety disorders (agoraphobia, sociophobia, panic disorder) ($n = 6$, 6%).

Ten patients (9.6%) dropped out of the study due to non-compliance. The completers and non-completers showed no significant differences in mean baseline scores on the Y-BOCS severity scale, Beck Depression Inventory (BDI), and symptom-dimensions from the Y-BOCS symptom checklist (data not shown, all $P > 0.1$).

Treatments

All patients were treated with multimodal CBT including exposure and response management at the Behavior Therapy Unit of the University Hospital of Hamburg. Exposure was generally started with therapist-assisted sessions, both in the clinical environment and outside in 'real life' situations. During exposure, patients were repeatedly guided to describe precisely the triggered emotions (which were mostly experienced as anxiety but sometimes also as anger, aggression or depression), to identify the accompanying cognitions and to compare the real situation with the original expectation. Cognitive restructuring accompanied the exposure treatment based on the patient's behavior 'experiment', leading to new emotional experience and a new experience-induced cognitive set (e.g. 'I can cope'). These therapist-assisted sessions were followed by self-exposure and self-imposed response management without the therapist (19, 20). Based on individual behavior analyses and case formulations, all patients participated in one or more of the following three additional group programs: social skills training, stress-management, and problem solving training. Further details of the multimodal behavior therapy approach for OCD including exposure and response management are described in Hand (21).

All patients received four single sessions per week and participated in the groups mentioned above. The mean treatment duration was 9 weeks (SD = 2.7) for those completing treatment. All psychotherapists involved in the study were either licensed cognitive-behavior therapists skilled in treating patients with OCD or they had reached an advanced level in their training toward becoming a cognitive-behavior therapist. All therapists received the same clinical supervision.

Concomitant pharmacological treatments were determined on the basis of clinical indication. Seventy-four patients (71.2%) were concomitantly treated with antidepressant drugs, mostly SSRIs. Fifteen patients (14%) received neuroleptic or benzodiazepine drugs in addition to their antidepressant medication at some time during the treatment. Concerning the five OCD symptom dimensions, chi-square analyses indicated that the frequency of patients receiving medication vs. not receiving medication did not differ significantly (all $P > 0.05$).

Measures

Experienced and trained raters who were not involved in the treatment process conducted all clinician ratings. OCD symptoms were assessed at baseline with the clinician rated Y-BOCS symptom checklist (3), which includes over 50 types of obsessions and compulsions divided into 13 major categories and two categories of miscellaneous obsessions and compulsions. The dimensional structure of the Y-BOCS symptom checklist has been reasonably replicated and the symptom dimensions are relatively independent from overall symptom severity (22). The current presence of a given symptom was coded by a value of 1 and its absence by a value of 0. In accordance with Mataix-Cols et al. (9), the patients' scores on the five symptom dimensions identified in a previous study (symmetry/ordering, hoarding, contamination/cleaning, aggressive/checking, sexual/religious obsessions) (8) were achieved by summing the scores of the symptom categories under each dimension.

Obsessive–compulsive disorder severity was assessed at baseline and post-treatment with the German version (23) of the clinician-rated 10-item Y-BOCS severity scale (3). Depressive symptoms were assessed at baseline by the self-rated 21-item BDI (24) [German version (25)]. Seventeen patients did not complete the BDI and were therefore excluded from analyses of BDI scores.

Statistical analyses

We used chi-square tests for between-group comparisons in categorical variables and *t*-tests for continuous variables. Binary logistic regression

analysis was conducted to examine potential predictors of treatment response/non-response. Regression analysis was repeated with baseline Y-BOCS total scores, BDI scores and concomitant medication as independent variables to control for their possible effects on treatment outcome. In all analyses, the level of significance was set at $P < 0.05$ (two-sided). The Statistical Package for Social Sciences (SPSS), version 12.0, was used for all calculations.

Results

Demographical and clinical characteristics of the entire study group ($n = 104$) are listed in Table 1. The mean Y-BOCS total score of 26.7 (SD = 5.1) indicated severe OCD symptoms at baseline. Regarding the main categories of the Y-BOCS symptom checklist, the most frequent symptoms were aggressive and contamination obsessions, and compulsive checking and cleaning.

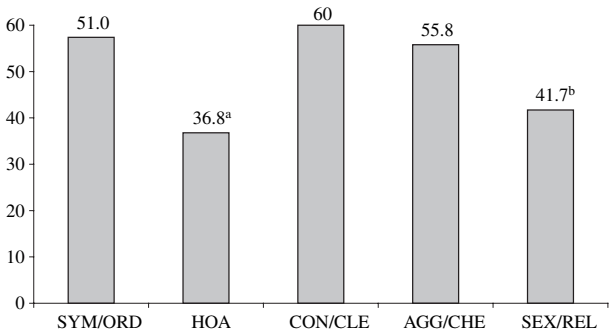
In the group of treatment completers ($n = 94$), a highly significant decrease in the mean Y-BOCS score from 26.8 (SD = 5.1) at baseline to 17.0 (SD = 7.1) at post-treatment ($t = 13.8$, d.f. = 93, $P < 0.001$) was observed. In agreement with several previous OCD studies (26–28), response to CBT was defined as at least a 35% decrease on the Y-BOCS total score. By using this definition, 54 patients (57.4%) were classified as responders and 40 (42.6%) as non-responders. Patients with hoarding symptoms at baseline were significantly less likely to become treatment responders compared to patients without these symptoms (Fig. 1). Only seven of 19 patients (36.8%) with hoarding symptoms were responders compared with 47 of 75 patients (62.7%) without hoarding symptoms. Moreover, patients with sexual and religious obsessions tended to respond slightly less frequently, although this was not statistically significant. Regarding the other three symptom dimensions, the number of responders was not different from those of non-responders (all chi-square values between 0.28 and 0.73, d.f. = 1, all *P*-values between 0.28 and 0.73). Furthermore, responders and non-responders did not significantly differ in terms of baseline Y-BOCS total scores ($t = -3.534$, d.f. = 92, $P = 0.73$) and BDI scores ($t = 0.82$, d.f. = 81, $P = 0.39$), and there were no differences in treatment response rates between patients with and without concomitant medication ($\chi^2 = 0.25$, d.f. = 1, $P = 0.62$).

All OCD symptom dimensions were submitted to a stepwise binary logistic regression analysis. Response/non-response to CBT served as dependent variable and the five OCD symptom dimensions as independent variables. Only higher scores on the hoarding dimension were a significant predictor for non-response (B = −1.06, Wald $\chi^2 = 3.95$, d.f. = 1, $P = 0.047$). The other symptom dimensions failed to reach significance and did not enter into the equation. Similarly, after controlling for baseline Y-BOCS and BDI scores and concomit-

Table 1. Baseline demographical and clinical characteristics and frequencies of the main categories of the Y-BOCS symptom checklist in 104 in-patients with OCD

Variables	Mean (SD)
Age in years	32.9 (9.6)
Illness duration in years	10.4 (2.1)
Y-BOCS severity scale	
Total score	26.7 (5.1)
Obsessions	13.1 (3.6)
Compulsions	13.8 (3.2)
BDI*	21.6 (9.7)
	Number of OCD patients *n* (%)
Gender, female/male	65/39 (62.5/37.5)
Frequencies of Obsessions (Y-BOCS symptom checklist)	
Aggressive	72 (69.2)
Contamination	69 (66.3)
Symmetry	34 (32.7)
Religious	22 (21.2)
Hoarding	18 (17.3)
Somatic	18 (17.3)
Sexual	6 (5.8)
Frequencies of Compulsions (Y-BOCS symptom checklist)	
Checking	74 (71.2)
Cleaning	67 (64.4)
Repeating	46 (44.2)
Counting	40 (38.5)
Ordering	29 (27.9)
Hoarding	17 (16.3)

Y-BOCS, Yale-Brown Obsessive–Compulsive Scale; OCD, Obsessive-Compulsive Disorder; BDI, Beck Depression Inventory.
*As 11 patients did not complete the BDI, calculations were made for 93 patients.



SYM/ORD = Symmetry/ordering, HOA = hoarding, CON/CLE = contamination/cleaning, AGG/CHE = aggressive/checking, SEX/REL = sexual/religious
[a] Significant differences in responder rates between patients with hoarding symptoms and patients without these symptoms ($Chi^2 = 4.14$, df = 1, $P = 0.04$)
[b] $Chi^2 = 3.26$, df = 1, $P = 0.07$

Fig. 1. Percentage of OCD in-patients with symptoms of a certain symptom dimension who responded to treatment ($n = 94$).

ant medication (no medication = 0; concomitant medication = 1), only the hoarding dimension significantly predicted treatment response.

Discussion

Despite the efficacy of both CBT, involving exposure and response management, and (non-selective or selective) SRIs for OCD, 30–50% of patients fail to respond sufficiently to these treatments (29, 30). Considering that non-response to treatment is often associated with substantial impairment and low quality of life in OCD patients (31, 32), it is important to identify variables associated with poor treatment outcome that may point to additional interventions that could improve outcome. Therefore, the present study prospectively investigated OCD symptom dimensions as potential predictors of outcome following CBT in a clinical in-patient setting. The results showed that i) patients with hoarding symptoms were significantly less likely to become responders to CBT than those without hoarding symptoms and ii) higher mean scores on the hoarding dimension predicted poorer response to CBT, even after controlling for possible confounding variables.

These findings are in agreement with the study by Abramowitz et al. (10) which found that hoarding compulsions and obsessions were predictive for poorer outcome of CBT. Similarly, Mataix-Cols et al. (9) reported that patients with hoarding symptoms showed a trend toward a lower rate of response to behavior therapy than those without hoarding symptoms. In contrast to the results of the Mataix-Cols et al. (9) study, baseline scores on the sexual/religious dimension were not related to outcome in our sample (however, we found at least a trend towards lower responder rates in patients with these symptoms). Furthermore, patients who dropped out prematurely from our study did not differ in terms of symptom dimensions from the treatment completers, whereas Mataix-Cols at al. (9) reported higher scores on the hoarding dimension as predictor of dropping out of the trial. Differences between the methodologies of their and our study might be the reason for these conflicting results. Mataix-Cols et al. (9) analyzed data from a randomized controlled trial in which out-patients received either computer guided behavior therapy or clinician guided behavior therapy whereas our study evaluated in-patients who were treated in a clinical setting with intensive CBT including clinician guided exposure-response management. Furthermore, the self-rated version of the Y-BOCS was used in the Mataix-Cols et al. (9) study while we administered the clinician rated Y-BOCS, which is considered as the 'gold standard' for rating OCD in treatment outcome studies. Although it has been shown that both versions of the Y-BOCS might be largely equivalent (33), individual scores may differ considerably between the two versions (34). Moreover, studies using other instruments have demonstrated that patients rated their obsessive–compulsive symptoms differently from clinicians (35, 36).

Our result that OCD patients with hoarding symptoms respond poorly to CBT might be explained by several factors. First, patients with hoarding symptoms have been found to have poor insight, involving a lack of recognition that the symptoms are unreasonable or excessive (37), and this could affect the effectiveness of CBT. Some studies (38, 39) reported that OCD patients with poor insight responded less well to behavior therapy than those with good insight [however, another study failed to find such an association (40)]. Second, hoarding was found to be associated with high rates of comorbid personality disorders (41, 42) and patients with OCD and comorbid personality disorders might respond less well to CBT than those without comorbid personality disorders [e.g. (43)]. Nevertheless, other OCD studies did not find a negative impact of comorbid personality disorders on the outcome of CBT [e.g. (44)]. Moreover, from a neurobiological perspective, obsessive–compulsive hoarding may be a neurobiological subgroup, which is associated with poor treatment response. A recent functional magnetic resonance imaging study study by Mataix-Cols et al. (6), using a symptom-provocation paradigm in 16 OCD patients compared to 17 healthy subjects, reported that the hoarding, washing and checking dimensions were mediated by distinct but partially overlapping neural systems. In a PET study of OCD patients, Saxena et al. (7) found that the group of 12 patients with hoarding symptoms had a different pattern of cerebral glucose metabolism than both the group of 33 non-hoarding OCD patients and 17 normal comparison subjects. The authors concluded that 'obsessive–compulsive hoarding may be a neurobiologically distinct subgroup or variant of OCD whose symptoms and poor response to antiobsessional treatment are mediated by lower activity in the cingulated cortex' (7). However, both studies are preliminary and more research is needed to understand the poorer treatment outcome among patients with hoarding symptoms compared to non-hoarding OCD patients.

Several limitations should be considered when interpreting our results. First, about 70% of our patients received medication (mostly SSRIs) in addition to CBT. We have no reliable data about

the history of treatment response to SSRIs in the past (concerning non-responders in particular) and the concomitant drug treatment was not controlled in our study (except statistically). This could be regarded as an important shortcoming of the study design. However, the present study represents clinical practice in the treatment of in-patients with severe OCD. Second, no structured clinical interview for axis II disorders was performed, so no information can be given regarding personality disorders in our sample. Moreover, our study lacks follow-up data. Previous studies have shown that the symptom dimensions used in the present study are remarkably stable over years (45, 46). Therefore, it would be valuable to evaluate the predictive value of OCD symptom dimensions for long-term CBT outcome.

Despite these limitations, our results provide further improvement in understanding treatment failures of patients with OCD. In line with previous findings of an association of hoarding symptoms with non-response to SRIs (8), our results strongly indicate that OCD patients with hoarding symptoms might respond poorly to CBT. Thus, new treatments for patients with obsessive–compulsive hoarding need to be developed to improve their outcome. For example, in contrast to the treatment approach used in the present study, idiosyncratic problems associated with compulsive hoarding should be addressed in a specialized CBT approach for hoarding symptoms. Specific motivational interventions should be included as motivation for change in compulsive hoarders is often low or ambivalent; many of these patients are pressured into treatment by significant others (e.g. family members) (47–49). Moreover, relapse prevention methods, such as self-management interventions that utilize cognitive-behavior principles (50), seem to be important in enabling patients to maintain their treatment gains over the long-term. A specialized intervention program that included a combination of education, training in organizing and decision-making, motivational interventions, exposure to non-acquisition and discarding, and cognitive restructuring, has shown some promise in treating patients with obsessive–compulsive hoarding (48, 51, 52). Future research should further evaluate these and other interventions specifically designed to address hoarding symptoms in patients with OCD.

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