The Boundary Between Hypochondriasis and Obsessive-Compulsive Disorder: A Cross-Sectional Study From the Netherlands

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Objective: To investigate similarities and differences between the symptom profiles of patients with hypochondriasis and those of patients with obsessive-compulsive disorder (OCD) and to compare the contamination/cleaning OCD subtype to other OCD subtypes.

Method: Between January 1998 and July 2002, 76 patients diagnosed with hypochondriasis (N = 31) or OCD (N = 45) (DSM-IV criteria) and 25 subjects with no formal DSM-IV diagnosis were compared with regard to the extent of diagnosis-specific symptoms, the number and nature of physical symptoms, and whether these symptoms evoked fear. The analyses were repeated after subdividing the OCD patients into the contamination/cleaning and other OCD subgroups.

Results: Patients with hypochondriasis and OCD differed significantly from each other on the extent of diagnosis-specific symptoms (all p < .001). Patients with hypochondriasis reported significantly more obsessive-compulsive symptoms and patients with OCD reported significantly more hypochondriacal symptoms than did the healthy control-group members (all p < .05). Neither group differed significantly from the other on the number and nature of feared physical symptoms. The contamination/cleaning OCD subtype did not differ significantly from other OCD subtypes in either the severity of hypochondriacal symptoms or the number of feared physical symptoms.

Conclusion: Hypochondriasis and OCD can be distinguished on the basis of diagnosis-specific symptoms, although they share a number of similarities. In addition, although patients with the contamination/cleaning OCD subtype tend to be afraid of contracting diseases, the differences between the symptom profiles of these patients and those of patients with hypochondriasis exceed the similarities. Our results confirm that the 2 conditions are separable and valid diagnoses.

(J Clin Psychiatry 2006;67:1682–1689)
nately, because no control group was included in that study, it remains unknown whether the symptoms exceeded the subclinical level.\(^{12}\) Another study\(^{13}\) found that patients with OCD scored significantly higher on the Illness Attitude Scales (IAS) than did healthy control-group subjects who were matched for socio-demographic variables, thereby providing some evidence for a clinical overlap between the 2 disorders. To date, no studies have examined whether patients with the contamination/cleaning subtype of OCD have more hypochondriacal symptoms than do OCD patients who do not have these specific obsessions.

In addition to the similarities discussed above, patients with hypochondriasis differ from OCD patients on at least one important aspect. Patients with hypochondriasis have a tendency to overestimate the likelihood that ambiguous symptoms are indicative of serious disease, a fear that is unique to this disorder.\(^{14-18}\) Although patients with anxiety disorders also frequently express a heightened alertness to somatic sensations,\(^{19}\) it can be argued that the nature of the physical symptoms of patients with anxiety disorders, like OCD, differs from that of patients with hypochondriasis. It is possible that OCD patients initially suffer from recurrent and intrusive thoughts about contracting a serious disease (or similar fears), which subsequently cause marked anxiety and somatic distress. In contrast, patients with hypochondriasis may initially experience physical sensations that subsequently provoke thoughts about a serious illness. It is therefore conceivable that patients with hypochondriasis suffer from different physical symptoms (diffuse and vague symptoms that are associated with a serious disease) than do patients with OCD (who primarily experience such anxiety symptoms as tachycardia and sweating) (c.f., Cote et al.\(^{20}\)). At present, however, which types of physical symptoms are reported by patients with hypochondriasis and which symptoms evoke fear remain unknown.

The foregoing discussion suggests that current knowledge about the phenomenological boundaries between hypochondriasis and OCD is based largely on clinical experience and requires further empirical examination. We therefore decided to compare hypochondriacs, OCD patients, and healthy individuals on (1) the presence and severity of diagnosis-specific symptoms and (2) the number and nature of physical symptoms and whether they evoke fear. Finally, we investigated (3) whether patients with the contamination/cleaning subtype of OCD experience more hypochondriacal symptoms and physical sensations than do patients who suffer from other OCD subtypes.

**METHOD**

**Study Population**

All patients who participated in this study were selected within the framework of 2 randomized controlled trials. A convenience sample of normal control-group members, with no formal DSM-IV diagnosis, who were matched with patients as closely as possible for gender and age, was recruited among psychology students and relatives of students, all of whom were unaware of the purpose of the study. Subjects who reported having received any psychological or psychiatric help in the past were excluded. We chose to include a healthy control group instead of a control group of psychiatric patients in order to investigate whether the severity of hypochondriacal symptoms in OCD patients and, conversely, the severity of OCD symptoms in patients with hypochondriasis are higher than the severity of either among normal control-group members.

**Patients**

Patients who were at least 18 years of age and who met the DSM-IV criteria for hypochondriasis or OCD\(^*\) (established by means of the Structured Clinical Interview for DSM-IV Axis I Disorders\(^{21}\) [SCID] were selected within a framework of 2 separate randomized controlled trials (RCTs) conducted at 2 outpatient clinics for anxiety disorders in Leiden and Amsterdam. Exclusion criteria in both RCTs were as follows: comorbid diagnoses of psychotic disorders, substance use disorders, organic mental disorders, an allergy to SSRIs, and having received psychotherapy elsewhere. Pregnant and lactating women and patients using concomitant antidepressants, mood stabilizers, antipsychotics, and anticoagulants were also excluded. Patients with comorbid diagnoses of mood disorders, anxiety disorders, and other somatoform disorders were included if they indicated that hypochondriasis or OCD was the psychiatric disorder from which they suffered the most. Medical records were reviewed to ensure that hypochondriacal complaints could not be explained by somatic illness. No patients were excluded because of a medical diagnosis.

Thirty-one of the 112 consecutive hypochondriasis patients in the RCT and 45 of the 125 consecutive OCD patients in the RCT participated in the present substudy, for which no special eligibility criteria were required. Of the patients with hypochondriasis, 66% had been referred by their general practitioners and 34% had responded to articles in newspapers. The corresponding percentages for the OCD patients were 73% and 27%. Written informed consent was obtained from each patient. The study received ethical approval from the participating medical centers, and it was conducted between January 1998 and July 2002.

**Measurements**

To assess the severity of obsessive-compulsive complaints, we used 2 questionnaires. The first was the Padua Inventory-Revised\(^{22}\) (PI-R), which is a self-report questionnaire consisting of 41 items that are rated on a 5-point
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RESULTS

The study included a total of 101 subjects. Thirty-one of these patients had received a diagnosis of current DSM-IV hypochondriasis and 45 patients met the criteria for current DSM-IV obsessive-compulsive disorder. 

Twenty-five healthy subjects served as control-group

Statistical Analysis

Differences between 2 groups according to demographic and clinical variables were analyzed with independent t tests and between 3 groups with 1-way analysis of variance (ANOVA). For categorical variables, $\chi^2$ tests were used. Post hoc comparisons were made using a Scheffé test, as the sample sizes of the 3 groups were unequal. In case of unequal variances, we used the Games-Howell test, which also takes into account unequal sample sizes. Although this study involved a number of comparisons, we chose not to apply a Bonferroni correction, because of the explorative and descriptive nature of this study. All tests were 2-tailed with $\alpha$ set at .05. For cases that failed to meet the assumptions of the 1-way ANOVA or independent t test, we used their nonparametric equivalents (Kruskal-Wallis test and Mann-Whitney U test). The relative magnitude of the differences between the 2 disorders and the control group was calculated by means of effect sizes (Cohen’s $d$) by subtracting the group means and dividing the difference by the pooled standard deviation.

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members. Hypochondriacs with comorbid OCD (N = 3, 10%) and OCD patients with comorbid hypochondriasis (N = 3, 7%) were not included in these analyses. The number and proportion of female subjects in the 3 groups were as follows: hypochondriasis, 17 (61%); OCD, 22 (52%); and control group, 15 (60%) (χ² = 1.026, df = 2, p = .60). The mean (± SD) age in years was 43.2 (11.2) for patients with hypochondriasis, 35.5 (8.3) for patients with OCD, and 44.7 (11.6) for the members of the control group (F = 8.147, df = 2,92; p = .001). When the Games-Howell post hoc comparison was conducted, patients with OCD appeared to be significantly younger than the other 2 groups (p = .01). A significant interaction effect between age and group made it impossible to repeat the analyses with statistical adjustment for group differences in age. We therefore decided to divide age, for the OCD group, into aliquots below and above the median. There appeared to be no differences between the responses of younger participants and those of older participants on any of the questionnaires. We can therefore conclude that age was not a confounding factor.

When we studied the number of current comorbid diagnoses, significantly more hypochondriacal patients appeared to have comorbid diagnoses than did patients with OCD. Only 4 patients (14%) suffered from hypochondriasis without comorbid diagnoses. In contrast, 23 patients (55%) from the OCD group had no comorbid diagnoses (χ² = 16.000, df = 1, p < .001). For both groups, the most frequently reported diagnoses were major depressive episode (hypochondriasis, 39%; OCD, 10%) and panic disorder (hypochondriasis, 50%; OCD, 7%).

In order to rule out the possibility that hypochondriacal symptoms in patients with OCD and, conversely, that OCD symptoms in patients with hypochondriasis could be explained by the presence of additional diagnoses, we also compared subgroups with or without comorbidity and found no significant differences. The hypochondriacal symptoms of OCD patients and the OCD symptoms of hypochondriacal patients, therefore, seem to be independent of comorbidity.

The finding that fully half of the patients with hypochondriasis had comorbid panic disorder, however, is of particular concern. As are hypochondriacs, patients with panic disorder are characterized by a tendency to misinterpret physical symptoms as indicative of a serious condition (e.g., chest pain or palpitations as signs of a heart attack). We therefore cannot be sure whether our findings relate to differences between hypochondriasis and OCD or to differences between panic disorder and OCD. To increase confidence in our results, we divided the hypochondriacs into 2 groups; 1 group consisted of patients with comorbid panic disorder, and the other group was comprised of patients without comorbid panic disorder. We repeated the analyses on age, gender, measures for hypochondriasis, and the PSC (number of reported symptoms and feared symptoms) within each of these 2 groups. Hypochondriacs with comorbid panic disorder appeared to be significantly younger (38.1 ± 8.4 vs. 48.4 ± 11.6 years; U = 48,500, N₁ = 14, N₂ = 14, p = .02) and reported significantly more physical symptoms (t = –2.968, df = 28, p < .01) than did hypochondriacs without panic disorder. Because our main aim was to examine the differences between hypochondriasis and OCD, we present the PSC results only from hypochondriacs without comorbid panic disorder. We must nevertheless be cautious in interpreting the results, given the small sample sizes.

Table 1 summarizes the mean scores on the Whiteley Index, the IAS, the YBOCS for hypochondriasis, the PSC, the PI-R, the YBOCS, and the YBOCS symptom checklist. To gain insight into the magnitude of the differences between hypochondriacs, OCD patients, and healthy control-group members with regard to hypochondriacal and OCD symptoms, we calculated effect sizes, which are also listed in Table 1.

**First Objective**

Our first objective was to investigate the extent of diagnosis-specific symptoms in patients with OCD and hypochondriasis as compared with healthy individuals. Table 1 indicates that, as expected, patients with hypochondriasis do have significantly more hypochondriacal symptoms (e.g., disease fear, disease conviction, illness behavior, and physical symptoms). Analyses also revealed significant differences between all 3 groups on the Whiteley Index (F = 93.051, df = 2,92; p < .001), the Health Anxiety subscale (F = 73.716, df = 2,90; p < .001), and the Illness Behavior subscale (F = 23.865, df = 2,90; p < .001) of the IAS. Games-Howell post hoc comparisons revealed significant differences between all 3 groups on the Whiteley Index (all p ≤ .001). On the Health Anxiety subscale and the Illness Behavior subscale of the IAS, patients with hypochondriasis differed significantly from patients with OCD and healthy control-group members (all p < .001). Patients with OCD differed from control-group members on these scales as well, but to a lesser degree (all p < .05).

The hypochondriasis YBOCS also showed a significant group effect on the scores on the obsessions subscale (χ² = 65.741, df = 2, p < .001), the compulsions subscale (χ² = 66.951, df = 2, p < .001), the avoidance subscale (χ² = 53.418, df = 2, p < .001), and the total scale (χ² = 67.990, df = 2, p < .001). Analyses comparing the different groups separately revealed significant differences across all scales between patients with hypochondriasis and both of the other groups (all p < .001). Patients with OCD also differed significantly from the control-group members (all p < .05).

The questionnaires that assessed the extent of obsessive-compulsive symptoms revealed opposite re-
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The scores of OCD patients were higher than those of either the hypochondriacal patients or the members of the control group (Table 1). An ANOVA on the PI-R revealed that the difference between all 3 groups was significant (F = 66.568, df = 2,92; p < .001). The Games-Howell post hoc procedure showed all 3 groups to differ significantly from each other (all p < .001). For the YBOCS, there was also a significant group effect on the scores on the obsessions subscale (χ² = 76.372, df = 2, p < .001), the compulsions subscale (χ² = 77.104, df = 2, p < .001), and the total scale (χ² = 76.112, df = 2, p < .001). Analyses comparing the groups separately on these 3 scales revealed significant differences between the OCD group and the other 2 groups (all p < .001). The scores of hypochondriacs did not differ significantly from those of the control group (all p < .05). On the YBOCS symptom checklist, an overall analysis appeared to be significant for obsessions (χ² = 60.177, df = 2, p < .001), as well as for compulsions (χ² = 65.764, df = 2, p < .001). With regard to 2-group comparisons, both patient groups appeared to have more obsessions and compulsions than did the control group (all p ≤ .001). Patients with OCD had significantly more obsessions and compulsions than did patients with hypochondriasis (p < .001).

Second Objective

Our second objective was to investigate the number and nature of physical symptoms in patients with hypochondriasis, patients with OCD, and control-group members and to investigate which symptoms evoked fear. For this analysis, we included only those hypochondriacs who had no comorbid panic disorder. On the PSC, patients with hypochondriasis and OCD reported significantly more symptoms than did the members of the control group (Table 1). The ANOVA revealed a significant main effect between the 3 groups (F = 10.699, df = 2,78; p < .001) and significant differences between both psychiatric groups and the control group (both p < .05). Hypochondriacs did not differ significantly from OCD patients in the number of physical symptoms (calculated according to the Games-Howell procedure). Figure 1 illustrates the 5 most frequently reported physical symptoms for each group.

Third Objective

Our final objective was to investigate whether OCD patients who suffer from contamination obsessions and cleaning or washing compulsions (i.e., contamination/cleaning subtype) actually have more hypochondriacal symptoms and physical sensations than do OCD patients who do not have these specific obsessions. We therefore subdivided the OCD group into 2 subgroups: OCD contamination/cleaning subtype (N = 20; 48%) and other

Table 1. Mean (SD) Scores on the Whiteley Index, the Illness Attitude Scales, the Yale-Brown Obsessive Compulsive Scale (YBOCS) for Hypochondriasis, the Physical Symptom Checklist, the Padua Inventory-Revised, the YBOCS, and the YBOCS Symptom Checklist

<table>
<thead>
<tr>
<th>Questionnaire (range)</th>
<th>Hypochondriasis (N = 28)</th>
<th>Obsessive-Compulsive Disorder (N = 42)</th>
<th>Healthy Control Group (N = 25)</th>
<th>Effect Sizesa</th>
<th>Effect Sizesb,c</th>
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</thead>
<tbody>
<tr>
<td>Whiteley Index (0–56)</td>
<td>24.6 (6.4)</td>
<td>9.9 (6.3)</td>
<td>5.4 (3.4)</td>
<td>2.3</td>
<td>0.9b</td>
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<td>Illness Attitude Scales</td>
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<td>Health Anxiety (0–44)</td>
<td>29.5 (7.2)</td>
<td>12.4 (7.8)</td>
<td>8.4 (4.7)</td>
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<td>Illness Behavior (0–24)</td>
<td>15.8 (4.3)</td>
<td>10.6 (5.3)</td>
<td>7.4 (2.9)</td>
<td>1.1</td>
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<td>YBOCS for hypochondriasis</td>
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<td></td>
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<tr>
<td>Obsessions (0–24)</td>
<td>12.4 (3.6)</td>
<td>1.9 (3.7)</td>
<td>0 (0)</td>
<td>2.9</td>
<td>0.7b</td>
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<tr>
<td>Compulsions (0–20)</td>
<td>9.5 (3.3)</td>
<td>0.9 (2.2)</td>
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<td>Avoidance (0–20)</td>
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<td>1.1 (3.0)</td>
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<td>Total (0–64)</td>
<td>29.6 (9.7)</td>
<td>3.8 (7.6)</td>
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<td>Physical Symptom Checklist (0–51)</td>
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<td>Reported symptomsd</td>
<td>12.1 (8.0)</td>
<td>11.0 (6.9)</td>
<td>4.5 (2.7)</td>
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<td>Reported feared symptomsd</td>
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<td>Padua Inventory-Revised (0–164)</td>
<td>26.3 (14.8)</td>
<td>60.9 (22.8)</td>
<td>12.8 (8.4)</td>
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<td>YBOCS</td>
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<td>Obsessions (0–20)</td>
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<td>13.1 (3.0)</td>
<td>0 (0)</td>
<td>4.0</td>
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<td>13.7 (3.1)</td>
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<td>26.7 (5.4)</td>
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<td>YBOCS symptom checklist (0–15)</td>
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<td>3.6 (1.7)</td>
<td>0 (0)</td>
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aEffect sizes for hypochondriasis versus OCD comparisons.
bEffect sizes for OCD versus healthy control-group members comparisons.
cEffect sizes for hypochondriasis versus healthy control-group members comparisons.
dFourteen patients with hypochondriasis were included in these analyses.

Abbreviations: OCD = obsessive-compulsive disorder, YBOCS = Yale-Brown Obsessive Compulsive Scale.
subtypes (N = 22; 52%). We compared both subgroups of OCD patients with each other and with patients with hypochondriasis on all measures for hypochondriasis and the number of symptoms and fears (PSC) using Kruskal-Wallis tests. We found a significant main effect on all questionnaires (all p < .01). Subgroup analyses with the Mann-Whitney U test revealed that the hypochondriacal symptoms of patients with hypochondriasis were significantly more severe (significant effects on all questionnaires) than did either of the other groups. Furthermore, hypochondriacal patients reported significantly more bloating and flatulence (not shown) than did either of the other groups. Finally, OCD patients reported sleeping more than the members of the control group did (all p < .05).

**DISCUSSION**

The first objective of our study was to investigate the extent of diagnosis-specific symptoms in patients with OCD and hypochondriasis, as compared with healthy control subjects, in order to determine whether the severity of hypochondriacal symptoms in patients with OCD and, conversely, OCD symptoms in patients with hypochondriasis are higher than those that are observed in healthy individuals.

The ANOVA results and the magnitude of the effect sizes demonstrated that each disorder has its own specific symptom presentation; hypochondriacal patients experience significantly more fear of suffering from a serious disease than do OCD patients, and patients with OCD have significantly more OCD symptoms than do patients with hypochondriasis. A certain degree of clinical overlap, however, exists between the 2 disorders. On all questionnaires concerning these disorders, patients with hypochondriasis reported significantly more OCD symptoms and patients with OCD reported significantly more hypochondriacal symptoms than did the members of the control group. Our findings are similar to the results of a former study, which also found that patients with OCD reported significantly higher scores on the Illness Attitude Scales than did healthy control subjects.
The second objective of our study was to examine the number and the nature of physical symptoms in patients with hypochondriasis (without comorbid panic disorder), patients with OCD, and healthy control subjects, and to determine whether these symptoms evoked fear. Both psychiatric groups reported significantly more physical symptoms than did the members of the control group, and they did not differ significantly from each other. Control-group members most frequently reported pain complaints (e.g., aching joints, back, muscles, and head), while both patient groups were particularly likely to mention general complaints (e.g., tensed muscles and tiredness). Our results indicate that somatic symptoms, particularly general complaints, are strongly related to current psychological distress, independent of the kind of disorder. Furthermore, these results are similar to those of several other studies, which revealed that patients with somatoform, mood, or anxiety disorders tend to present more physical complaints than do healthy individuals.28,29

Strikingly, patients with hypochondriasis did not fear significantly more physical symptoms than OCD patients did. This finding can possibly be explained by the fact that the variation in reported symptoms appeared to be too large (with only a few patients mentioning specific complaints) to elicit significant results between the 2 patient groups. Furthermore, the most frequently reported symptoms were not the most frequently feared. It is conceivable that the most-reported symptoms are a consequence of stress brought about by the misinterpretation of the feared physical symptoms. We must be cautious with this suggestion, however, as it implies uninvestigated causality.

Our third and final objective was to investigate whether OCD patients who suffer from contamination obsessions and cleaning or washing compulsions (i.e., contamination/cleaning subtype) have more hypochondriacal symptoms and physical sensations than do patients who suffer from the other subtypes of OCD. We found that, with the exception of the number of physical symptoms, patients with the contamination/cleaning subtype reported significantly fewer hypochondriacal and feared somatic symptoms than did patients with hypochondriasis, and they did not differ significantly from the other OCD patients.

This study has several statistical limitations that should be considered when evaluating the findings. First, the number of subjects for some of the analyses was small, and low statistical power may have therefore influenced the results. In particular, the comparison between hypochondriacs with and without comorbidity must be interpreted with caution, as very few patients had no comorbid diagnoses. The same applies to the results of the PSC. Because we sought to disentangle physical symptoms that are related to hypochondriasis from physical symptoms that are related to panic disorder, we compared only hypochondriacs without comorbid panic disorder to OCD on the number and type of feared physical symptoms. Only 14 (50%) of the hypochondriacal participants, however, had no comorbid panic disorder. The finding of a trend towards significance concerning more feared physical symptoms among hypochondriacs is one indicator of the influence of low statistical power on the results.

With respect to the presence of comorbidity, the high percentage of comorbidity (86%) among the patients in the hypochondriacal group in this study is consistent with percentages (between 62%30 and 88%31) that have been found in previous studies. In contrast, the comorbidity rate of the OCD group is 45%. This percentage is lower than percentages that are reported in the literature; between half and three quarters of all OCD patients are particularly likely to suffer from comorbid depressive and anxiety disorders.32 Because the presence of a comorbid depressive, anxiety, or somatoform disorder was not an exclusion criterion for either OCD patients or hypochondriacal patients, we must conclude that our finding that OCD patients have fewer comorbid problems than do hypochondriacs occurred by chance as an unintended consequence of the selection process.

Second, although we tried to correct for a possible confounding role of age, we cannot rule out the possibility that the age difference between the 2 patient groups influenced our results. The finding that the OCD patients were significantly younger than were the members of the other 2 groups must be explained in the same way as the differences in comorbidity rates, as the age at onset is the same for both groups, according to the literature on the OCD spectrum,33 and because the eligibility for this study from age 18 was the same for both patient groups.

Third, the combination of multiple comparisons and the lack of correction for type I errors (using the Bonferroni adjustment) may have contributed to an overestimation of the effect. Because most of the results were robust, however, it is unlikely that these limitations affected the outcomes severely.

One limitation concerning the content is the absence of a psychiatric control group for comparison. We cannot rule out the possibility that the finding that patients with hypochondriasis had more OCD symptoms and those with OCD had more hypochondriacal symptoms is partially attributable to a nonspecific increase of symptoms found among psychiatric patients in general. In order to be more conclusive, future research should include a psychiatric control group (e.g., major depressive episode) for comparison.

When elaborating on the implications of our findings for the OCD spectrum, we would like to stress that the validity of psychiatric diagnoses does not rely solely on differences in clinical features; it also depends on biological markers, family studies, course of illness, and differences in treatment response. In our opinion, therefore, a serious discussion about the place of hypochondriasis within this spectrum cannot be conducted before all im-
portant aspects have been investigated. To date, the literature provides just as much information supporting the hypothesis that hypochondriasis belongs to the OCD spectrum as it does information that dismisses this hypothesis. Support for placing hypochondriasis within the spectrum can be found in the phenomenological overlap with OCD and amelioration after treatment with cognitive-behavioral therapy or an SSRI. On the other hand, hypochondriasis and OCD differ neurobiologically, and the percentages of comorbid hypochondriasis in OCD patients and of comorbid OCD in hypochondriasis are relatively low. As this study has shown, the differences in diagnosis-specific symptoms largely exceed the similarities.

REFERENCES