The Relationship Between Types and Severity of Repetitive Behaviors in Gilles de la Tourette's Disorder and Obsessive-Compulsive Disorder

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Background: This study investigated which categories of obsessive-compulsive and Tourette-related behaviors in Gilles de la Tourette's disorder and obsessive-compulsive disorder (OCD) without tics are experienced as most severe across the study groups and what the differences are in symptom distribution between the study groups.

Method: Fourteen subjects with both Tourette's disorder and OCD, 18 subjects with Tourette's only, 21 subjects with OCD (no tics), and 29 control subjects were studied using a semistructured interview designed to equally assess Tourette- and OCD-related behaviors according to DSM-III-R criteria. Each reported repetitive behavior was evaluated on the presence of anxiety and on goal-directedness. Anxiety-related items were categorized as obsessions or compulsions and non–anxiety-related items as impulsions. Severity of each reported item was assessed with respect to time per day consumed and amount of distress and interference induced by the item. Following these criteria, each reported item was classified as a symptom, a subthreshold symptom, or just as being present.

Results: Across the study groups, obsessions were experienced as more severe than (Tourette-related) impulsions and compulsions. Within the study groups, patients with both Tourette's disorder and OCD reported more symptomatic Tourette-related impulsions, such as mental play, echophenomena, and impulsive or self-injurious behaviors; less overall symptomatic obsessions; and less symptomatic washing than patients with OCD (no tics). The differences among individuals with Tourette's with or without OCD reflected differences in symptom severity rather than differences in symptom distribution.

Conclusion: Obsessions are more time consuming, distressing, and interfering than compulsions and impulsions. Furthermore, the symptomatic repetitive behaviors were distributed differently among patients with both Tourette's disorder and OCD and patients with OCD (no tics). Patients with Tourette's and OCD are phenomenologically more similar to Tourette's than to OCD. These differences possibly represent differences in underlying pathophysiology between Tourette's and tic-free OCD.

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Gilles de la Tourette's disorder is characterized by motor and vocal tics, and obsessive-compulsive disorder (OCD), by recurrent and persistent thoughts or impulses that are experienced as intrusive and interfere with the person's life.[1] Phenomenological and family/genetic studies point out that there is an interrelationship between Tourette's and OCD.

Obsessive-compulsive phenomena are found in elevated frequencies in Tourette's disorder probands and their first-degree relatives independent of concurrent OCD in these probands.[2,3] Family studies of OCD probands have revealed increased rates of tics.[4] However, obsessive-compulsive symptoms differ in their phenomenology between Tourette's and OCD.[4–7] Family, genetic, and biological research have indicated that tic-free and tic-related OCD are probably genetically distinct and that tic-related OCD might be part of a "Tourette's spectrum" of disorders, in contrast to tic-free OCD.[8–10] Moreover, the different OCD subtypes possibly require different pharmacologic treatment regimens, which enhances the importance of a careful delineation of Tourette's and OCD phenotypes.[10,11]

One phenomenological approach to identify subtypes is to investigate the various symptom categories. Mental play, echophenomena, touching, symmetry behaviors, injurious behaviors (including self-inflicted), and aggressive and violent obsessions are found more frequently in Tourette's disorder, whereas OCD patients report more

contamination obsessions and washing behaviors.[4,12–14] OCD patients with tics are generally positioned between Tourette's and OCD.[13,14] Factor analyses of symptom categories of obsessive-compulsive and Tourette-related behaviors have identified a hoarding/symmetry[15,16] or impulsive factor[17] related to Tourette's and a contamination factor related to OCD.

Another phenomenological approach to identify subtypes is to investigate subjective experiences accompanying the various repetitive behaviors. Shapiro et al.[18] considered the repetitive behaviors related to Tourette's disorder as essentially non–anxiety-related and advocated calling them *impulsions* to distinguish them from the anxiety-driven obsessions and compulsions related to OCD. Impulsions are also referred to as Tourette-related behaviors or ticlike compulsions. The concept of impulsions is in accordance with findings by Miguel et al.,[13,14] who reported that more cognitions and autonomic anxiety accompany obsessions and compulsions in tic-free OCD patients, whereas patients with OCD with tics and patients with Tourette's reported fewer cognitions and anxiety but more sensory phenomena associated with repetitive behaviors. Therefore, a distinction between Tourette-related impulsions and typical obsessions and compulsions might be of help in identifying the subtle phenomenological differences between Tourette's disorder and (tic-free) OCD.

The next clinically important step to take in research on the phenomenology of repetitive behaviors in Tourette's disorder and OCD is to investigate which categories of repetitive behaviors cause distress and functional impairment and need treatment. Severity of symptoms is an important factor in seeking and maintaining treatment.[19] Furthermore, symptom severity appears to be a negative prognostic factor in short-term treatment response.[20] Patients with higher symptom severity might need more treatment sessions to improve the symptoms sufficiently,[20–23] although one pharmacologic treatment study[24] has found that response rate was greatest for patients with more severe OCD, especially with greater interference and distress from obsessions.

A number of variables have been investigated in association with OCD symptom severity such as age at onset, illness duration, and comorbid conditions like depression.[25] Much less attention has been paid to the relationship between types and severity of specific repetitive symptoms in Tourette's disorder and OCD patients. In Tourette's, presence of generalized tics and coprolalia seems to indicate the severest end of the Tourette's spectrum.[26] In OCD, one study[27] found that patients with obsessions alone had lower severity of obsessive-compulsive complaints than patients with obsessions and compulsions. In an epidemiologic sample of OCD subjects, the tic-free subjects experienced their obsessions and compulsions as more severe than did the subjects who had tics.[28]

Few studies are available on the relationship between specific obsessive-compulsive symptom categories and treatment response. Hoarding is possibly a symptom that predicts poor treatment outcome.[29] A lifetime history of comorbid tics seems to predict poor selective serotonin reuptake inhibitor (SSRI) treatment outcome in OCD.[10,30] Behavioral treatment appears to be effective in OCD patients, but since about 75% of the behavioral treatment studies of OCD have been performed on patients with primarily washing and checking rituals, it is unclear if the effect of behavioral treatments can be generalized to other obsessive-compulsive symptom categories.[31] One study[32] has revealed that obsessions that would naturally be threatening to individuals—for instance, fear of fire or of toxic contaminants—are more resistant to treatment than obsessions that are more ego-dystonic to the patients.

We sought to investigate (1) which symptom categories of repetitive behaviors are most incapacitating across and within the study groups and (2) what the differences are in symptom distribution between the study groups. Therefore, patients with both Tourette's disorder and OCD were compared with those with Tourette's and no OCD, those with OCD without tics, and a control group. The first hypothesis was that across and within the study groups, obsessions and compulsions, being anxiety-related, are more distressing than impulsions. Secondly, based on the assumption that tic-related and tic-free OCD patients probably represent etiologically distinct subgroups of OCD, we hypothesized that this would be reflected in differences in symptom distribution among patients with Tourette's and OCD and patients with tic-free OCD. Patients with both disorders would represent a form of Tourette's, not OCD. As a consequence, patients with both disorders would have obsessions, compulsions, and (Tourette-related) impulsions, whereas patients with tic-free OCD would predominantly experience obsessions and compulsions.

Severity of the various repetitive symptoms was assessed by classifying each reported repetition as a symptom, a subthreshold symptom, or just as being present. This is in line with family studies[8,33] in which the prevalence of OCD of different degrees of severity has been investigated in relatives of OCD probands. A repetition was considered symptomatic when the patient experienced the repetitive thought and/or action for ≥ 1 hour a day and experienced moderate to severe distress and/or interference with daily life from the symptom. The repetition was considered a subthreshold symptom if the repetitive behavior consumed < 1 hour a day with or without significant distress or interference. Divergent from the literature,[8] neither ego-dystonia nor insight were used as criteria for subthreshold OCD. A repetitive behavior was considered just present if it consumed < 1 hour a day and caused no distress or interference with the person's life.

Table 1. Overview of the Symptom Categories of the Leiden Semistructured Interview for Tourette's Disorder and Obsessive-Compulsive Disorder

Category	Content
Repetitive thoughts	
Repetitive aggressive thoughts	Thoughts about harming self/others, violent/horrific images, repetitive thoughts about being responsible for something bad happening
Repetitive contamination worries	Concerns with bodily secretions, dirt, germs, toxic contaminants, insects, household items, how contamination might feel, and somatic worries about venereal diseases, cancer, etc
Repetitive sexual thoughts	Forbidden/perverse sexual thoughts/images about other adults, children, animals
Repetitive ruminating	Need to know/remember, fear of saying certain things, fear of not saying just the right thing, fear of losing things, excessive list making
Mental play	Repetitive "neutral" impulses, thoughts or images, often intended as a pastime, including nonviolent visual, auditory, word, and/or number games
Repetitive actions	
Echophenomena	Copro/echolalia, copro/echopraxia, palilalia/praxia in thought and out loud
Repetitive washing/cleaning actions	Hand washing, bathing, toilet routine, cleaning of household items/objects, measures to prevent or remove contact with contaminants, etc
Repetitive checking actions	Checking locks on doors, gas, light, etc
Repetitive repeating actions	Repeating all routine activities in household, at work, while dressing, etc, and ordering actions
Counting actions	Counting
Repetitive symmetry thoughts and actions	All repetitive thoughts and actions designed to relieve a sense of skewness
Repetitive touching actions	Touching self/others/objects and smelling, grooming, licking behaviors
Repetitive rereading or rewriting actions	Reading/rewriting
Impulsive or self-injurious behaviors	Repetitive biting, spitting, licking of self/others/objects, trichotillomania, nose picking, injurious behaviors toward self/others
Repetitive praying actions	Repetitive praying
Miscellaneous repetitive thoughts and actions	Miscellaneous thoughts/actions, hoarding, slow actions, need to tell/ask/confess

METHOD

Thirty-two adults with Tourette's disorder (N = 14 with OCD, N = 18 without OCD), 21 adults with OCD (no tics), and 29 adults with low back pain due to either myalgia or hernia nuclei pulposi who served as a control group were included in the study. The study was approved by the medical ethics committees of the participating centers. All patients were outpatients and gave written informed consent for the study.

The patients with Tourette's disorder were recruited via the Dutch Gilles de la Tourette Association, the outpatient services of the Psychiatric Hospital Endegeest in Oegstgeest, the Department of Psychiatry of the University Hospital Rotterdam-Dijkzigt, and the department of Neurology of Leyenburg Hospital, The Hague. The patients with OCD were recruited from the outpatient services of Psychiatric Hospital Endegeest in Oegstgeest and the Reinier de Graaf Gasthuis at Delft. The control group was recruited from the department of neurology of Leiden University Medical Center.

All subjects were administered parts of the Composite International Diagnostic Interview (CIDI)[34] by a trained interviewer (A.D.L.) before entering the study to evaluate inclusion and exclusion criteria according to DSM-III-R criteria. The diagnosis of Tourette's disorder was confirmed independently by 2 experienced clinicians (T.C.A.M.v.W., B.J.M.v.d.W., or D.C.C.) before the patients entered the study according to DSM-III-R criteria[1] by clinical interview and using the Shapiro symptom checklist.[18] Subjects with concomitant psychosis, major depression, substance abuse, or mental deficiency were excluded.

Evaluation Procedures

To assess obsessions, compulsions, and other repetitive behaviors, a semistructured interview (Table 1; Leiden interview on Tourette's and OCD, available on request from the first author) was administered in which the various obsessive-compulsive phenomena were operationalized as stereotyped repetitive thoughts or actions.

The interview contains questions about repetitive phenomena that we expected to be specifically Tourette-related, such as mental play, repetitive smelling, echophenomena, biting, nose-picking, licking, and spitting. To determine severity of each reported behavior, evaluations were made on the time spent on the item (< 1 hour a day or ≥ 1 hour a day) and amount of distress and/or interference with social or occupational life caused by it. Scores of distress and interference were united, and scores of ≥ 2 on a 0- to 4-point global severity scale were considered positive. This information was then used to evaluate whether the repetitive thought or action should be considered as a symptom, a subthreshold symptom, or just present, according to the rules outlined above. Further, accompanying anxiety (scores ≥ 2 on a 0- to 4-point global severity scale were considered positive), aim of the behavior (aimless, pastime, to achieve a sense of symmetry, to gratify a "just-right" perception,[35] to reduce anxiety), and whether the item prompted an anxiety-reducing action were assessed. All interviews were videotaped and subsequently independently scored by 2 research assistants

Table 2. Patient Characteristics and Rating Scale Scores[a]

Characteristic	Tourette's + OCD (N = 14)	Tourette's Only (N = 18)	Tic-Free OCD (N = 21)	Controls (N = 29)	Differences Between Groups, p Values: Tourette's + OCD vs Tourette's Only	Tourette's + OCD vs Tic-Free OCD	Tourette's Only vs Tic-Free OCD	Tourette's + OCD vs Controls	Tourette's Only vs Controls	Tic-Free OCD vs Controls
Age, y, mean ± SD	33 ± 14	35 ± 14	36 ± 9	45 ± 12	NS	NS	NS	< .001	.02	.03
Male gender, N (%)	8 (57)	9 (50)	9 (42)	11 (38)	NS	NS	NS	NS	NS	NS
Illness duration, y, mean ± SD	24 ± 15	25 ± 16	16 ± 11	11 ± 13	NS	NS	.045	.02	< .001	NS
Current medication, N (%)										
Neuroleptics	5 (36)	5 (28)	4 (19)	0 (0)	NS	NS	NS	< .001	< .001	.02
Antidepressants	0 (0)	2 (11)	9 (43)	0 (0)	NS	.005	.04	NS	.03	< .001
Rating scale scores, mean ± SD										
MADRS	8 ± 8	10 ± 6	9 ± 7	4 ± 4	NS	NS	NS	.003	.001	.002
Y-BOCS	21 ± 5	11 ± 5	21 ± 6	2 ± 4	< .001	NS	.00	< .001	< .001	< .001
LOI	94 ± 16	76 ± 19	90 ± 20	59 ± 12	.005	NS	.04	< .001	.004	< .001
GAF	74 ± 13	77 ± 10	68 ± 10	86 ± 6	NS	NS	.02	< .001	.001	< .001
STAI-state	43 ± 12	37 ± 8	46 ± 11	31 ± 6	NS	NS	.01	< .001	.03	.001
STAI-trait	51 ± 12	44 ± 7	52 ± 9	31 ± 6	.05	NS	.03	< .001	< .001	< .001

[a]Abbreviations: GAF = Global Assessment of Functioning scale, adult version; LOI = Leyton Obsessional Inventory; MADRS = Montgomery-Asberg Depression Rating Scale; OCD = obsessive-compulsive disorder; STAI = State-Trait Anxiety Inventory (Spielberger); Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

trained in identifying tics and repetitive behaviors. The research assistants were blind to the diagnoses of the subjects. Whenever there was a lack of agreement between the raters, consensus was reached through reassessing the videotape and discussion. A repetitive thought was considered an obsession if it provoked anxiety and/or an anxiety-reducing stereotyped repetitive thought or action. A repetitive thought or action with the aim of anxiety reduction was considered a compulsion. A repetitive thought or action that neither provoked anxiety nor gave rise to anxiety-reducing actions was considered an impulsion.

To assess tics, the subjects were administered the Shapiro symptom checklist.[18] A tic was considered to be present when either observed on video by 2 independent raters or reported in the past month. Furthermore, the Montgomery-Asberg Depression Rating Scale (MADRS),[36] the Yale-Brown Obsessive Compulsive Scale (Y-BOCS),[37,38] the Leyton Obsessional Inventory (LOI),[39] the DSM-III-R Global Assessment of Functioning scale,[40] and the State-Trait Anxiety Inventory (STAI)[41] were administered.

Statistical Analyses

To analyze the interrater agreement, kappa coefficients and 95% confidence intervals (CI) were calculated.

Pairwise quantitative comparisons between the Tourette's plus OCD, Tourette's only, OCD only (no tics), and control groups were carried out of overall symptomatic and subthreshold ratings and of the specific symptom categories of the Leiden interview, using Mann-Whitney U tests. In all analyses, $p < .05$ was considered significant. Bonferroni correction was not used, as we performed an exploratory phenomenological study attempting to detect subtle differences between Tourette's and OCD subtypes. Therefore, it seemed more important to avoid a type II than a type I error.[42]

RESULTS

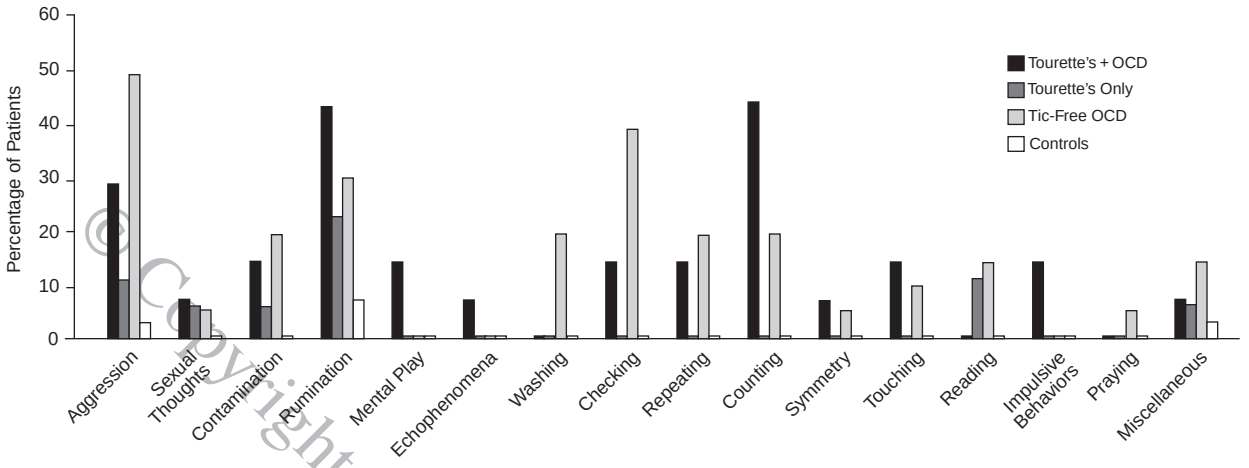
Reliability between the raters was good to excellent: mean kappa coefficient between raters for presence of the variable was 0.97 (CI = 0.94 to 1), mean kappa coefficient between raters for time per day spent on the variable was 0.95 (CI = 0.94 to 1.00), mean kappa coefficient for distress accompanying the variable was 0.97 (CI = 0.93 to 1.00), mean kappa coefficient between raters for anxiety accompanying the variable was 0.75 (CI = 0.62 to 0.89), and mean kappa coefficient between raters for goal directedness of the variable was 0.78 (CI = 0.68 to 0.89).

Patient Characteristics and Rating Scale Scores (Table 2)

The control subjects were older than the patient groups. No gender differences were found across the study groups. The 2 study groups with Tourette's disorder had a longer duration of illness than individuals with tic-free OCD and the control group. All patient groups used more antidopaminergic medication than the controls. Highest rates of antidepressant medication were found within the tic-free OCD study group. The Tourette's only and the OCD (no tics) groups used more antidepressant medication than did the controls.

As a consequence of the exclusion of moderately to severely depressed patients, depression scores were similar across the patient groups and higher than those of the control group. Obsessive-compulsive severity scores and LOI

Figure 1. Symptomatic Repetitive Behaviors According to the Leiden Interview for Tourette's Disorder and Obsessive-Compulsive Disorder (OCD)



scores were higher in Tourette's plus OCD and in OCD (no tic) subjects than in subjects with Tourette's only. Global functioning was lowest in the tic-free OCD group and differed significantly from the Tourette's only group. In all patient groups, global functioning was lower than the controls. State as well as trait anxiety was elevated in all patient groups when compared with the controls. On anxiety measures, the Tourette's only subjects scored between controls and subjects with OCD (with and without Tourette's).

The Relationship Between Symptom Categories and Symptom Severity

Symptom severity is reflected in the number of repetitive behaviors reaching a symptomatic or subthreshold level. An overview of the symptomatic and subthreshold repetitive behaviors reported by the study groups is displayed in Figures 1 and 2.

Of all symptomatic repetitions reported across the study groups, 41% consisted of obsessions, 32% of impulsions, and 27% of compulsions. Of all subthreshold symptoms, 28% consisted of obsessions, 46% of impulsions, and 26% of compulsions. Of the total number of repetitions, 20% consisted of obsessions, 58% of impulsions, and 22% of compulsions. Across the study groups aggressive repetitive thoughts, ruminations, and counting and checking behaviors were most often reported to become symptomatic.

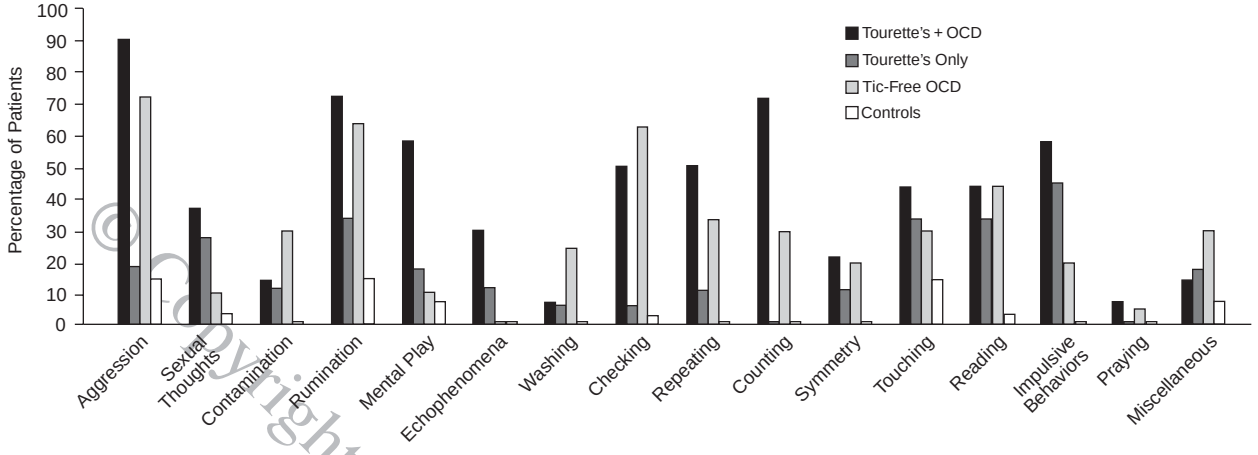
Over 90% of patients with Tourette's and OCD and patients with tic-free OCD reported symptoms and subthreshold symptoms, whereas 39% of patients with Tourette's only reported symptoms, and 41% reported subthreshold symptoms. Ten percent of the controls reported symptoms, and 40% reported subthreshold symptoms. In other words, the rates of symptomatic, subthreshold, and overall repetitions were similar in Tourette's plus OCD and tic-free patients (NS), but elevated when compared with patients who had Tourette's only (p between < .001 and .02 for all comparisons). Furthermore, all patient groups had elevated rates of symptoms and subthreshold symptoms in comparison with the controls (p between < .001 and .02 for all comparisons).

Within the Tourette's plus OCD study group, impulsions were most frequently reported to become symptomatic or to reach a subthreshold level, whereas the tic-free OCD subjects reported more symptomatic and subthreshold obsessions. Patients with Tourette's only reported most on symptomatic and subthreshold impulsions and obsessions.

Tourette's disorder without OCD compared with Tourette's plus OCD. Subjects with Tourette's disorder only reported fewer symptomatic and subthreshold compulsions and impulsions than did subjects with both disorders (p between < .001 and .01) and fewer subthreshold obsessions (p = .02). With regard to symptomatic repetitive behaviors, the 2 Tourette's groups only differed on rates of counting behaviors, with subjects with Tourette's only reporting less symptomatic counting than subjects with both disorders (p = .002). Further, subjects with Tourette's only reported fewer subthreshold aggressive repetitive thoughts (p = .001), subthreshold ruminations (p = .03), mental play (p = .01), checking (p = .005), repeating (p = .02), and counting (p < .001) than did Tourette's plus OCD subjects.

Tourette's disorder without OCD compared with OCD without tics. Overall, subjects with Tourette's only reported fewer symptomatic as well as subthreshold obsessions (p = .002 and .001, respectively) and compul-

Figure 2. Subthreshold Symptoms According to the Leiden Interview for Tourette's Disorder and Obsessive-Compulsive Disorder (OCD)



sions ($p < .001$ in both cases) than did tic-free OCD subjects. Further, subjects with Tourette's only reported fewer symptomatic as well as subthreshold aggressive repetitive thoughts ($p = .01$ and $< .001$, respectively), checking ($p = .004$ and $< .001$, respectively), repeating ($p = .05$ and .09, respectively), and counting behaviors ($p = .05$ and .01, respectively), and fewer symptomatic washing ($p = .05$) behaviors than tic-free OCD subjects. They also reported fewer subthreshold ruminations ($p = .04$) and tended to report more subthreshold impulsive or self-injurious behaviors ($p = .06$) than tic-free OCD subjects.

Tourette's disorder plus OCD compared with OCD without tics. Patients with Tourette's disorder plus OCD reported fewer symptomatic obsessions ($p = .04$) and more overall subthreshold impulsions ($p = .007$) than tic-free OCD subjects. Further, individuals with tic-free OCD tended to report more symptomatic washing behaviors ($p = .09$). Subjects with both disorders reported more symptomatic and subthreshold mental play ($p = .08$ and .002, respectively) and impulsive or self-injurious behaviors ($p = .08$ and .01, respectively) than tic-free OCD individuals, as well as more subthreshold sexual thoughts ($p = .06$), echophenomena ($p = .01$), and counting behaviors ($p = .02$).

Tourette's disorder and OCD patient groups compared with the control group. Patients with Tourette's only reported more symptomatic and subthreshold impulsions when compared with the controls ($p = .04$ and $< .001$, respectively) Both the Tourette's plus OCD and the OCD (no tic) group reported more symptomatic and subthreshold obsessions, compulsions, and impulsions than the controls (p between $< .001$ and .01 for all comparisons). On a symptomatic level, subjects with Tourette's only tended to differ from the controls on rates of rereading/rewriting (Tourette's only subjects reporting more rereading/rewriting; $p = .07$). Further, subjects with Tourette's only reported more subthreshold repetitive sexual thoughts ($p = .02$), rereading/rewriting ($p = .005$), and impulsive or self-injurious behaviors ($p < .001$) than did the controls.

Subjects with Tourette's and OCD and those with tic-free OCD both reported more symptomatic aggressive repetitive thoughts ($p = .02$ and $< .001$, respectively), contamination thoughts ($p = .04$ and .01, respectively), ruminations ($p = .004$ and .03, respectively), checking ($p = .04$ and $< .001$, respectively), repeating ($p = .04$ in both cases), and counting ($p < .001$ and .01, respectively) behaviors than the controls. Subjects with both disorders also reported more symptomatic mental play ($p = .04$), touching ($p = .04$), and impulsive or self-injurious behaviors ($p = .04$) than the controls, whereas tic-free OCD subjects reported more symptomatic washing ($p = .01$) and rereading/rewriting ($p = .04$).

The Tourette's plus OCD group reported more subthreshold repetitive thoughts and actions than did the control group on all items (p between $< .001$ and .04) except for subthreshold repetitive praying, washing, and miscellaneous thoughts and actions. OCD (no tics) subjects reported more subthreshold repetitions than did the controls on all items (p between $< .001$ and .04) except for subthreshold sexual thoughts, mental play, echophenomena, touching, and praying behaviors.

DISCUSSION

The first hypothesis was partly supported: across the study groups, obsessions are experienced as being most

severe when compared with compulsions and impulsions. When the overall frequencies of repetitive behaviors are compared with frequencies of subthreshold and symptomatic repetitions, one observes that the impulsions, while constituting more than half of the proportion of overall repetitions, only constituted one third of the symptomatic repetitive behaviors. On the other hand, obsessions, constituting only 20% of the overall repetitions, formed 41% of all symptomatic repetitions. The percentages of compulsions were stable across the 3 levels of repetitive behaviors (22%–27%). This means that obsessions in particular—predominantly aggressive repetitive thoughts and ruminations—seem to be time consuming, distressing, and interfering with daily life. These findings show the importance of not only focusing on the overt behavioral repertoire in the treatment of Tourette's disorder and OCD patients, but to take the obsessions into account as well or even give them priority in treatment, especially in the treatment of tic-free OCD patients. Within the patient group, with both Tourette's and OCD, Tourette-related impulsions were experienced as being most severe in terms of time consumption, distress, and interference with daily life. Patients with OCD with tics seem to benefit less from monotherapy with SSRIs than do tic-free OCD individuals, and addition of dopamine-2 blocking agents to treatment with an SSRI is often a more useful approach for these patients.[10] This difference in treatment response can possibly be explained by the phenomenological differences among patients with both disorders and tic-free OCD patients described above, reflecting differences in underlying pathophysiology.

The second hypothesis was supported as well, since the symptoms and subthreshold symptoms were distributed differently between Tourette's disorder plus OCD and tic-free OCD groups. Differences between the groups were more pronounced with regard to the subthreshold symptoms than the symptoms. Patients with both disorders most frequently reported that impulsions became symptomatic, whereas tic-free OCD patients reported most on symptomatic obsessions. Further, patients with Tourette's plus OCD reported on more mental play, impulsive or self-injurious behaviors, and echophenomena. Tic-free OCD individuals reported more symptomatic washing behaviors. Thus, patients with both disorders and those with tic-free OCD showed more differences with regard to the occurrence of non–anxiety-related, stimulus-bound impulsions than with regard to "typical" obsessions and compulsions. The differences found between Tourette's with and without OCD seemed to reflect differences in symptom severity rather than differences in symptom distribution. The combination of the 2 disorders probably represents a more severe form of Tourette's, not tic-free OCD, which is in line with the literature.[43,44] Comparisons of Tourette's and tic-free OCD groups with the control group were in accordance with the differences in symptom distribution outlined above. Although phenomenological research is basically descriptive, and therefore no conclusions can be drawn on underlying etiology from these findings, they support the notion that the combination of Tourette's and OCD is part of a Tourette's spectrum of disorders rather than on the OCD spectrum.

Another conclusion to be drawn from these differences in symptom distribution is that the distinction between anxiety-related obsessions, compulsions, and non–anxiety-related impulsions seems to be useful in distinguishing the symptoms of patients with Tourette's plus OCD from those of individuals with tic-free OCD. Further, this distinction can be helpful in establishing treatment priorities.

In children, tic severity seems to be indicative of the severest end of the Tourette's disorder spectrum. Tic symptoms often ameliorate with age, and approximately two thirds of cases either improve or show complete remission during late adolescence and early adulthood.[45] Although the course of obsessions, compulsions, and impulsions in Tourette's is not well known, these repetitive symptoms do not seem to diminish in adulthood.[46] In adults, the severe end of the Tourette's spectrum is possibly determined by their obsessions, compulsions, and Tourette-related impulsions. According to our clinical experience, tic severity and obsessive-compulsive symptom severity are not necessarily related, and Tourette's patients with versus without OCD possibly represent genetic heterogeneity within Tourette's disorder.[47]

Although the results of this study are by and large convergent with the literature,[4,14,47–49] some differences should be discussed. First, in other reports, a greater number of aggressive and violent obsessions are observed in Tourette's disorder patients than in those with tic-free OCD,[11,14,28,48,49] in contrast to the present study. Another difference with the literature is that we did not find different rates of symptomatic symmetry or touching behaviors between Tourette's and OCD.[15,16] These differences in phenomenology are probably a consequence of our choice to investigate only subthreshold and symptomatic repetitive phenomena in Tourette's and OCD, which might have resulted in less pronounced differences between the groups. Across the study groups, obsessions became symptomatic more often than impulsions. As a consequence, a larger proportion of overall impulsions has been excluded from analyses than obsessions and compulsions, although impulsions are perhaps more discriminative for tic-relatedness than obsessions and compulsions. On the other hand, the fact that we did find differences in symptom distribution between the groups, regardless of the restriction made with regard to severity of the repetitive behaviors, makes these results more robust.

Finally, in this study, no differences were found among patients with Tourette's disorder plus OCD and those with tic-free OCD with regard to symptom severity. This result deviates from one report in the literature[28] in which indi-

viduals with tic-free OCD experienced their complaints as more distressing than individuals with OCD with tics. The differences in findings can be explained by the more extensive criteria used to determine symptom severity.

Although the sample sizes were small in this study, and therefore the generalizability of the results is limited, we have been able to extend the data from previous studies by using an interview that equally emphasized Tourette-related behaviors, obsessions, and compulsions by focusing on symptomatic repetitive behaviors and by adding a control group.

Future research should be directed at the comparison of treatment response in relation to the differences in symptom distribution among OCD patients with and without tics. More specific behavioral and psychopharmacologic treatment strategies should be designed for patients with OCD with tics as opposed to those with OCD without tics.

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