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# Reliability and Validity of the Yale-Brown Obsessive-Compulsive Scale in Schizophrenia Patients

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**ABSTRACT** ~ Although a sizeable minority of people with schizophrenia manifest obsessive and compulsive symptoms, to our knowledge there are no studies of the psychometric performance of measures such as the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS). The present study examined psychometric properties of the Y-BOCS in patients with recent-onset schizophrenia and comorbid obsessive-compulsive symptoms (OCS). To 37 patients with recent-onset schizophrenia and related disorders and comorbid OCS taken from 135 consecutively admitted patients we administered the Y-BOCS at admission and 6 weeks later. The Y-BOCS showed good internal consistency and interrater reliability in this population; however, findings concerning the divergent validity against depressive and negative symptoms are inconsistent. *Psychopharmacology Bulletin. 2006;39(1):25-30.*

## INTRODUCTION

A growing literature suggesting that obsessive-compulsive symptoms (OCS) occur in 7.8% to 46%<sup>1-10</sup> of patients with schizophrenia has prompted renewed interest in this issue by clinicians and researchers.

The severity of OCS is often assessed with the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS).<sup>11</sup>

The Y-BOCS, a semistructured interview, was introduced by Goodman and colleagues<sup>11,12</sup> to measure OCS in a content-free format in patients with obsessive-compulsive disorder (OCD). The scale ratings do not depend on specific types of symptoms but are instead based on aspects of those symptoms as reported by the patient during the interview (eg, duration, interference, degree of resistance). The

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scale is divided into 2 parts of 5 questions each: the obsessions subscale and the compulsions subscale. On each subscale 5 aspects of pathology are rated on scales ranging from 0 (no symptom) to 4 (extreme symptoms): time spent, degree of interference, distress, resistance, and perceived control over the symptoms. Unlike some other OCS measures, the Y-BOCS assigns lower scores to greater resistance as an indicator of health. Scores obtained from the subscales are summed to yield a Y-BOCS total score.

We will briefly summarize the results from investigations of the psychometric properties of the Y-BOCS in nonpsychotic OCD patients.

The results of tests of internal consistency of the total scale varied from 0.69 to 0.91 (Cronbach alpha).<sup>11,13</sup> Interrater reliability for Y-BOCS items measured as interrater ICC (intraclass correlation) varied from 0.76 to 0.94<sup>13</sup> and from 0.86 to 0.97.<sup>11</sup>

Test-retest reliability varied from  $r = 0.61$  (mean test-retest interval 48.5 days)<sup>13</sup> to  $r = 0.97$  (test-retest interval 7 days).<sup>14,15</sup> The Y-BOCS total score showed good convergence with several measures commonly used to assess symptoms of OCD but not with all.<sup>12,14,15</sup> Discriminant validity was studied twice, and high correlations between Y-BOCS total score and measures of depression (varying from 0.42 to 0.60)<sup>12</sup> and between Y-BOCS total score and measures of anxiety (varying from 0.23 to 0.47)<sup>13</sup> were found. In a factor analysis, 2 distinct relatively uncorrelated factors for obsessions and compulsions were found.<sup>16</sup>

We are not aware of reports on the psychometric properties of the Y-BOCS in patients with schizophrenia.

The present study examines psychometric properties of the Y-BOCS in patients with recent onset schizophrenia and comorbid OCS or OCD.

## METHOD

### *Patients*

Consecutively admitted patients ( $n = 135$ ) participating in a prospective study of recent-onset schizophrenia and related disorders were included. Patients were treated at a specialized unit in the Academic Medical Center, Amsterdam, The Netherlands. The intensive treatment program was aimed at decreasing psychotic symptoms, preventing psychotic relapse, and improving quality of life. Reasons for admission to the treatment program were clinical treatment considered being necessary to enable stabilization, psychoeducation, and rehabilitation. Discharge diagnoses according to *DSM-IV* criteria were based on longitudinal, clinical, and heteroanamnesic assessment (Longitudinal Expert Assessment of Diagnosis procedure).<sup>17</sup> Exclusion criteria were neurologic or endocrine disease and mental retardation. After a complete description of the study to the subjects, written informed consent was obtained from all.

### *Instruments and Procedure*

Patients were screened for the presence of OCS at admission and 6 weeks after admission. The presence of OCS was defined according to the Structured Clinical Interview for *DSM-III-R*, patient version,<sup>18</sup> as persistent, repetitive, intrusive, and distressful thoughts (obsessions) not related to the patient's delusions, or repetitive goal-directed rituals (compulsions) clinically distinguishable from schizophrenic mannerisms or posturing. Three of us (LDH, BH, NB) reached agreement on the presence of OCS after discussing longitudinal, clinical, and heteroanamnestic information. When OCS was present, 2 raters administered the Y-BOCS.

Both raters independently administered Y-BOCS to 7 patients to obtain preliminary data on the interrater reliability. Severity of other symptoms was assessed with the Positive and Negative Syndrome Scale (PANSS) and the Montgomery-Åsberg Depression Rating Scale (MADRS) by independent and clinically trained raters.

### RESULTS

One hundred thirty-five patients (103 men, 32 women) were included; 112 were diagnosed with schizophrenia, 13 with schizophreniform, and 10 with schizoaffective disorder; mean age at admission was 21.7 years (SD = 3.1). At admission, 37 patients had OCS (mean Y-BOCS total score = 3.8, SD = 5.9). Six weeks later, 35 patients had OCS (mean Y-BOCS total score = 3.5, SD = 5.7).

Nineteen patients had a Y-BOCS total score of 10 or higher and fulfilled *DSM-IV* criteria for OCD at both assessments (mean Y-BOCS total score at admission = 17.8, SD = 7.2; mean Y-BOCS total score 6 weeks after admission = 17.9, SD = 5.9).

### *Reliability*

**Internal Consistency.** Item remainder correlation and Cronbach's alphas are presented in Table 1.

Interrater reliability was calculated with intraclass correlation coefficients: 0.87 for the obsessions subscale, 0.85 for the compulsions subscale, and 0.78 for the total score.

**Divergent Validity.** To study divergent validity of the Y-BOCS, Pearson correlation coefficients were calculated for the subscale and total scores of the Y-BOCS and those of the PANSS and MADRS total score. These results are presented in Table 2.

Pearson correlation between the obsessions and compulsions subscale at admission was -.07 and -.12 6 weeks after admission.

## THE YALE-BROWN OBSESSIVE-COMPULSIVE SCALE

## DISCUSSION

Findings for internal consistency (alpha 76-79) were adequate and even better than the 0.69 figure found in nonpsychotic patients with OCD given by Woody et al.<sup>13</sup> Woody et al. found resistance to compulsion to be poorly related to the overall scale. In our study this item had only a slightly lower item-remainder correlation with the subscale

TABLE 1

## YALE-BROWN OBSESSIVE COMPULSIVE SCALE: INTERNAL CONSISTENCY

	AT ADMISSION		6 WEEKS AFTER ADMISSION	
	ITEM-REMAINDER CORRELATION (N=37) (SUBSCALE)	ITEM-REMAINDER CORRELATION (N=37) (Y-BOCS TOTAL)	ITEM-REMAINDER CORRELATION (N=35) (SUBSCALE)	ITEM-REMAINDER CORRELATION (N=35) (Y-BOCS TOTAL)
<i>Obsessions Subscale</i>	Alpha=0.92		Alpha=0.93	
1. Time spent	0.83	0.54	0.84	0.49
2. Interference	0.83	0.57	0.83	0.51
3. Distress	0.86	0.43	0.79	0.33
4. Resistance	0.58	0.52	0.77	0.39
5. Control	0.91	0.48	0.88	0.40
<i>Compulsions Subscale</i>	Alpha=0.90		Alpha=0.87	
6. Time spent	0.85	0.37	0.84	0.32
7. Interference	0.77	0.60	0.75	0.66
8. Distress	0.81	0.53	0.65	0.31
9. Resistance	0.67	0.29	0.64	0.43
10. Control	0.75	0.35	0.71	0.30
<i>Y-BOCS Total</i>	Alpha=0.79		Alpha=0.76	

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TABLE 2

## PEARSON CORRELATION BETWEEN Y-BOCS AND OTHER MEASURES OF PSYCHOPATHOLOGY AT ADMISSION AND 6 WEEKS AFTER ADMISSION

	AT ADMISSION				6 WEEKS AFTER ADMISSION***			
	<i>N</i>	<i>Obs.</i>	<i>Com.</i>	<i>Total</i>	<i>n</i>	<i>Obs.</i>	<i>Com.</i>	<i>Total</i>
PANSS positive subscale	37	.09	.21	.21	29	.11	-.09	.02
PANSS negative subscale	37	.45**	.16	.45**	29	-.01	.19	.15
PANSS general psychopathology subscale	37	.30	.37*	.49**	29	.05	.16	.16
MADRS total score	36	.36*	.08	.35*	29	-.03	.15	.10

\*P < .05, \*\* P < .01

\*\*\*Assessment of PANSS, MADRS and Y-BOCS within one week was lacking in 6 patients.

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compulsions (alpha 0.58-0.77) than the other items, which varied from alpha 0.65 to 0.91. Therefore, we found no ground for their suggestion to delete the resistance item.

Interrater reliability was good for both the subscales and for the Y-BOCS total. We were not able to assess the test-retest reliability because we considered the 6-week period between both assessments as too long. In this period, severity of Y-BOCS may change, thereby diminishing the test-retest reliability.

The Y-BOCS showed poor divergent validity in investigations of nonpsychotic OCD patients in that it was as high or more highly correlated with depression than with other measures of OCD.<sup>12,19,20</sup> In our study, differences in correlation between Y-BOCS total score and subscale scores and other measures of psychopathology on the 2 assessments are striking. Although at admission severity of obsessions correlated with severity of negative symptoms and with severity of depressive symptoms, this correlation disappeared 6 weeks later. Severity of compulsions was related to total score on PANSS general psychopathology, but this correlation also diminished 6 weeks later.

PANSS and MADRS appeared to improve during admission (data not shown), whereas severity of OCD remained constant. Apparently inpatient treatment is associated with improvement of positive, negative, and depressive symptoms but has no effect on OCS. This could explain the disappearance of the correlation between the Y-BOCS and other measures of severity of psychopathology. From a psychometric point of view it is disturbing that Y-BOCS correlates with mood state, and that this correlation depends on the time of assessment.

Findings are conflicting about the relationship between OCD and negative symptoms.<sup>1,21</sup> We found a correlation between severity of obsessions and PANSS negative subscale at admission, but this correlation also disappeared. The relationship between OCD and negative symptoms remains controversial, and more study is needed.

The very low correlation between the obsessions subscale and the compulsions subscale at both assessments is in agreement with the 2-factor solution of the Y-BOCS.<sup>16</sup>

We address again the way we defined OCS in our psychotic sample. We only assessed the diagnosis of OCS if patients had persistent, repetitive, intrusive, and distressful thoughts (obsessions) not related to the patient's delusions, or repetitive goal-directed rituals (compulsions) clinically distinguishable from schizophrenic mannerisms or posturing. Other authors included OCS related to delusions.<sup>3,8</sup> Although we agree that obsessions and delusions are not necessarily mutually exclusive, we took a different stand in our study because we wanted to distinguish between psychotic symptoms and OCS. We think the very low

correlations between obsessions or compulsions and positive symptoms show that we succeeded in our effort to disentangle psychotic symptoms and OCS as much as possible.

We conclude that the Y-BOCS in a population of patients with recent-onset schizophrenia and related disorders shows good internal consistency and interrater reliability, but that findings concerning the divergent validity against depressive and negative symptoms are inconsistent. ❀

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