

A Computer-Administered Version of the Yale–Brown Obsessive–Compulsive Scale

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The Yale–Brown Obsessive–Compulsive Scale (Y-BOCS) was converted to an interactive computer-administered format. To examine its utility, the computer version of the Y-BOCS was administered in a design counterbalanced with the clinician-administered version to a sample of patients with obsessive–compulsive disorder (OCD), patients with other anxiety disorders, and nonpatient controls. The computer-administered version of the Y-BOCS correlated highly with the clinician-administered version, especially in the OCD sample, and showed equal ability to distinguish OCD patients from subjects in the other two groups. It was also well understood and liked by subjects, who showed no preference for the clinician interview over the computer interview.

With the recognition that obsessive–compulsive disorder (OCD) is more common than previously believed (Robins et al., 1984), there has been growing interest in the nature and treatment of this difficult anxiety disorder. Extensive attempts to examine the heterogeneous clinical picture of this disorder (Insel, 1984; Rasmussen & Tsuang, 1986), as well as numerous treatment studies (see Christensen et al., 1987, for a partial review), underscored the need for a standardized and sensitive method of assessing the severity of the disorder and its associated symptoms.

The shortcomings of previously used self-report and clinician-rated scales were reviewed by Goodman et al. (1989b). Scales such as the Obsessive Compulsive Checklist (Marks, 1978) and the Maudsley Obsessive Compulsive Inventory (MOCI; Rachman & Hodgson, 1980) are essentially symptom checklists that can provide detailed information about the type of symptoms experienced but are not sufficiently sensitive for measuring severity and change over time. This is also true for the clinician-rated National Institute of Mental Health Global Obsessive Compulsive Scale (NIMH-OC; Murphy, Pickar, & Alterman, 1982). Structured interviews, such as the Schedule for Affective Disorder and Schizophrenia (SADS; Spitzer & Endicott, 1975) and the Diagnostic Interview Schedule (DIS; Robins et al., 1981) can determine categorically whether patients meet RDC or *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.; *DSM-III*; American Psychiatric Association, 1980) criteria for OCD but are not useful for assessing the subtypes, level of impairment, or changes in the disorder.

To address these problems, Goodman et al. (1989b, 1989c) developed the Yale–Brown Obsessive Compulsive Scale (Y-BOCS). The Y-BOCS assesses the severity of OCD independently from the variety of obsessions and compulsions present. It explores five different dimensions independently for obsessions (Items 1–5) and compulsions (Items 6–10): (a) time spent on them, (b) interference they cause, (c) distress the patient experiences, (d) degree of resistance to the symptoms, and (e) amount of control the patient has over them. Each item is rated from 0 (*none*) to 4 (*extreme*), and includes item probes and anchor points to guide the rater. The total Y-BOCS score (YB-TOT) is the sum of Items 1 to 10 (range = 0 to 40). Subscale scores for obsessions (YB-OBS) and compulsions (YB-COM) are also computed (each with a range of 0 to 20).

In addition to the Severity scale, the Y-BOCS includes a Symptom Checklist assessing over 50 different OCD symptoms. Subjects indicate current and past presence of each symptom. They can also use an “other” category to indicate rare obsessions and compulsions not included in the list. The Checklist is usually given only in the first administration of the Y-BOCS and provides a detailed picture of the content and behavioral expression of the patient’s symptoms.

Excellent agreement among raters for the Y-BOCS total, sub-totals, and individual item scores was reported by the developers, with intraclass correlation coefficients ranging from .88 to .98. The Y-BOCS also demonstrated high internal consistency, with coefficients alpha ranging from .88 to .91 (Goodman et al., 1989b). The convergent validity of the Y-BOCS was established by correlating its total score with three other independent measures of OCD in several patient samples, with resulting coefficients ranging between .53 and .74 in the combined patient sample (Goodman et al., 1989c). Results from several drug treatment trials (e.g., Goodman et al., 1989a; Greist et al., 1990) show that the Y-BOCS is highly sensitive in measuring change.

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The Y-BOCS requires raters to be familiar with OCD. Our experience in the Anxiety Disorders Center at the University of Wisconsin–Madison is that raters who are very familiar with this disorder give ratings different from those given by less experienced clinicians. This may compromise the reliability of Y-BOCS assessment, which is especially important in multicenter studies, where standardized measurement is essential for combining and interpreting data properly. Furthermore, initial Y-BOCS interviews may take up to 40 min and can therefore be quite costly if administered by a clinician.

To facilitate a convenient and more cost-effective way of administering this scale, we converted the Y-BOCS to an interactive, computer-administered interview. This is a format that has been extensively studied recently (e.g., Erdman, Klein, & Greist, 1985), and a computer-administered version of the Hamilton Depression Rating Scale developed in our center (Kobak et al., 1990) has demonstrated high levels of reliability and clinical utility. The Y-BOCS computer interview closely follows the format of the semistructured clinician interview. The questions use the item probes and anchors provided by Goodman et al. (1986, 1989b), revised and clarified after review by two experienced psychiatrists and according to feedback from 10 OCD patients. In making the revision, special attention was given to preserving the original meaning while using simple and easy-to-understand vocabulary and syntax.

In the computer interview, patients are instructed to rate themselves by pressing the number corresponding to the anchor that describes them best. For example, level of impairment is assessed by the following question: "How much do your compulsive behaviors interfere with your social or work functioning? (If you are not currently working, please think about your everyday activities.)" Anchors for this question are 0 = *no interference*; 1 = *slight interference with social or occupational activities but overall performance not impaired*; 2 = *definite interference with social or occupational activities but overall performance not impaired*; 3 = *causes substantial impairment in social or occupational performance*; and 4 = *extreme, incapacitating*. After they make their ratings, patients review their answers and can change their responses if they so wish. This study was designed to assess the equivalence of the computer-administered Y-BOCS to the standard clinician-administered version.

Method

Subjects

Thirty five male and 35 female subjects, with ages ranging from 15 to 68 years ($M = 32.7$), participated in the study. Forty seven were outpatients from the Anxiety Disorders Center at the University of Wisconsin–Madison. Thirty one of these patients met *DSM-III-R* (*DSM-III-Revised*; American Psychiatric Association, 1987) criteria for OCD, and 16 were diagnosed with other anxiety disorders, including generalized anxiety disorder, panic disorder with or without agoraphobia, and other phobic disorders. Most of the patients were already participating in ongoing drug trials, and a minority were regular outpatients at the center. The remaining subjects were 23 nonpatient volunteers recruited through advertisement in the hospital, and most were medical students and staff members (not from the psychiatry department). All subjects were asked to participate in a study designed to develop new ways of assessing obsessive–compulsive symptoms.

The three groups—OCD, other anxiety disorders (ANX), and non-

patients (NP)—did not differ in sex ratio, but the NP group was younger ($M = 27.3$) than the ANX group ($M = 38.9$). None of the subjects had ever been interviewed with the Y-BOCS, although some of the subjects had answered questions related to obsessive–compulsive and anxiety symptoms that were included in paper-and-pencil questionnaires such as the Symptom Checklist–90 (Derogatis, 1983).

Procedure

Subjects from the patient groups had the standard screening procedure in the center, including several paper-and-pencil questionnaires and an interview with a psychiatrist, which included *DSM-III-R* diagnosis. The nonpatient volunteers completed the SCL–90 and were screened by a research staff member for prominent symptoms of anxiety, depression, or psychosis or for any psychiatric or psychological treatment in the last year (in fact, none were excluded on the basis of either the interview or SCL–90 scores). All subjects signed a consent form and took both interviews, which on average lasted approximately 40 min each (with a range of 25–90 min). Half of the subjects were randomly assigned to take the computer interview first, and half were first interviewed by a trained clinician.¹

In each interview, two sections were administered: first the Y-BOCS Symptom Checklist and then the 10-item scale. Both clinician and computer interviews began with a general explanation, which included examples regarding the nature of OCD symptoms. The clinician gave the instructions orally, and the computer program provided on-screen instructions that were advanced screen-by-screen by the patient. The clinician explicitly encouraged the subjects to ask questions. In the computer interview, subjects were also instructed to ask for assistance if needed, but the experimenter generally did not stay in the room (after preparing the patient to work with the computer) in order to maximize the use of the computer instructions only. After the two interviews, subjects completed a short paper-and-pencil questionnaire regarding their attitudes toward the two interview formats. The questionnaire asked subjects to rate the clarity and relevance of the computer interview, how comfortable they felt with it, how honest they were in responding, and their preference for this mode of administration as compared with the clinical interview.

Results

Figure 1 plots the clinician-administered and the computer-administered total Y-BOCS scores for each subject. Means and standard deviations of total and subscale scores of the Y-BOCS in the two forms of administration are given in Table 1.

Across the three subject groups, the scores of 75.7% of the subjects in the two Y-BOCS formats were within 3 points (out of the maximum of 40). As can be seen in Table 1, the scores were especially close in the OCD sample, where the mean difference between clinician- and computer-administered total Y-BOCS scores was .19. In the ANX and the NP samples, the patients rated themselves on the computer somewhat higher than the clinician had rated them (differences of 1.69 and 2.30, respectively). Planned comparisons (alpha set at .01) indicated that in both interview formats, the mean YB-TOT of the OCD group was significantly higher than that of each of the other two groups.

¹ Of the clinicians, three were trained to administer the Y-BOCS by W. Goodman; these three clinicians in turn trained the remaining clinicians. Training included supervised Y-BOCS rating of in-person and videotaped patients.

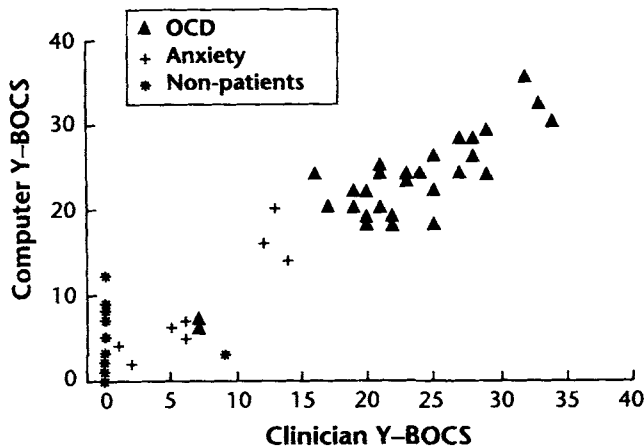


Figure 1. Plotted total Yale-Brown Obsessive-Compulsive Scale scores for each subject, according to form of administration.

Pearson correlations between the computer-administered and the clinician-administered YBOCS are given in Table 2. In the OCD sample, both total and subscale scores in the two forms of administration correlated very highly. The high correlations were maintained regardless of the order in which the interviews were administered. The correlations in the ANX group were slightly lower, at least partly because of a more limited range of scores (0-14 vs. 7-34 in the OCD sample) but still substantial. Finally, in the NP group the correlations were essentially zero, due to the lack of variability (all but 1 subject scoring 0) in the clinician-administered Y-BOCS scores.

Y-BOCS scores were not intended originally to be used for making a diagnosis of OCD or as cutoff scores, but rather for measuring severity of symptoms. Nevertheless, in recent drug studies in OCD (e.g., Baer et al., in press; Greist et al., 1990), a total Y-BOCS score of 16 or above has been adopted as an inclusion criterion. When this score is examined as a classification criterion in the present study (see Figure 1), we find that, with the exception of two ANX subjects who scored 16 and 20 on the computer, the same subjects were rated above or below the total score of 16 by the two forms of administration. In addition,

with the same exception, no ANX or NP subjects passed this criterion by either the computer or the clinician.

Subjects expressed a high level of satisfaction with the computer-administered Y-BOCS. Most patients reported they understood the questions at least "reasonably well" (93.9%) and were able to get their ideas across at least "reasonably well" (79.4%). The majority felt that the length of the interview was "just right" (84.8%) and that they were at least "somewhat" comfortable with this form of interview (78.8%). In fact, subjects had no preference for the clinician interview over the computer interview: 25% reported they would rather give the information to a clinician, 25% preferred the computer, and the rest (50%) had no preference.

Discussion

This is a first attempt to examine a new computer-administered version of the Y-BOCS, currently the best-validated scale for measuring the severity of obsessive-compulsive symptoms.

The high correlations and the small mean differences between the computer- and the clinician-administered versions of the YBOCS in the OCD sample suggest that the computer version is highly comparable to the clinician-administered version for measuring the symptomatology of OCD patients. In the ANX sample, and even more so in the NP sample, a somewhat different picture emerges, with subjects in these two groups rating themselves on the computer as experiencing more symptoms than observed by the clinicians. It seems that anxious and normal subjects rated different types of experiences, such as depressive ruminations, worries about school performance (many of them were medical students), and so forth as OCD symptoms. The clinicians, in contrast, distinguished better between "true" OCD and other types of obsessive thoughts and compulsive behaviors. (Another way of looking at this is that the clinicians were in fact biased in their tendency to dichotomize behaviors into normal and abnormal.) This is not necessarily a shortcoming of the computer interview: It simply means that the computer version of the Y-BOCS will tend to provide a more continuous score of obsessions and compulsions relative to the clinical interview. This quality man-

Table 1
Means and Standard Deviations of the Computer-Administered and the Clinician-Administered Versions of the Y-BOCS

Scale	Group											
	OCD (n = 31)				ANX (n = 16)				NP (n = 23)			
	Computer		Clinician		Computer		Clinician		Computer		Clinician	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Total	22.74	6.06	22.94	6.27	6.25	6.15	4.56	4.84	2.70	3.56	.39	1.88
YB-OBS	11.48	3.78	11.71	2.93	3.63	3.59	2.63	2.92	1.09	1.90	.22	1.04
YB-COM	11.16	3.76	11.23	4.34	2.63	3.10	1.94	2.62	1.61	2.31	.17	.83

Note. Y-BOCS = Yale-Brown Obsessive-Compulsive Scale; OCD = obsessive-compulsive disorder; ANX = other anxiety disorders; NP = nonpatients; YB-OBS = Y-BOCS Obsession subscale; YB-COM = Y-BOCS Compulsion subscale.

Table 2
Pearson Correlations Between the Computer-Administered and the Clinician-Administered Versions of the Y-BOCS

Scale	Group		
	OCD n = 31	ANX n = 16	NP n = 23
Total	.88*	.77*	.02
YB-OBS	.87*	.72*	-.01
YB-COM	.86*	.70*	.03

Note. Y-BOCS = Yale-Brown Obsessive-Compulsive Scale; OCD = obsessive-compulsive disorder; ANX = other anxiety disorders; NP = nonpatients; YB-OBS = Y-BOCS Obsession subscale; YB-COM = Y-BOCS Compulsion subscale.

* $p < .001$.

ifested itself only at the low end of the scale (in the non-OCD samples) and should have no effect in OCD samples.

This study did not directly examine the test-retest reliability of the computer-administered Y-BOCS. The reliability of the clinician-administered version, however, has been well established (Goodman et al., 1989b), so there is no a priori reason to question the test-retest reliability of the computer-administered version. Still, it might be advantageous to examine it directly by repeated administration in larger samples.

In conclusion, the computer-administered version of the Y-BOCS was highly comparable in the OCD sample to the clinician-administered version in this first validation study. The computer version was just as acceptable to subjects and has the additional advantages of eliminating interrater variability, being inexpensive, having on-line error checking, and capturing data in computer-processable form. Therefore, the computer-administered version of the Y-BOCS seems to have enough merit to continue examining its utility and limitations in multiple administrations in larger and more heterogeneous patient populations.

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