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# Congruence and discrepancy between self-rated and clinician-rated symptom severity on the Yale–Brown Obsessive-Compulsive Scale (Y-BOCS) before and after a low-intensity intervention

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ABSTRACT

The Yale–Brown Obsessive Compulsive Scale (Y-BOCS) is the most common measure of Obsessive-Compulsive symptom severity. The Y-BOCS interview is considered gold standard, but its self-rating format is increasingly used in clinical trials. Few studies investigated congruency and potential changes over treatment. This question is highly relevant, as a systematic bias might obscure results of clinical trials. We examined the relationship of self- and clinician-rated Y-BOCS scores in participants with obsessive-compulsive disorder in pre ($N$ = 128), post, (4 weeks, $n$ = 104) and follow-up (6 months, $n$ = 98) assessments of a randomized-controlled clinical trial. We administered Y-BOCS interview via telephone paralleling online administration of the self-report form. Analyses showed medium-to-strong correlations of Y-BOCS interview and self-rating scores at pre-assessment. Patients rated symptoms lower than clinicians. Larger discrepancies were associated with hoarding and age. Congruency was inferior for obsessions relative to compulsions, largely owing to the "resistance against obsessions" item. Agreement strongly increased at post and follow-up. Though overall congruency between the two Y-BOCS forms was satisfactory, results suggest a "correction over time" effect. Such bias may distort the precise interpretation of treatment effects. Therefore, we made several suggestions to improve the reliability of change scores assessed with the Y-BOCS self-rating.

## 1. Introduction

The Yale–Brown Obsessive Compulsive Scale (Y-BOCS) is the undisputed gold standard for the assessment of obsessive-compulsive (OC) symptoms and the most widely used instrument in both clinical and research settings. In fact, symptom change according to Y-BOCS assessments before and after treatment is the primary outcome measure in pharmacological and psychotherapeutic intervention trials for obsessive-compulsive disorder (OCD; e.g., see meta-analysis by Lopez-Pina et al., 2015). As a result, national and international guidelines for evidence-based interventions for OCD largely depend on the reliability and validity of the Y-BOCS.

Since the introduction of the Y-BOCS in 1989 by Goodman and colleagues, a large body of research has demonstrated overall good psychometric properties and clinical utility of the Y-BOCS interview in different samples (see review by Grabill et al., 2008; meta-analysis by Lopez-Pina et al., 2015).

Although the Y-BOCS has become the undisputable gold standard for assessing OCD severity, it has been criticized for its relatively poor economy and feasibility (see Grabill et al., 2008). In fact, administration of the Y-BOCS interview is time-consuming and demanding for both clinicians and patients. Moreover, to achieve a valid and reliable administration of the interview, clinicians need to be knowledgeable and experienced with both the disorder and the instrument (e.g., Rosenfeld et al., 1992; Sulkowski et al., 2008), requiring both clinical experience and intensive rater training. Even so, inter-rater differences cannot be fully ruled out (Grabill et al., 2008).

In order to circumvent these limitations, a self-report form of the Y-BOCS was developed in the early 1990s (Y-BOCS-SR; Baer, 1991), and several studies indicated high internal consistency of this form in both OCD (Baer et al., 1993; Rosenfeld et al., 1992; Steketee et al., 1996) and non-OCD samples (Olafsson et al., 2010; Steketee et al., 1996, 1996; Rosenfeld et al., 1992; Warren et al., 1993). In their review, Grabill et al. (2008) concluded that Y-BOCS-SR is a good measure of

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symptom severity but that its sensitivity to treatment effects has not yet been demonstrated.

There are good reasons to believe that self-assessed OCD symptom severity, and specifically change scores (i.e., differences from pre to post assessment), diverge from clinician ratings. One major cause may be insufficient understanding of OCD symptoms or low symptom insight among individuals with OCD, particularly uninformed individuals doing their first (pre-treatment) assessment. However, their understanding of OCD and symptom insight may increase over the course of (successful) treatment. If so, their second self-assessment will be based on higher symptom insight and increased self-awareness, most likely leading to a relative increase in the self-evaluated severity of the symptoms currently present. Such a "correction over time" bias in the Y-BOCS-SR would lead to higher congruence with the clinician evaluation at post relative to pre assessment but at the same time would obscure (i.e., underestimate) symptom change scores and hence treatment effects. In addition, the reliability of self-assessed symptom severity and change may be different across different symptom dimensions. Moreover, direct (e.g., Y-BOCS insight items) and indirect (e.g., previous psychotherapy) measures of insight as well as sociodemographic factors such as sex or age may have an impact on self-ratings.

Despite these potential problems, the Y-BOCS-SR is increasingly being used as the main and sometimes the only outcome measure (e.g., Herbst et al., 2014; Wootton et al., 2013; Wooton and Titov, 2010). If the assessment of symptom severity and change scores based on the Y-BOCS-SR were proven to be sufficiently congruent with the interview form, its administration would be an attractive and economic alternative in clinical and research settings. This would be particularly welcomed by the growing body of research investigating effects of remote media-delivered interventions that, by design, omit any face-to-face contact with a clinician (e.g., Internet-delivered cognitive-behavioral therapy, or iCBT). Moreover, administration of the self-rating form instead of the interview would conserve the scarce resources of trained personnel in the health-care system.

Unfortunately, only a few studies have systematically investigated the congruence between Y-BOCS and the Y-BOCS-SR. In an early study, Steketee et al. (1996) compared the Y-BOCS self-report and the interview for a single assessment of individuals with OCD ($n = 36$) and a student control sample ($n = 70$). All participants completed both the interview and a paper-and-pencil self-report form (Baer et al., 1991) within an interval of approximately one week, with a counterbalanced order of administration. The two forms showed strong association in Pearson's correlation analyses in both the OCD sample (total score: $r = 0.73$, obsessions $r = 0.78$ compulsions $r = 0.79$) and the nonclinical sample (total score: $r = 0.75$, obsessions $r = 0.65$, compulsions $r = 0.75$). For the former group, inter-item correlations ranged from $r = 0.41$ (resistance against obsessions) to $r = 0.71$ (time spent with compulsions). In the OCD but not in the nonclinical sample, total scores and subscores were significantly lower in the self-report form relative to the interview. The order of administration had no effect. Federici et al. (2010) assessed 86 individuals with a primary OCD diagnosis with the same Y-BOCS self-report form (Baer et al., 1991), followed by the interview two weeks later. They reported higher scores in the interview compared to the self-report version for the total scale and the compulsions subscale but not for the obsessions subscale. Intraclass correlations were moderate to strong (total score $r = 0.64$, obsessions $r = 0.45$, compulsions $r = 0.65$). Consistent with the findings of Steketee et al. (1996), the lowest inter-item correlation was found for the resistance item on both subscales which was even lower for obsessions ($r = 0.26$) than compulsions ($r = 0.45$). Results showed no systematic difference between the two Y-BOCS versions. However, the authors pointed out a nonsignificant tendency to rate higher symptom severity in the interview relative to the self-report version. The authors interpreted their results as only moderately supportive of the convergence of the self-report and clinician-administered Y-BOCS. They pointed out that the findings of lower convergence for the obsessions subscale require further attention. They explicitly called for future studies, including repeated testing before and after an intervention.

Huh et al. (2013) assessed a sample of 106 OCD patients with the clinician-administered Y-BOCS followed by the completion of the self-report approximately eight days later. Results showed higher total scores for obsessions but not compulsions in the interview relative to the self-rating form. Intra-class correlations (ICC) were strong: total score: $r = 0.70$; obsessions: $r = 0.61$; compulsions: $r = 0.68$. Analyses at item level again showed the lowest correlations for resistance against both obsessions and compulsions (both $r = 0.44$) and the highest for distress caused by compulsions ($r = 0.63$). Similarly, Storch et al. (2016) found that the Y-BOCS-SR generated lower scores compared to the interview in 67 participants with OCD. Whereas correspondence between the total scores of the two forms was strong (Pearson correlations: $r = 0.57$), the resistance and control against obsessions (ICC: $r = 0.34$, $r = 0.44$) and against compulsions (ICC: $r = 0.54$, $r = 0.56$) items only showed fair to moderate agreement. Depression was found to be a significant moderator.

The only study in which congruence for the two Y-BOCS forms was assessed at more than one time point was conducted on a small sample of 28 individuals with OCD prior to and following approximately nine weeks of inpatient treatment (Schaible et al., 2001). At both time points, all participants completed the self-rating form before the interview. The intra-class correlations between the two forms was very strong for the total score at pre assessment, $r = 0.83$, and increased at post assessment, $r = 0.93$. Change scores were also highly correlated, $r = 0.81$. No significant difference between self- and clinician-rated mean scores were found at pre assessment, but at post assessment, the total score was slightly lower due to the interview scores; clinicians rated symptom improvement somewhat higher than patients did.

To summarize, although findings of the few studies investigating the congruence of the two Y-BOCS forms yielded evidence for their overall moderate-to-high convergence at a single assessment, several important discrepancies have become apparent that warrant further attention. These include the tendency for lower scores in the self-rating compared to the interview and relatively poor congruence for the rating of obsessions, particularly the "resistance against obsessions" item. Importantly, only one study compared the Y-BOCS self-rating and interview forms before and after treatment, showing an increase in congruence from pre to post assessment in the small inpatient sample. None of the studies included a third (follow-up) assessment. As pointed out above, it is highly important to investigate the congruence of the Y-BOCS interview and self-rating via repeated assessments over the course of treatment as there are good reasons to assume systematic biases such as a "correction over time" effect in the self-rating. If such a bias becomes evident, the results of the increasing number of clinical trials relying solely on Y-BOCS-SR have to be interpreted with caution. Notably, studies investigating congruence between self- and clinician-rated measures of depression over the course of treatment have demonstrated an increase in agreement with repeated testing (Dunlop et al., 2010; Sayer et al., 1993; Senra Rivera et al., 2000). In OCD, the impact of increased understanding and symptom insight on self-rated symptom severity may be even more pronounced. Finally, OCD is a complex disorder with various symptom dimensions and idiosyncratic presentations (e.g., ranging from high to no symptom insight), which makes it important to investigate which factors promote congruence and which promote discrepancy.

We aimed to investigate the congruence and discrepancy of OCD symptom severity and symptom change scores between clinician-rated and self-rated Y-BOCS assessments in the course of low-intensity intervention and multiple testing (pre, post, follow-up). Another goal of the study was to explore which factors account for observed discrepancies.

In view of previous results, we expected moderate to good convergence at baseline. Based on preliminary evidence (Schaible et al.,

2001) and the assumptions outlined above, we expected that congruence would further improve at post and follow-up assessments. Additionally, we aimed to explore the relationship between observed discrepancies and basic sociodemographic variables (sex, age), direct and indirect indicators of insight (psychotherapy vs. no psychotherapy, duration of illness, Y-BOCS insight item), and psychopathological characteristics (OCD dimensions according to the Obsessive-Compulsive Inventory-Revised, OCI-R, Foa et al., 2002, German version by Gönner et al. (2008); depression according to the Beck Depression Inventory, BDI-I, Beck and Steer, 1993), all of which can be assumed to impact individuals' symptom self-report (e.g., see Schneibel et al., 2012).

## 2. Method

### 2.1. Study design

We administered both Y-BOCS forms to a baseline sample of 128 people with OCD with post (4 weeks) and follow-up (6 months) assessments in the context of an online randomized controlled trial. At all three time points, participants completed the Y-BOCS self-rating form online, after which a clinician-administered version was conducted by a telephone interview. Between pre and post assessments participants received one of two low-intensity interventions (the metacognitive self-help book *myMCT* or psychoeducational material), which are briefly described in Section 2.2.2. Methods and results of the intervention trial are described in detail elsewhere (Hauschildt et al., 2016).

#### 2.2.1. Participants and procedure

Participants were recruited via German Internet forums devoted to OCD (e.g., www.zwange.de), leaflets distributed by an OCD-specific self-help organization (German Association for OCD), and staff at inpatient and outpatient facilities. A web-link directed interested individuals to the online survey. Study participation required willingness to participate in the online surveys and subsequent diagnostic telephone interviews at three points in time. Participants were informed that they would be randomly allocated to receive either the self-help manual *myMCT* or an "information package" including psychoeducational material on OCD. It was made clear that participation was anonymous and would not include any face-to-face contact with a clinician or investigator. A financial reimbursement of 60€ (online voucher) was offered for full adherence. A total of 157 participants completed the initial online survey and left their email addresses for further study participation. Inclusion criteria were age above 18 and below 75 years, a current diagnosis of OCD (DSM-IV criteria based on the Mini International Neuropsychiatric Interview (MINI: Sheehan et al., 1998), and Y-BOCS interview total score ≥ 8. The low cut-off was chosen to include individuals with mild forms of OCD and to not restrict variance in the data. Acute suicidal ideation, lifetime psychotic symptoms, or current substance or alcohol dependence (verified by the MINI interview) led to exclusion from the study.

Participants gave electronic informed consent before starting the baseline survey. In addition to psychometric scales (see detailed description below), the online survey asked for demographic data, treatment status, and history. The telephone interview was scheduled within three days of the completion of the online survey. A total of 128 individuals met the inclusion criteria and were randomized to one of the two interventions, including post and follow-up assessments. Of these, 104 (81.3%) participated in the post assessment and 98 (76.6%) the 6-month follow-up. The study was approved by the ethics committee of the medical council Hamburg (Ethik-Kommission der Ärztekammer Hamburg, PV3671).

#### 2.2.2. Low-intensity interventions

All participants were randomly allocated to receive one of the two remote low-intensity interventions, *"myMCT"* or "*Information package*". myMCT, short for *"My metacognitive training"* is a self-help book for individuals with OCD which provides educational information and instructions and assignments for self-application. The book aims to educate individuals about core features of OCD, to detect cognitive biases, dysfunctional (metacognitive) beliefs and coping strategies that underlie or maintain OCD symptomatology, and to convey alternative strategies. The *"Information package"* is a selection of standard written materials (i.e., as distributed by the German Society for OCD) comprising information about the core features of OCD, obsessions, compulsions, and further typical symptoms, basic models of OCD development, vicious circles and dynamics of its maintenance, as well as the introduction of several approaches to treat OCD.

### 2.3. Measures

#### 2.3.1. Y-BOCS interview

The Yale–Brown Obsessive Compulsive Scale (Y-BOCS; Goodman et al., 1989a, 1989b) is a manualized, semi-structured interview. It is comprised of a comprehensive symptom checklist to identify the specific type and content of OC symptoms in addition to a 19-item rating scale whose first ten items make up the Y-BOCS total score. These ten items are divided into two subscales that separately measure obsessions and compulsions on the following five aspects: (1) time spent with obsessions/compulsions, (2) interference by obsessions/compulsions, (3) distress caused by obsessions/compulsions, (4) resistance against obsessions/compulsions, and (5) perceived control over obsessions/compulsions. Based on the individual's answers, the interviewer provides a rating on a 5-point scale ranging from 0 (none) to 4 (extreme) for each item. The main scores derived from the scale are a total score (with a range from 0 to 40) and subscores for obsessions and compulsions (each with a range of 0–20). The interview also includes additional items tapping insight, avoidance, difficulties in making decisions, overresponsibility, slowness, and pathological doubt, as well as three further items on which the interviewer may rate the overall severity of the disorder, estimated reliability of the rating, and overall symptom improvement, if applicable. As mentioned, however, the last nine items are not added to any of the scores.

In the present study, the German version of the Y-BOCS interview (Hand and Büttner-Westphal, 1991), which has shown good internal consistency and inter-rater reliability (Jacobsen et al., 2003), was administered at pre, post, and follow-up via telephone by four psychologists (three with M. Sc. and one in final phase of master degree in psychology) all of whom had undergone a specific Y-BOCS rater-training prior to the trial. Interviewers were blind to participants' self-rating score and intervention condition. According to the manualized instructions, the interviewer first provided a brief definition of the concepts of obsessions and compulsions before the most relevant symptoms were identified by means of the symptom checklist. Subsequently, interviewers rated obsessions and compulsions separately on the two subscales, including the five items mentioned above, for the respective past seven days. Additional items were applied but not included in the subtotals and total scores.

#### 2.3.2. Y-BOCS self-reporting

At all three time points, participants completed the self-report form of the Y-BOCS (Y-BOCS-SR; Baer et al., 1991; German version Schaible et al., 2001) as part of an online survey prior to the administration of the Y-BOCS interview. To ensure a genuine evaluation of current symptoms, the instructions made very clear that the Y-BOCS-SR was referring each time (pre, post, and follow-up) to the time period of only seven days prior to the respective assessment.

Similarly to the interview form, participants first received brief written information about the concepts of obsessions and compulsions followed by the instruction to identify and write down their main obsessions and/or compulsions. Subsequently, participants rated obsessions and compulsions separately on the five core items (time spent,

interference, distress, resistance, control) and six additional items regarding the past seven days. As in the interview form, ratings were made on 5-point scales from 0 (none) to 4 (extreme).

#### 2.3.3. Other measures

The MINI based on DSM-IV diagnostic criteria was administered as part of the telephone interview to verify the diagnosis of OCD and to determine potential comorbidities, of which some were previously defined as exclusion criteria (see above). In addition to the Y-BOCS-SR, the online survey included online versions of the well-established OCI-R and the BDI-I.

### 2.4. Strategy of data analyses

Given our particular research question, we were advised to carry out analyses for all complete cases (CC) of the sample for which data was available at the particular assessment (i.e., baseline: $n = 128$, post: $n = 104$; follow-up: $n = 98$), instead of intention-to-treat (ITT) analyses with missing data estimated through multiple imputations (MI) or last-observation-carried-forward (LOCF), which are common in *clinical* trials. Decreasing sample sizes from pre to post and follow-up are due to drop-out, commonly seen in longitudinal (clinical) trials. However, with 81.3% (post-assessment) and 76.6% (6-months follow-up), the present study achieved highly satisfactory completion rates, especially given that the trial included only a remote low-intensity intervention with no face-to-face contact with a clinician or researcher. Completer vs. non-completer analyses with regard to relevant baseline moderators and primary outcome were carried out in order to control for systematic differences, for results, see Table 3.

As both interventions included psychoeducation about OCD symptoms, which was hypothesized as main impact factor on increase in congruence over time, our primary analyses were carried out for the complete sample, across intervention conditions. To examine congruence between the two Y-BOCS forms, we calculated both Pearson's and intra-class correlations for the main scores (total, obsessions and compulsions subscores) at all three time points as well as item-level correlational analyses for a more in-depth investigation. We compared correlational coefficients using *S*teiger's *Z* test analyses (Steiger, 1980). Mean total and subscores of the self-reports and interviews were compared using *t*-tests for dependent samples. To determine congruence between self- and clinician-rated levels of symptom change from pre to post and pre to follow-up assessments, we calculated Pearson correlations for the difference scores, following Schaible et al. (2001).

To further elucidate the role of our selected potential moderators (i.e., age, sex, OCD duration, OCI-R total and symptom dimension subscores, BDI total score, Y-BOCS insight item, previous psychotherapy), we conducted additional correlational analyses and subsequent multiple linear regression models, or *t*-tests for the categorical variables, with observed discrepancies. Hierarchical regression models were selected, with those factors that had shown significant correlations with absolute discrepancies in the previous correlation analyses entered first, and then all remaining variables were entered in a second step. To analyze the impact of the potential moderators on the observed discrepancies, two different discrepancy scores were calculated for the Y-BOCS total and subscores at each of the three time points: (a) absolute discrepancy scores (Abs. Discrepancy = |expert-rated – self-rated Y-BOCS scores|, i.e., scores > 0: deviance of self- versus expert rating), (b) relative discrepancy scores (Rel. Discrepancy = expert-rated – self-rated Y-BOCS scores, i.e., scores > 0: over-reporting; scores < 0: under-reporting).Three multiple linear regression models were carried out to determine which of the selected factors explained the independent variance of absolute discrepancies between the self- and clinician-rated Y-BOCS scores at each time point (pre, post, follow-up). An alpha level of 0.05 (two-tailed) was used for all statistical tests. SPSS 24 was used to conduct all analyses.

**Table 1**
Sociodemographic and psychopathological sample characteristics: means (standard deviations) or numbers.

| OCD sample | Baseline ($n = 128$) | Post ($n = 104$) | Follow-up ($n = 98$) |
|---|---|---|---|
| Sex (male/female) | 42/86 | | |
| Age | 39.02 (10.76) | | |
| Duration of OCD (months) | 228.85 (138.93) | | |
| Previous PT (yes/no) | 77/51 | | |
| OCI-R | | | |
| *total* | 24.03 (10.83) | 21.57 (10.01) | 20.81 (11.82) |
| *Obsessing* | 5.85 (3.41) | 5.30 (3.31) | 4.84 (3.18) |
| *Neutralizing* | 2.55 (2.95) | 2.08 (2.71) | 2.07 (2.67) |
| *Washing* | 4.46 (4.28) | 4.38 (4.08) | 3.88 (3.88) |
| *Checking* | 5.01 (3.89) | 4.38 (3.55) | 4.48 (3.81) |
| *Hoarding* | 2.33 (3.18) | 1.96 (2.90) | 2.01 (2.85) |
| *Ordering* | 3.83 (3.70) | 3.47 (3.48) | 3.48 (3.36) |
| Y-BOCS insight | 1.91 (0.86) | 1.88 (0.91) | 1.92 (0.90) |
| BDI | 17.29 (9.10) | 14.24 (9.37) | 12.95 (9.76) |

Note. PT = Psychotherapy.

**Table 2**
Means (standard deviations) and Pearson correlations of clinician-rated and self-rated Y-BOCS scores at pre, post, and follow-up.

| | Pre ($n = 128$) | Post ($n = 104$) | Follow-up ($n = 98$) |
|---|---|---|---|
| Y-BOCS total | | | |
| Clinician rating | 22.01 (6.50) | 19.51 (7.28) | 17.82 (7.77) |
| Self rating | 19.99 (6.14) | 18.77 (6.27) | 17.21 (7.03) |
| Pearson correlation | 0.60** | 0.86** | 0.83** |
| ICC correlation | 0.75** $F(3.99)$, CI: 0.64–0.82 | 0.92** $F(12.02)$, CI: 0.88–0.94 | 0.91** $F(10.58)$, CI: 0.86–0.94 |
| Y-BOCS Obsessions | | | |
| Clinician rating | 11.14 (3.73) | 9.82 (3.88) | 8.92 (4.24) |
| Self rating | 10.00 (4.00) | 9.56 (3.23) | 8.64 (4.07) |
| Pearson correlation | 0.53** | 0.78** | 0.73** |
| ICC correlation | 0.69** $F(3.27)$, CI: 0.57–0.78 | 0.87** $F(7.70)$, CI: 0.68–0.84 | 0.85** $F(6.52)$, CI:0.77–0.90 |
| Y-BOCS Compulsions | | | |
| Clinician rating | 10.87 (4.46) | 9.69 (4.45) | 8.90 (4.74) |
| Self rating | 9.99 (4.44) | 9.21 (4.40) | 8.57 (4.54) |
| Pearson correlation | 0.66** | 0.87** | 0.85** |
| ICC correlation | 0.80** $F(4.96)$, CI: 0.71–0.86 | 0.93** $F(14.72)$, CI: 0.90–0.95 | 0.91** $F(10.58)$, CI: 0.86–0.94 |

** $p < 0.001$; CI = Confidence Interval (95%).

## 3. Results

### 3.1. Sample characteristics

The main sociodemographic and clinical characteristics of the baseline sample are presented in Tables 1 and 2. On average, participants were in their late 30s, and twice as many were female as were male. OCD symptom severity (according to the Y-BOCS interview) was moderate to high: 17% ($n = 22$) had mild symptoms (Y-BOCS score 8–15), 42% ($n = 54$) had moderate symptoms (Y-BOCS 16–23), and 41% ($n = 52$) had severe to extreme symptoms (Y-BOCS ≥ 24). On average, participants showed mild to moderate levels of comorbid depression (BDI-I score: $M = 17.29$, $SD = 9.10$). Average self-estimated duration of OCD was long ($M = 228.85$ months, $SD = 138.93$), and 77 (60.2%) participants reported that they had previously completed psychotherapy. Results for completer vs. non-completer analyses are displayed in Table 3.

### 3.2. Consistencies and discrepancies between clinician-rated and self-rated Y-BOCS scores

All mean scores and standard deviations for Y-BOCS total and subscales on both forms and the three time points are presented in Table 2.

**Table 3**
Completers vs. non-completers comparisons.

| Variables | Completers ($n$ = 98) | Non-completers ($n$ = 30) | Statistics |
|---|---|---|---|
| Sex (male/female) | 32/66 | 10/20 | $\chi^2(1) = 0.01$, $p = 0.945$ |
| Age in years | 40.89 (10.56) | 32.93 (9.17) | $t(126) = 3.72$, $p = 0.000$ |
| Previous PT (yes/no) | 59/39 | 18/12 | $\chi^2(1) = 0.01$, $p = 0.984$ |
| Y-BOCS insight | 1.88 (0.85) | 1.90 (0.92) | $t(126) = 0.12$, $p = 0.902$ |
| BDI total | 17.07 (9.22) | 18.00 (8.66) | $t(126) = 0.49$, $p = 0.625$ |
| Y-BOCS Discrepancy[a] | | | |
| Total score | 1.76 (5.51) | 2.87 (6.13) | $t(126) = 0.94$, $p = 0.349$ |
| Obsessions | 1.01 (3.76) | 1.57 (3.73) | $t(126) = 0.71$, $p = 0.479$ |
| Compulsions | 0.81 (5.78) | 1.07 (6.27) | $t(126) = 0.21$, $p = 0.833$ |

[a] Discrepancy between Y-BOCS Interview vs. self-rating at baseline.

Both the Pearson (Table 3) and intra-class correlations (Table 2) show that at pre assessment the scores attained on the interview and self-rating forms correlated significantly at a medium to high magnitude, with the lowest correlation found for obsessions (ICC $r = 0.69$; Pearson $r = 0.53$). Notably, all Pearson and intra-class correlations largely and significantly increased from pre to post (all $p$'s $< 0.001$) and from pre to follow-up (all $p$'s $< 0.01$) assessments.

Results of Pearson's correlation analyses on the item level are displayed in Table 4. As can be seen, at pre assessment all clinician-rated and self-rated items correlated significantly (all $p$'s $< 0.05$). Generally, intercorrelations were of moderate to strong magnitude and were higher for items on compulsions relative to obsessions. The congruence of all item scores increased numerically from pre to post and follow-up assessments. This increase was significant for most but not for all items (obsessions: time spent, distress; compulsions: interference, resistance; $p$'s $> 0.05$). The highest agreement between clinicians and patients was found for "time spent with compulsions" at post ($r = 0.80$) and "distress from compulsions" at post ($r = 0.81$) and follow-up ($r = 0.82$). An exception to this pattern was found for the "resistance against obsessions" item, for which only a very weak agreement was found at pre assessment ($r = 0.18$), with the most pronounced and significant increase ($Z = -3.31$, $p < 0.001$) after the intervention ($r = 0.55$), but again there was a strong decline at follow-up assessment ($r = 0.27$).

Group comparisons showed a consistent pattern of lower means on the Y-BOCS-SR relative to the interview on all scores (i.e., total, obsessions, compulsions) and time points. However, differences between the mean scores were small and declined with repeated testing; whereas total scores differed by about two points at pre assessment, $M_{Diff} = 2.02$, $SD = 5.67$, $t(127) = 4.03$, $p < 0.001$, the difference dropped below one point at post assessment, $M_{Diff} = 0.93$ $SD = 3.78$, $t(102) = 2.50$, $p = 0.014$, and decreased even further to half a point at follow-up assessment, $M_{Diff} = 0.5$ $SD = 4.37$, $t(96) = 1.19$, $p = 0.239$. Note that additional analyses comparing discrepancies between Y-BOCS interview and Y-BOCS-SR between the two intervention conditions confirmed that interventions did not have significant differential effects on Y-BOCS interview versus SR difference scores (all $p$s $> 0.170$).

**Table 4**
Inter-item- Person's correlations for Y-BOCS self- report and interview at pre, post, and follow-up.

| | Pre | Post | Follow-up |
|---|---|---|---|
| Obsessions: | | | |
| Time spent | 0.61*** | 0.66***. | 0.74*** |
| Interference | 0.58*** | 0.73*** | 0.71*** |
| Distress | 0.52*** | 0.60*** | 0.65*** |
| Resistance | 0.18* | 0.55*** | 0.27** |
| Control | 0.40*** | 0.58*** | 0.60*** |
| Compulsions: | | | |
| Time spent | 0.61*** | 0.80*** | 0.77*** |
| Interference | 0.63*** | 0.72*** | 0.66*** |
| Distress | 0.60*** | 0.81*** | 0.82*** |
| Resistance | 0.49*** | 0.64*** | 0.54*** |
| Control | 0.47*** | 0.73***. | 0.68*** |

Note: Pre: $n = 128$; Post: $n = 104$, Follow-up: $n = 98$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.000$.

### 3.3. Congruence of symptom change

To determine congruence of self- and clinician-rated levels of symptom change from pre to post and pre to follow-up assessments, Pearson correlations were calculated for the difference scores following Schaible et al. (2001). Results showed a medium-sized correlation for pre-post change on the Y-BOCS total score ($r = 0.39$, $p < 0.001$). For change ratings from pre to follow-up, congruence further improved ($r = 0.45$, $p < 0.001$).

### 3.4. Potential moderators for discrepancy between self-rated and clinician-rated Y-BOCS scores

Discrepancy scores were submitted to either exploratory correlational analyses (continuous variables) or $t$-tests (categorical variables) with the pre-selected potential moderators. Pre-selected potential moderators were correlated with relative and absolute discrepancy scores (for definitions, see Section 2.4). All variables and results are displayed in Table 1 of the Appendix. Several significant correlations emerged. Most notably, at pre assessment, higher scores on the OCI-R obsessing subscale were correlated with lower discrepancies between Y-BOCS self- and clinician ratings. A negative correlation with relative discrepancies indicated that a higher OCI-R score on obsessing was associated with higher self-reported versus clinician-rated Y-BOCS scores. In contrast, at post and follow-up assessments, hoarding was highly and positively correlated with absolute discrepancies. Here, positive correlations with the relative discrepancy score indicate that higher hoarding was associated with patients' underreporting on the Y-BOCS relative to the experts. Age, illness duration, low insight (post) as well as depression (post and follow-up) were associated with patients' underreporting of obsessions but not compulsions on the Y-BOCS.

For the two categorical variables (male vs. female, psychotherapy vs. no psychotherapy), $t$-tests for independent samples were calculated with absolute Y-BOCS discrepancy scores as dependent variables. Results showed that men and women did not differ in discrepancies between self- and clinician rating on baseline Y-BOCS total scores or subscores (all $p$'s $> 0.67$). However, for those individuals who had received psychotherapy ($n = 77$) versus those who had not ($n = 51$) at baseline, the $t$-test showed a significantly lower discrepancy on the obsession subscale, $M = 2.05$ (2.37) vs. $M = 3.69$ (3.18), $t(85.87) = -3.14$, $p = 0.002$, but not on the compulsions or total score ($p$'s $> 0.26$).

As a last step, three multiple linear regression models were calculated to predict absolute discrepancy for the Y-BOCS total scores at each time point (pre, post, follow-up assessments). As independent variables, we entered all potential predictors displayed in Table 1, Appendix for the respective time point. For all three analyses, the second model that included all factors explained slightly more overall variance compared

to the first. For the absolute discrepancy at pre assessment, a significant regression equation was found, $F$ (12,115) = 2.04, $p$ = 0.027, with an $R^2$ of 0.18 ($\Delta R^2$ for step 2 = 0.04). Obsessing ($\beta$ = −0.33, $p$ = 0.001), OCD duration ($\beta$ = −0.23, $p$ = 0.026), and age ($\beta$ = 0.23, $p$ = 0.023) were significant predictors (all other $\beta$'s ranged from −0.10 to 0.15, all $p$'s > 0.1).

For discrepancy at post assessment, a significant regression equation was found, $F$(12, 90) = 5.27, $p$ < 0.001) with an $R^2$ of 0.41 ($\Delta R^2$ = 0.03). Hoarding ($\beta$ = 0.55, $p$ < 0.001) and age ($\beta$ = 0.22, $p$ = 0.022) were significant predictors (all other $\beta$'s ranged from −0.12 to 0.15, all $p$'s > 0.1).

At follow-up assessment, the regression equation failed to reach significance level, $F$(10, 86) = 1.85, $p$ = 0.064) with an $R^2$ of 0.20, ($\Delta R^2$ = 0.15). OCI-R ordering ($\beta$ = −0.35, $p$ = 0.012), BDI ($\beta$ = 0.29, $p$ = 0.019), and OCD duration ($\beta$ = −0.23, $p$ = 0.045) were significant predictors (all other $\beta$'s ranged from −0.11 to 0.19, all $p$'s > 0.09). Table 2 in the Appendix shows all factors and parameters for all models.

## 4. Discussion

The present study investigated the congruence and discrepancy of self- and clinician-administered Y-BOCS scores at pre-post (4 weeks) and follow-up (6 months) assessments in a large sample of individuals with OCD who received one of two low-intensity interventions. In line with previous studies (Federici et al., 2010; Huh et al., 2013; Schaible et al., 2001; Stekeete et al., 1996) we found a medium to strong congruence between the Y-BOCS interview and self-rating at baseline assessment, which was higher for the compulsions than the obsessions subscale. As in most previous studies (Federici et al., 2010; Hu et al., 2013;Steketee et al., 1996), patients rated their own symptoms as less severe than did the clinicians. However, in our study these differences were rather small, though statistically significant at pre and post but not at follow-up assessment.

Importantly, we found that the congruence between the Y-BOCS forms increased at the second and third assessments subsequent to low-intensity psychoeducational intervention. At follow-up assessment, the difference between self-rated and clinician-rated scores was neither statistically nor clinically significant (i.e., less than 1 point on the scale; see Table 2). However, symptom change scores showed only medium-sized agreement between the two forms. Analyses at the subscale and item level revealed that the higher congruence at post and follow-up was mostly attributable to increased agreement on the obsessions subscale. This finding indicates that, initially, individuals with OCD evaluate the degree and impact of their *compulsions* similarly to clinicians, but they are less (or differently) aware of the nature and extent of their *obsessions*. By post assessment, their understanding of obsessions seems to be considerably altered, resembling that of clinicians.

A specific note should be made in regard to the "resistance against obsession" item, which previous studies have repeatedly identified as problematic (e.g., Steketee et al., 1996; Storch et al., 2010; but see Jacobsen et al., 2003). In our study, patients and clinicians showed little agreement in their ratings of resistance against obsessions at baseline, but congruence for this item significantly increased at post assessment. However, in contrast to the other items, congruence again declined sharply six months later. This pattern suggests that, relative to the other Y-BOCS items, resistance against obsessions ("How much of an effort do you make to resist the obsessive thoughts?") represents a more complex and non-self-explanatory construct. To address this complexity, the interview form includes comprehensive instructions for clinicians on how to rate this item, explaining that resistance (other than avoidance or compulsions) is understood as a "manifestation of health," with higher resistance indicating less impaired functioning and hence a lower item score. However, in CBT, and especially its "third-wave" approaches such as mindfulness-based therapy (for a review see Hale et al., 2013) or acceptance and commitment therapy (Hayes et al., 2006), patients are encouraged to do the exact opposite, namely, to refrain from struggling with or attempting to suppress obsessive thoughts because such efforts are known to have a paradoxical effect (e.g., Purdon and Clark, 2000; Salkovskis, 1989). Whereas the interview guidelines take this into account by instructing clinicians to rate the use of this type of strategy as a form of "passive opposition" (i.e., high use of mindful acceptance of obsessive thoughts leading to lower scores on the scale), the self-rating form does not include such instructions. Even for trained interviewers, it may be difficult to distinguish between dysfunctional "submission" to and functional "acceptance" of obsessive thoughts; for (uninformed) patients, this distinction clearly represents an unreasonable demand. Consequently, it is not surprising that this item has repeatedly shown the least congruence between self- and clinician-rating. As our results show, a higher consensus in regard to this item can be reached following a brief CBT-based psychoeducational intervention and/or as a consequence of undergoing the Y-BOCS interview and self-rating for a second time in four weeks. This shared understanding, however, may not be sustained over a longer time span, as suggested by our finding of decreased congruence again at the 6-month follow-up. Notably, the interventions applied in our study were low-intensity approaches for self-application. The "correction over time" effect we observed may be even stronger and more stable when patients undergo comprehensive psychotherapeutic treatment.

In order to elucidate the factors that may explain the observed discrepancies between the Y-BOCS self-report and interview, we investigated the role of potential moderators in additional exploratory analyses. Several significant correlations emerged between the selected factors and relative and absolute discrepancy scores, but only a few of them were shown to account for independent variance in subsequent regression analyses. Of these, hoarding tendencies showed the highest impact because the hoarding OCI-R subscore strongly predicted absolute discrepancies between patient and clinician ratings. Positive correlations with relative discrepancies indicated that stronger hoarding tendencies were associated with an *under*reporting of OCD symptoms.

Notably, at pre and follow-up assessments, only a small proportion (about 20%) of variance was explained by the regression models. The modest fit of the model indicates that various other factors, not investigated in our study, must have impacted the observed discrepancies at pre and follow-up assessments. At post assessment, some of these factors may have been eliminated or reduced by a greater shared understanding of OCD and stronger motivation to change in most participants, accounting for a much better fit of the regression model (41% explained variance). The finding that hoarding tendencies were still a strong predictor for discrepancies at post assessment—when overall congruence had largely increased—suggests that for hoarding, in contrast to the other OCI-R symptom dimensions, an increase of insight could not be reached. This corresponds with current evidence that the OCD hoarding subtype is distinctive from other OCD subtypes (Williams and Viscusi, 2016) and is associated with lower insight (Samuels et al., 2002) and little motivation to change (Grisham et al., 2005; Wheaton et al., 2008). These characteristics have led to a reclassification of hoarding as a distinct disorder now subsumed under "Obsessive-Compulsive and Related Disorders" in the most recent (5th) edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; American Psychiatric Association, 2013).

The present study is among the first to examine the congruence between the Y-BOCS self-rating and interview forms in multiple assessments before and after an intervention and to investigate potential moderating factors. Further strengths are the large sample size of individuals with OCD and the inclusion of a 6-month follow-up assessment. At the same time, several limitations are also noteworthy. First, we administered the Y-BOCS interview via telephone, and differences from the more conventional face-to-to face administration cannot entirely be ruled out. Second, in our study all participants received a low-intensity intervention. Therefore, we were not able to address the question of the extent to which the increase in congruence between the self- and clinician-rated Y-BOCS scores is a result of the intervention or,

alternatively, a result of the repeated administration of both measures (which is not common practice in clinical reality). The mere administration of both interview and self-report likely raises awareness and self-observation of symptoms, the interview clearly doing so to a higher extent. The administration of the Y-BOCS itself is also likely to facilitate shared terminology and understanding of the disorder between individuals with OCD and clinicians, leading to more congruent ratings. Future studies should specifically target this question by comparing congruence over repeated Y-BOCS assessments between OCD samples with and without treatment. Of note, our sample included mild cases of OCD (Y-BOCS total score ≥ 8), unlike in most clinical studies which commonly apply a higher cut-off. Third, although our exploratory analyses of potential moderators yielded interesting findings, these results have to be regarded as preliminary. For exploratory purposes, we calculated many correlation coefficients without correcting for multiple tests, and some of the significant correlations might not have withstood such correction. However, in a subsequent regression model, hoarding was confirmed as the most important predictor for discrepancy at post assessment, explaining a substantial part of the variance. Subsequent studies should specifically investigate the reliability of the Y-BOCS-SR (and of self-rating in general) in this subgroup.

## 5. Conclusions and implications

Overall, our results demonstrate good correspondence of the mean symptom severity scores of the two Y-BOCS forms; however, their congruence seems less satisfactory in the assessment of symptom change. Our findings suggest a “correction over time” effect in the self-rating form, which is primarily evident for “resistance against obsessions.” In our study, relative to baseline, considerably higher consensus between patients and clinicians was reached in a second assessment following a low-intensity psychoeducational intervention. Whereas this finding seems desirable from a clinical point of view—assuming that an increased shared understanding of a major maintaining factor for OCD builds a good basis for better treatment response—it is problematic from a methodological perspective because it may undermine the validity of the assessment of actual treatment effects. Moreover, despite the observed increase in congruence in the overall sample at post assessment, individuals with high hoarding symptoms showed persistently low symptom awareness, which compromises the reliability of self-rating in this subgroup.

Reviewing the present and previous results, we recommend the use of the Y-BOCS interview form, administered by well-trained interviewers, as first choice for clinical and research purposes if availability of resources and study design allow for it. Considering the increasingly high demand for a valid self-rating instrument (e.g., for use in online trials of remote interventions), we further suggest revising the Y-BOCS-SR. This can be done either by including instructions on how to rate the “resistance against obsessions” item, paralleling the instructions for clinicians in the interview form, or by creating a Y-BOCS self-rating form that corresponds to the recently revised version of the interview, the Y-BOCS-II (Storch, et al., 2010). In this revised version, among other amendments, the “resistance against obsessions” item was replaced with an “obsession-free interval” item (original item 1b, which did not contribute to the score). Initial studies have shown good psychometric properties of the Y-BOCS-II interview (Storch et al., 2010).

Finally, preliminary evidence for the reduced reliability of self-rating by individuals with hoarding tendencies indicates that researchers and clinicians should interpret self-rated Y-BOCS severity and change scores with caution or consider refraining from the use of the Y-BOCS self-rating form in this subgroup altogether.

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