# Clinical Section

# THE OBSESSIVE COMPULSIVE INVENTORY: PSYCHOMETRIC PROPERTIES IN A NONCLINICAL STUDENT SAMPLE

Laura M. Simonds, Susan J. Thorpe and Sandra A. Elliott

*University of Greenwich, London, U.K.*

**Abstract.** The psychometric properties of a new scale, the Obsessive Compulsive Inventory (OCI; Foa, Kozak, Salkovskis, Coles, & Amir, 1998), were examined in a nonclinical student sample. The study was a partial replication of the original validation study by Foa et al. Test-retest reliability, internal consistency, and convergent validity were examined using a sample of 126 undergraduate psychology students. Statistical analyses (Pearson's $r$ and Cronbach's alpha) indicated adequate test-retest reliability for the full scales and subscales (coefficients ranging from 0.69 to 0.88) and high internal consistency (all coefficients exceeding 0.7). Convergent validity with the Maudsley Obsessional Compulsive Inventory (MOCI; Hodgson & Rachman, 1977) was adequate for the full scales and for the Washing and Checking subscales (coefficients ranging from 0.61 to 0.75). The OCI is a useful supplement to existing self-report measures of obsessive-compulsive symptomatology.

*Keywords:* Obsessive, compulsive, inventory, psychometric, nonclinical.

## Introduction

Empirical evidence suggesting continuity between patient and nonpatient groups with respect to some obsessive-compulsive phenomena has implications for theoretical and methodological approaches in the investigation of Obsessive-Compulsive Disorder (OCD).

Rachman (1971) noted that worrying and unpleasant thoughts are a universal experience. For the obsessional patient, however, these thoughts are more repetitive and they engender a greater degree of disturbance. Rachman and de Silva (1978) found almost 80% of a nonpsychiatric sample reported experiencing either obsessional thoughts or impulses. In a replication by Salkovskis and Harrison (1984), 88% of a nonpsychiatric sample reported either obsessional thoughts or impulses. In both investigations, these "normal" obsessions were similar in content and form to obsessions reported by patient samples.

Rachman and de Silva (1978) further observed that clinical obsessions were more frequent, intense, and gave rise to more discomfort than normal obsessions. Cognitive-behavioural formulations of OCD (e.g., Rachman, 1978; Salkovskis, 1985, 1989) encompass this notion of continuity between normal and clinical obsessions, and postulate mechanisms whereby normal intrusive thoughts may become clinically significant obsessions. It is perhaps not surprising, therefore, that some subsequent research studies have employed nonpatient samples who experience obsessive-compulsive phenomena of varying degrees. Such samples may be more easily recruited than patient samples, may be a less selective group than patient samples, and provide an opportunity to study aetiological factors (Gibbs, 1996). In addition, the study of nonpatient samples who display obsessive-compulsive phenomena, irrespective of diagnostic status, may enrich the understanding of intrusive thoughts, obsessions and compulsions per se.

Various self-report measures exist that are capable of quantifying both clinical (above diagnostic threshold) and nonclinical obsessive-compulsive phenomena. The Obsessive Compulsive Inventory is a new self-report scale for measuring obsessive-compulsive symptoms. Foa et al. suggest that the OCI is a more comprehensive instrument than currently available measures of obsessive-compulsive symptomatology because it contains seven subscales that capture the heterogeneity of obsessions and compulsions observed in OCD. In addition, the inventory does not need to be applied by trained interviewers unlike assessments such as the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989). Therefore, the OCI appears to sample a wide range of obsessive-compulsive phenomena in a format that is easy to administer. The inventory is intended to be used to assess not only obsessions and compulsions in groups with diagnosable OCD, but also thoughts and behaviours of an obsessive-compulsive nature in the general population. Validation data have been reported by Foa et al., derived from patients diagnosed with OCD, Generalized Social Phobia, Post-Traumatic Stress Disorder, and from nonpatients.

Given the importance of assessing the frequency and severity of a range of obsessive-compulsive phenomena in nonclinical samples who might serve an analogue function, the aim of the study reported here was to assess the psychometric properties of the OCI within a nonclinical student sample. The study sought to assess the following: (i) test-retest reliability; (ii) internal consistency; and, (iii) convergent validity. Where possible, the data are compared with those reported by Foa et al. obtained from their nonpatient group of students and hospital staff who volunteered to participate.

## Method

### Design

Participants filled in two questionnaire-based measures of obsessive-compulsive symptomatology. Both measures were completed on two separate occasions, separated by a 4-week interval.

### Participants

One hundred and twenty six undergraduate psychology students participated in the first stage. Age range 18–47 ($\bar{x}$ 24.4, *SD* 7.3), 78% female. Eighty-three of these participants (66%) were available for the second stage and all participated. The age range and sex ratio of the participant groups was consistent across the two stages.

*Measures*

The Obsessive Compulsive Inventory (Foa et al., 1998) is a 42-item self-report measure of obsessive-compulsive symptomatology. Participants rate each item for both frequency and distress on 5-point Likert scales. The full scale yields total possible scores for both frequency and distress of 168. In addition to yielding total frequency and distress scores, frequency and distress can be rated separately for each of seven subscales: Washing, Checking, Doubting, Ordering, Obsessing, Hoarding, and Neutralizing. Total frequency and distress scores possible for each subscale are as follows: Obsessions (32); Washing (32); Checking (32); Neutralizing (28); Hoarding (12); Order (20); and Doubting (12). Therefore, two full scale scores, and 14 subscales scores may be derived.

The Maudsley Obsessional Compulsive Inventory (MOCI; Hodgson & Rachman, 1977) is a 30-item true/false response format measure that yields a total obsessionality score and four subscale scores: Cleaning, Checking, Slowness, and Doubting. Alpha coefficients reported for the subscales were 0.8, 0.7, 0.7, and 0.7 respectively, with a test-retest coefficient of 0.8 for the entire scale (Hodgson & Rachman, 1977).

*Procedure*

The study was carried out in two stages, separated by a 4-week interval. The measures were compiled into a booklet with instructions. Participation was voluntary and written consent was obtained. Participants were told that they would be asked questions concerning their experience of specific thoughts and behaviours. Participants first completed the MOCI and then the OCI.

Four weeks later, 83 of the initial 126 participants were retested. At this time, they completed these measures in the same order. After all data from the second stage had been collected, participants were fully debriefed.

## Results

*Descriptive statistics*

Means for total and subscale scores were calculated for the OCI (first administration) and are shown in Table 1. Mean frequency scores are all higher than mean distress scores.

*Test-retest reliability*

Pearson's $r$ was calculated to assess test-retest reliability. Coefficients are shown in Table 2 and are compared with those obtained by Foa et al.

Most coefficients are lower than those obtained by Foa et al. However, they indicate adequate test-retest reliability. The reliability of the total frequency and distress scores, the obsessing frequency and distress scores, checking and ordering distress scores, and hoarding frequency scores was shown to be good.

**Table 1.** Descriptives for OCI complete scale and subscales (*N* = 126)

| Scale | Frequency | | Distress | |
|---|---|---|---|---|
| | Mean | *SD* | Mean | *SD* |
| Total scale | 26.3 | 21.6 | 18.2 | 21.4 |
| Washing subscale | 0.45 | 0.51 | 0.31 | 0.48 |
| Checking subscale | 0.56 | 0.54 | 0.35 | 0.50 |
| Doubting subscale | 0.71 | 0.87 | 0.55 | 0.85 |
| Hoarding subscale | 1.26 | 0.99 | 0.53 | 0.72 |
| Neutralizing subscale | 0.51 | 0.50 | 0.34 | 0.46 |
| Obsessing subscale | 0.68 | 0.74 | 0.65 | 0.84 |
| Ordering subscale | 0.67 | 0.66 | 0.44 | 0.58 |

Total score ranges from 0–168. Subscales comprise differing numbers of items, all rated for frequency and distress from 0–4. Mean item scores for each subscale are shown.

**Table 2.** Test-retest coefficients for OCI complete scale and subscales

| Scale | Frequency (*N* = 83) | Distress (*N* = 81) |
|---|---|---|
| Total score | 0.88 [0.90] | 0.88 [0.89] |
| Washing | 0.85 [0.88] | 0.82 [0.86] |
| Checking | 0.81 [0.82] | 0.82 [0.82] |
| Doubting | 0.69 [0.86] | 0.75 [0.77] |
| Hoarding | 0.84 [0.84] | 0.82 [0.68] |
| Neutralizing | 0.73 [0.85] | 0.71 [0.80] |
| Obsessing | 0.88 [0.88] | 0.88 [0.80] |
| Ordering | 0.72 [0.87] | 0.77 [0.83] |

All significant at $p < 0.001$.
Bracketed coefficients are those obtained by Foa et al.

## Internal consistency

Cronbach's alpha (Table 3) was calculated to assess internal consistency of the total scale frequency and distress items, and for each of the subscales. All alpha coefficients exceed 0.7. Therefore, the OCI total scale and subscales show high internal consistency.

## Convergent validity

Convergent validity was assessed by correlating the total scores obtained on the OCI with total scores obtained on the MOCI at the first administration (Table 4). Three of the OCI subscales could be correlated with corresponding MOCI subscales: Cleaning (Washing), Checking, and Doubting. Pearson's *r* was used.

Coefficients obtained are comparable with those reported by Foa et al. Convergent validity with the corresponding MOCI subscales is adequate. However, coefficients for

**Table 3.** Alpha coefficients – total scale and subscales

| Scale | Frequency | Distress |
|---|---|---|
| Total | 0.94 [0.94] | 0.95 [0.95] |
| Washing | 0.82 [0.85] | 0.84 [0.91] |
| Checking | 0.80 [0.79] | 0.85 [0.84] |
| Doubting | 0.87 [0.76] | 0.87 [0.82] |
| Hoarding | 0.78 [0.83] | 0.81 [0.82] |
| Neutralizing | 0.71 [0.74] | 0.78 [0.70] |
| Obsessing | 0.89 [0.82] | 0.90 [0.82] |
| Ordering | 0.78 [0.82] | 0.81 [0.85] |

Bracketed coefficients are those obtained by Foa et al.

**Table 4.** Correlation of OCI total frequency and distress scores with MOCI total scores, and correlation of OCI Washing, Checking and Doubting subscales with MOCI Cleaning, Checking and Doubting subscales

| | OCI Frequency ($N = 126$) | OCI Distress ($N = 125$) |
|---|---|---|
| MOCI Total | 0.74 [0.72] | 0.75 [0.66] |
| MOCI Cleaning | 0.62 [0.69] | 0.61 [0.68] |
| MOCI Checking | 0.69 [0.63] | 0.65 [0.65] |
| MOCI Doubting | 0.49 [0.63] | 0.56 [0.53] |

All at $p < 0.001$.
Bracketed coefficients are those obtained by Foa et al.

**Table 5.** Correlation of OCI Doubting subscale with MOCI Doubting subscale (Conscientiousness items removed)

| | OCI Doubting Frequency ($N = 126$) | OCI Doubting Distress ($N = 1\,25$) |
|---|---|---|
| MOCI Doubting | 0.61 | 0.63 |

$p < 0.001$.

the Doubting subscales are quite low. To examine whether these lower coefficients were due to the MOCI subscale comprising both Doubting and Conscientiousness items, correlations were performed using only those items relating to Doubting from the MOCI subscale. The recalculated coefficients are shown in Table 5.

## Discussion

This study provided further reliability data for the Obsessive Compulsive Inventory (OCI; Foa et al., 1998). The results indicate that the total scale and subscales have

satisfactory test-retest reliability and high internal consistency, the coefficients for the latter being very similar to those reported by Foa et al. The superior test-retest coefficients obtained by Foa et al. may be attributable to difference in inter-test interval length. Foa et al. readministered the OCI after a 1-week interval whereas, in this study, a 4-week interval was used. Since the OCI instructions require respondents to consider experiences that may have occurred in the preceding month, the data gathered by Foa et al. would be enquiring about experiences in largely the same period of time, whereas respondents in this study would have been evaluating experiences occurring over two different time periods. Therefore, diminished test-retest coefficients are not necessarily indicative of weak scale properties, but may be reflective of actual changes in obsessive-compulsive experiences at two different index points.

Convergent validity was assessed by correlating the OCI with the MOCI. This was calculated for the full scale and for the three of the seven subscales: Washing, Checking and Doubting (the MOCI does not measure Obsessing, Neutralizing, Ordering or Hoarding). The coefficients obtained were comparable to those reported by Foa et al., especially with respect to the subscales, the coefficients ranging from 0.49 to 0.69. Convergent validity of the OCI with the MOCI was found to be the weakest, however, with respect to the Doubting subscale. However, when correlations were recalculated comparing only those items relating to Doubting from the MOCI subscale with the OCI Doubting subscale, satisfactory coefficients were produced. This suggests convergence between the OCI and the MOCI on doubting-specific items. A further similarity with Foa et al.'s findings from their nonclinical group lies in the mean frequency and distress scores for the total scale and for the subscales. In both studies, means are higher for frequency scores than for distress scores. This may not be surprising considering the evidence that intrusive thoughts per se are commonplace in normal samples (e.g. Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). To conclude, the test-retest reliability and internal consistency of the OCI, when applied to a nonclinical student sample, has been shown to be good. Furthermore, convergent validity with the MOCI has largely been shown to be adequate. Given the limits on generalizability of this study, further research could confirm the stability of the OCI in other nonclinical populations, with larger samples, and incorporating other self-report measures of obsessive-compulsive symptomatology. The OCI is quick and easy to administer and samples a range of both obsessional and compulsive phenomena, yielding both frequency and distress scores. This makes it a useful supplement to existing measures capable of assessing both clinical and nonclinical obsessive-compulsive phenomena. The measure could be especially useful in providing a comprehensive assessment of the frequency and severity of a range of obsessive-compulsive phenomena in nonclinical samples who might be used as analogues of clinical obsessive-compulsiveness.

## References

FOA, E. B., KOZAK, M. J., SALKOVSKIS, P. M., COLES, M. E., & AMIR, N. (1998). The validation of a new Obsessive-Compulsive Disorder scale: The Obsessive Compulsive Inventory. *Psychological Assessment*, *10*, 206–214.

GIBBS, N. A. (1996). Nonclinical populations in research on Obsessive-Compulsive Disorder. A critical review. *Clinical Psychology Review*, *16*, 729–773.

Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., Heninger, G. R., & Charney, D. S. (1989). The Yale-Brown Obsessive Compulsive Scale: I. Development, use, and reliability. *Archives of General Psychiatry*, *46*, 1006–1011.

Hodgson, R. J., & Rachman, S. J. (1977). Obsessional-compulsive complaints. *Behaviour Research and Therapy*, *15*, 389–395.

Rachman, S. J. (1971). Obsessional ruminations. *Behaviour Research and Therapy*, *9*, 229–235.

Rachman, S. J. (1978). An anatomy of obsessions. *Behavioural Analysis and Modification*, *2*, 253–278.

Rachman, S. J., & De Silva, P. (1978). Abnormal and normal obsessions. *Behaviour Research and Therapy*, *16*, 233–248.

Salkovskis, P. M. (1985). Obsessional-compulsive problems: A cognitive-behavioural analysis. *Behaviour Research and Therapy*, *23*, 571–583.

Salkovskis, P. M. (1989). Cognitive-behavioural factors and the persistence of intrusive thoughts in obsessional problems. *Behaviour Research and Therapy*, *27*, 677–682.

Salkovskis, P. M., & Harrison, J. (1984). Abnormal and normal obsessions: A replication. *Behaviour Research and Therapy*, *22*, 549–552.