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IDENTIFICATION OF SPECIFIC CORRELATIONS IN OBSESSIVE-COMPULSIVE DISORDER AMONG DIFFERENT MEASURES[1]

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Abstract

Objective: Few studies have investigated the convergent validity of assessment methodologies administered to patients with obsessive-compulsive symptoms. None of them, however, report a quantitative analysis of the convergent validity across multiple tools dealing with the diagnosis of Obsessive Compulsive Disorder (OCD). Considering this gap, the aim of this study is to provide useful evidence investigating the correlation among four reporting tools featured by assessment methodologies used with OCD patients. Specifically, it aims at revealing significant correlations between the Symptom Checklist-90-Revision [SCL-90-R], the Minnesota Multiphasic Personality Inventory [MMPI-2], the Yale-Brown Obsessive Compulsive Scale [Y-BOCS] and the Padua Inventory Revised [PI-R] in OCD patients.

Method: The administered tests include the Symptom Checklist-90-Revision (SCL-90-R), the Minnesota Multiphasic Personality Inventory (MMPI-2), the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and the Padua Inventory Revised (PI-R). Subjective symptoms assessment and clinical interviews were performed in combination with the evaluation of these tests in 121 patients with OCD. As control groups, we selected 1) a group of depressed patients (N=23) and 2) a group of patients with anxiety disorders (N=54) that underwent the same clinical interviews.

Results and conclusions: Results indicate significant correlations between i) two selected scales of the MMPI-2 – in particular the Psychastenia (PT) and Schizophrenia (SC) scales – and those obtained from the SCL-90-R (i.e. obsessive-compulsive symptoms and psychoticism); ii) between the two scales above and the total score of the Y-BOCS; iii) between the PT scale (MMPI-2), the obsessive compulsive symptoms scale (SCL-90-R) and the total score of the PI-R; iv) between the total score of Y-BOCS and the total score of PI-R. These results confirmed the strong convergent validity among the selected assessment methodologies and lead to a new and integrative clinical approach to diagnose OCD that is pre-screening of OCD symptomatology through reporting measures.

Key words: obsessive-compulsive disorder, convergent validity, MMPI-2, SCL-90-R, Y-BOCS, PI

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Introduction

Obsessive-compulsive disorder (OCD) is a disabling condition typically featuring recurrent, persistent and intrusive ego-dystonic thoughts, impulses, images (i.e. obsessions) and repetitive behaviours or mental acts (i.e. compulsions). These behaviours are executed to prevent or reduce anxiety, distress or threat or to neutralize obsessions (APA 2013).

Researchers and clinicians are continually investigating new treatment approaches and best combination of existing therapies (Taylor 1995, 1998; Olatunji et al. 2013). To this aim a primary need is to develop reliable, valid and sensitive assessment instruments that could significantly contribute to the understanding of OCD disorder. In the last decades, several self-reports and structured interviews have been developed and validated to assess OCD symptoms. However, several methodological caveats have been detected, such as poor psychometric properties and lack of specificity in investigating OCD symptoms (Goodman et al. 1989b, Sanavio 1988). At the end of the 1980s, two new analytical methods were developed to assess obsessions and compulsions: a structured interview, the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) (Goodman et al. 1989a, 1989b), and a self-report questionnaire, the Padua Inventory (PI, Sanavio 1988), subsequently revised by Van Oppen and collaborators (PI-R, 1995). These methods are currently the most used and reviewed among the available OCD tools (Steketee and Barlow 2004). Furthermore, it has been shown that the sensitivity of Y-BOCS changed in symptoms severity following empirically supported treatment (Abramowitz et al. 2005). Van Oppen and collaborators (1995) compared the Y-BOCS severity scale with the PI-R one observing a remarkably low correlation value (r=0.17), a finding that was subsequently replicated in other studies (e.g.

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Denys et al. 2004). It has been suggested that this low correlation value might be related to the different way in which these assessment methods are administered or to their different clinical goals – i.e. investigating symptoms categories or (PI-R) intensity (Y-BOCS). For example, Anholt and collaborators (2009) claimed that the Y-BOCS and the PI-R measure relatively unrelated features of OCD, therefore a combined use of multiple measures is recommended to assess the complexity of OCD phenomenon. Beside these studies, only few others have investigated the convergence validity across further OCD assessment methods (Samuel and Widiger 2010). Therefore, it seems crucial to fill this gap by developing a systematic and integrative approach, which could be helpful in verifying the convergent validity and the reliability of these measures. This could envisage different assessment methods of quantitative and qualitative aspects in combination with performing a differential diagnosis, covering possible personality or mental structured disorders tending towards psychosis.

Specifically, our combined diagnostic process would help the clinician to differentiate between OCD and the risk mental state for psychosis. Indeed, the clinician could misunderstand the difference between psychotic episodes and obsessions with extreme bizarre content. Regarding these aspects, Niendam and collaborators (2009) have demonstrated that, through a continued and integrative assessment, obsessive-compulsive symptoms do not represent a prodromal stage of psychosis per se, highlighting the importance to fully explore the whole picture of symptoms through different measures that investigate different dimensions of psychopathology.

The integrative approach presented in this work – the combination of *self-report methods (Symptoms Checklist-90; SCL-90-R and PI-R)*, which investigate the presence/lack of OC symptoms, with *semi-structure interviews (Y-BOCS)*, which allow to define the level and quality of obsessions and compulsions, and the Minnesota Multiphasic Personality Inventory, (MMPI, Hathaway and McKinley 1943) that highlights the personality structure – seems to be a necessity and resource in the evaluation of obsessive disorders, in their different configurations. Therefore, our study aims at:

1) Investigating correlations between specificMMPI-2 scales that are typically associated with the presence of obsessive symptoms (such as PT and SC) and specific SCL-90 scales (obsessive-compulsive symptoms and psychoticism) in a group of OCD patients.
2) Evaluating differences between the mean value of specific scales (obsessive-compulsive symptoms score and psychoticism score, SCL-90) between the OCD group and control groups (DEP and ANX).
3) Investigating the relation between the PI-R and the Y-BOCS within the OCD group and their relation with other scales aimed at evaluating obsessive-compulsive symptoms (SCL-90 and MMPI-2). In particular, we expect to observe an elevation of the PT scale only within the OCD group as a predictor of severity of the disorder.

Material and Methods

Participants

The present study was conducted on a group of 121 *OCD* patients (average age 33±10 years old; 61% of the total number of participants); 54 patients with *Anxiety Disorder*, including *Agoraphobia*, *Social Phobia*, *Generalized Anxiety Disorder* (ANX) (average age 27±12 years old; 27% of the total number of participants); 23 patients with *Depression* (DEP) (mean age 29±12years old; 12% of the total number of participants). Included patients in this study did not present any comorbidities.

Questionnaires

The assessment was performed at the Centre of Cognitive Psychotherapy (Rome, Italy) and included: the Minnesota Multiphasic Personality Inventory (MMPI-2), the Symptoms Checklist-90-Revision (SCL-90-R); OCD patients also completed the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and the Padua Inventory Revised (PI-R).

The MMPI (Hathaway and McKinley 1943) is one of the most frequently used clinical tests (Butcher 1979, Graham 2000, Lubin et al. 1984). Numerous studies have reported the test-retest reliability for the MMPI (Dahlstrom et al. 1972, Parker et al. 1988, Vacha-Hasse et al. 2001). The MMPI was first employed in a clinical context to assess personality features and contains 550 items covering a wide variety of topics focusing on many aspects (i.e. physical, mental and social). Four subscales are employed to measure response validity, while the other scales provide indication of the degree to which the patient is close to people with diagnosed personality and psychological disorders. The authors revised the original test in 1989, updating specific items (MMPI-2). Specific scales tackle symptoms generally related to obsessive compulsive functioning, such as the PT scale (Psychastenia) is typically pinpointing psychiatric symptoms categorized as compulsive or obsessive. The SC scale (Schizophrenia) indicates the presence of disturbed thought processes, as assessed in patients with OCD.

In order to assess other psychiatric disorders another measure was administered: the Symptoms Check-List-90-R (SCL90-R), which is a self-reporting method, containing 90 items measuring 9 dimensions of disorders. Each item is rated on a 5-point Likert scale ranging from "Not at all" to "Extremely". The SCL90-R measures both internalizing and externalizing symptoms and reflects general symptoms' severity. Ten items specifically investigate obsessive-compulsive symptoms, leading to the identifications of specific OCD related dimensions (the scale *obsessive-compulsive symptoms* [OBS]). Furthermore, the scale *psychoticism* is intended to reflect a continuous dimension from mild interpersonal alienation to full blown psychotic experience (Pedersen et al. 2014). Recently, an Italian study by Prunas and collaborators (2012) highlighted the psychometric properties and the factor structure of the Italian version of this test (Derogatis 1977).

The Padua Inventory (PI) is a questionnaire originally designed by Sanavio (1988) and revised by Van Oppen and collaborators (PI-R, 1995). The PI-R consists of 41 items, organised in a 5 factors-structure: impulses, washing, checking, precision and rumination. Several studies have proved the reliability and validity of this measure (Burns et al. 1995, Sternberger and Burns 1990).

The Yale-Brown Obsessive Compulsive Scale (Y-BOCS) is considered the "golden standard" for measuring OC symptoms (Goodman et al. 1989a, Steketee 1994). The Y-BOCS was designed to provide quantitative measurement of symptoms' severity in obsessive-compulsive disorder. This tool is clinician-rated, envisaging 10-item scale – each item rated from 0 to 4, with separate subtotals for severity of obsessions

and compulsions (Goodman et al. 1989a, 1989b). It is a reliable and valid instrument for assessing OC symptom severity (Taylor et al. 1995, Moritz et al. 2002). The particularity of the Y-BOCS severity index is that it is independent from symptoms' content or specificity.

Data analysis

Data analysis was carried out with MATLAB (Matlab 2014b, MatWork, MA). Pearson's correlations were performed to verify the presence of possible relations between specific scales of the selected measures. Univariate analysis of variance (ANOVA) was used to measure the difference between average values of the Obsessive-Compulsive symptoms (*OBS*) and psychoticism (*PSI*, SCL-90-R) in three experimental groups (OCD, ANX, DEP).

Results

The following statistical analyses confirmed the correlations hypothesized between scales of different psycho-diagnostic tools within the OCD group.

Correlations

Focusing on the correlation between the scale *SC* (MMPI-2) and *PSI* (SCL-90-R), all the groups (OCD, ANX and DEP) exhibit positive and significant correlations (OCD, r=0.7, p<0.01; ANX, r=0.6, p<0.01; DEP r=0.4, p=0.02). Similar results were obtained for the correlation between the scale *PT* (MMPI-2) and the scale *OBS* (SCL-90-R). Both OCD and ANX experimental groups showed positive and significant correlations (OCD, r=0.6, p<0.01; ANX, r=0.6, p<0.01). The group of depressed patients (DEP) did not show any significant statistical correlation between these variables (**figure 1**).

Within the OCD group, a significant positive correlation was detected between the total score of Y-BOCS with the *PT* scale (MMPI-2) and obsessive-compulsive symptoms (SCL-90-R), respectively r=0.4, p<0.01 and r=0.07, p<0.01 (**table 1**). The analysis showed positive and significant correlations between both *PT* scale and PI-R total score (r=0.06, p<0.01; **table 1**) and obsessive-compulsive symptoms and PI-R total score (r=0.07, p<0.01; **table 1**), in the OCD group.

Although the correlation level between the total score of PI-R and the total score of Y-BOCS was low (r=0.3), Pearson's correlation showed a significant result (p=0.01; **table 1**).

Comparisons

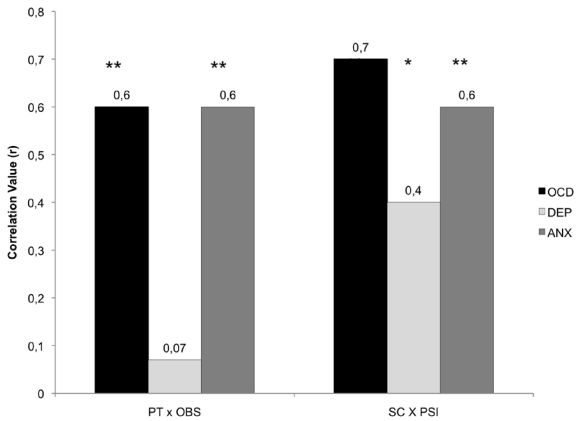
Since we observed similar trends between the three experimental groups (OCD, ANX and DEP) regarding the correlations between *OBS*/*PSI* (SCL-90-R) and *PT*/*SC* (MMPI-2), in order to verify the overall severity level of symptomatology we calculated the difference between the mean values obtained by each group in both scales (*OBS* and *PSI*, SCL-90-R). Results showed that OCD group has significant higher mean values compared to both groups for the *OBS* scale (ANOVA;

Table 1.

	PT (MMPI-2)		OBS (SCL-90)	
	r	***p***	***r***	***p***
Y-BOCS	0.4	p<0.01	0.7	p<0.01
PI-R	0.6	p<0.01	0.7	p<0.01

Note. Y-BOCS = Tale-brown Obsessive-Compulsive Scale; PI-R = Padua Inventory-Revised; PT = scale of psychastenia (MMPI-2); OBS = obsessive-compulsive symptoms (SCL-90).

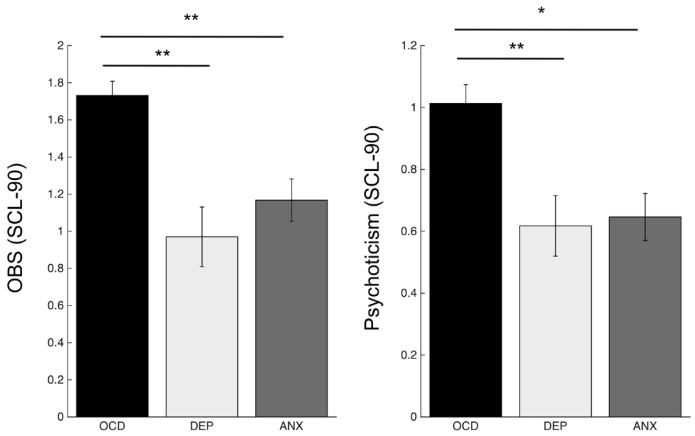
Figure 1. *Each bar represents the correlation value of the obsessive-compulsive disorder patients (OCD, black bar), patients with major depression (DEP, light grey bar) and patients with anxiety disorders (ANX, dark grey bar) groups referred to the scale psychastenia (PT, MMPI-I) and the scale obsessive-compulsive symtoms (OBS, SCL-90) on the left and the scale schizoprenia (SC, MMPI-I) and psychoticism (PSI, SCL-90) on the right.*
** p<0.05; ** p<0.01*



$F_{(2,181)} = 14.23$, $p<0.01$) and for the *PSI* scale (ANOVA; $F_{(2,181)} = 9.06$, $p<0.0002$), whereas ANX and DEP did not show any statistical difference in the two comparisons (**figure 2**).

In addition, in order to verify the overall severity of the symptomatology we compared the *global severity index* (GSI) of SCL-90-R of the three experimental groups. Results showed no significant differences among the groups.

Figure 2. *Each bar represents the mean value of the obsessive-compulsive disorder patients (OCD, black bar), patients with major depression (DEP, light grey bar) and patients with anxiety disorders (ANX, dark grey bar) groups of the scale obsessive-compulsive symtoms (OBS, SCL-90) on the left and the scale psychoticism (PSI, SCL-90) on the right.*
** p<0.05; ** p<0.01*



Discussion and conclusions

Our goal was to evaluate the convergent validity of results obtained from different instruments (both self-reports and structured interviews) used to diagnose OCD. Statistical analyses allowed a quantitative evaluation of significant convergent validity across all measures. Despite the statistical limitation of a reduced number of participants , the reliability of each measure, individually and in their cross correlation, is confirmed.

The significant correlation between PT scale (MMPI-2) and OBS scale (SCL-90-R) within the experimental group of OCD patients was also obtained within the group of anxious patients, whereas this result was not found among depressed patient. This result can be explained by the overlap of several symptoms between the two disorders. However, obsessions and compulsions described within anxiety disorders are less stable and reliable compared to OCD (Stein et al. 2010). Indeed the mean value of obsessive-compulsive symptoms was significantly lower than in patients with OCD. Moreover, the comparison between SC (MMPI-2) and psychoticism (SCL-90-R) describes similar trend across all the three groups. These results can be explained by the frequent reports of psychotic symptoms in patients with affective disorders (Hanssen et al. 2003, Olfso et al. 2002). Indeed, it seems that affective and psychotic phenomena often co-occur, possibly due to both either shared vulnerability and reciprocal causal influence (Wigman et al. 2012). However, comparing the mean values of the psychoticism scale among the groups, a remarkably significant difference emerged, suggesting that in OCD patients the presence of bizarre and arbitrary ideation could led to an elevation of the psychotic scale. These results may be interpreted within the cognitive theory of OCD originally described by Salkovskis (1999), further developed by Mancini and Gangemi (2004) and thoroughly detailed by Mancini (2016). According to this theory, the key to understand obsessional problems lies in the way in which intrusive thoughts, images, impulses and doubts are related. The presence of such high-conviction beliefs can cause the execution of inappropriate behaviours or the permutation into a morally horrible person. Recently, Salkovskis and collaborators (2012) demonstrated that high-conviction beliefs can not be considered a subtype of psychosis since the standard cognitive behavioural approach seems to be equally effective as for low-conviction beliefs. Pontillo and Mancini (2016), in a recent review of the literature, hypothesized that the relation between psychotic state and OCD may only occur when a comorbidity with Schizotype Personality Disorder is diagnosed, in this case the abnormal and bizarre beliefs would "facilitate" the development of OCD. In this sense, the elevation of the SC scale in OCD patients, in contrast with controls, could represent a predictive factor to evaluate the severity of OCD patient's symptomatology. In addition, it could represent a significant variable for differential diagnosis of OCD from Anxiety Disorders.

Indeed, only the combination of all different measures, allows clinicians to make differential diagnosis with other risk mental state for psychosis. Thus, the combination of these measures distinguishes the presence of obsessive ideas, fears of madness and loss of control of their own thoughts with processes of escape from reality and delusional and dissociative phenomena.

Furthermore, our data suggests that, despite a low level of correlation, a significant association emerged between the total score of PI-R and the total score of Y-BOCS.

In conclusion, our work confirms the validity of different diagnostic methodologies and it suggests an integrated approach to the pre-screening of obsessive-compulsive symptomatology. Specifically, it is proposed that an integrative approach to the OCD assessment enables the clinician to identify and measure the relevance of the symptoms, the obsessive thematic and the behaviour rituals. Furthermore, it allows identifying the core themes linked to the personality structure of the patient.

Moreover, the evaluation of MMPI-2 profile allows

the clinician to collect information regarding the general functioning behaviour of patients, and the personality traits that could play an important role in the genesis and/or maintenance of the OCD disorder.

Therefore this assessment approach might facilitate therapy by reducing the possibility of subjective mistakes in the clinical overview of the patient and eventually in the intervention to be undertaken.

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