Mediterranean Journal of Clinical Psychology

ISSN 2282-1619

MJCP

Volume 8, n 3, 2020

Clinical Psychology

A prototypical MMPI-2 configuration of Obsessive-Compulsive Disorder

*Giuseppe Femia [1] *, Andrea Gragnani [1], Teresa Cosentino [1], Mauro Giacomantonio [1, 2], Federico Diano [1], Antonella Bernaudo [1], Valerio Pellegrini [1, 2], Francesco Mancini [1, 3]*

Abstract

Background: Obsessive-Compulsive Disorder is often measured through self-report questionnaires focused on measuring symptomatology (Y-BOCS, OCI-R, and PI). The scientific literature identifies the Pt scale as a distinctive marker, but does not report data related to a specific OCD profile of the MMPI-2 test. Therefore, based on some clinical considerations and preliminary investigations, the following study aims to identify a specific MMPI-OCD configuration marked by the presence of significant indicators able to describe its psychological functioning and its key features in cognitive, emotional and affective terms.

Method: In order to explore the expected relationships, 395 participants were involved (average age: 34.20 years) and evaluated through the MMPI-2 test and the Yale-Brown interview.

Results: MANOVA, Multiple Linear Regression Analysis and Discriminant Function Analysis confirm that the OCD is marked by the recurrence of three elevated clinical scales (Pt, D, Sc). Hyper-prudential reasoning and some reasoning bias, typically employed by these subjects, could justify such results.

Conclusions: This specific configuration could therefore support the clinician during the assessment phases and lead him to identify – as well as differentiate – his characteristics from those of other psychological disorders, thus stimulating him to deepen during the interpretation of the results.

[1] Association of Cognitive Psychology – Associazione di Psicologia Cognitiva (APC) and School of Cognitive Psychotherapy – Scuola di Psicoterapia Cognitiva (SPC), Rome, Italy

[2] Social and Developmental Psychology Department, Sapienza University of Rome, Italy

[3] Guglielmo Marconi University, Rome, Italy

E-mail corresponding author: gppfemia@gmail.com

Keywords:
Differential diagnosis; HPC configuration; MMPI-2; Obsessive-compulsive disorder; Psychological assessment.

Received: 16 July 2020
Accepted: 10 November 2020
Published: 19 December 2020

Citation: Femia, G., Gragnani, A., Cosentino, T., Giacomantonio, M., Diano, F., Bernaudo, A., Pellegrini, V., Mancini, F. (2020). A prototypical MMPI-2 configuration of Obsessive-Compulsive Disorder. *Mediterranean Journal of Clinical Psychology, 8*(3). https://doi.org/10.6092/2282-1619/mjcp-2554

1. Introduction

Obsessive-Compulsive Disorder (OCD) is a disabling mental illness featuring recurrent, persistent and intrusive ego-dystonic thoughts, impulses or images (i.e. *obsessions*) and repetitive behaviors or mental acts (i.e. *compulsions*). These behaviors appear to prevent or reduce anxiety, distress, or threat or to neutralize obsessions (APA, 2013).

Since the introduction of DSM-5 (APA, 2013), the OCD no longer falls into Anxiety Disorders and has obtained an autonomous nosographic entity, for its specific symptomatological characteristics.

Phobia and OCD differ for the different processing of stimuli: while phobic patients fear the full category of the feared object (e.g. *the patient fears all the sizes of a spider*), obsessive patients fear specific objects, especially for the symbolic and peculiar meaning they attribute (e.g. *germs can be feared by the patient if present on glue and mud, but not on door handles*). While the danger is often exaggerated in phobias, it is very often imagined in OCD and this explains the often-perceived senselessness and ego-dystonicity of obsessions.

The information processing is also influenced by different emotions: if in phobias the dominant emotions are fear and anxiety, the OCD is distinguished by the emotion of disgust, that is prevented through washing or control behaviors (Haberkamp et al., 2019; Knowles et al., 2018; McGuire et al., 2016; Menzies & Dar-Nimrod, 2017; O'Connor & Audet, 2019).

The annual prevalence of OCD in the USA is 1.2%, with an average age of onset around 19.5 years. There is a slight prevalence among females, whereas males tend to have a much earlier age of onset with 25% before the age of ten (APA, 2013).

The OCD might become a chronic disabling condition that affects all aspects of a person's life, with a high risk of vulnerability to other disorders such as mood disorders (63.3%), impulse-control disorders (55.9%), and substance use disorders (38.6%) (Ruscio et al., 2010).

Specifically, although the content of obsessions can vary greatly and change through time even for the same person, they often belong to four main categories: 1) Contamination, following the vision of dirty objects, that lead to the fear of getting sick, often followed by the compulsion to wash; 2) Pathological doubt, from which one can derive the compulsion to control and to check the object of the obsession; 3) Intrusive thoughts, in which unacceptable thoughts recur for the person, which are often experienced as dangerous for their content and are often followed by ritualistic mental repetitions (e.g. *"if I think I want to strangle my son, it means I'm a defective mother"*); and 4) Symmetry/Order, which are usually combined with compulsions that force the person

to use a great amount of time to follow extremely rigid and precise rules of behavior (APA, 2013; Kumar, 2017; Mancini et al., 2016; O'Connor & Audet, 2019).

The study of phobic images seems useful in building a bridge between emotions and the manifestation of symptoms, essential for the study of personality (Settineri et al., 2019).

Starting from the prevalence of a specific theme of obsessions and/or compulsions, it is possible to find different subtypes of OCD: 1) Washer; 2) Checking; 3) Ruminations/Intrusive Thoughts; and 4) Symmetry and Ordering (Abramowitz, 2006; Goodman et al., 1989; Mancini et al., 2016).

Obsessive beliefs, such as exaggerated perception of threat, excessive sense of responsibility, the need for perfection/certainty, the fusion of thought and action and the need to control thoughts, can be secondary to personal factors, such as first experiences of life, some personality characteristics, or critical life events. The specific antecedents that trigger anxiety and anguish include both external stimuli (e.g. *baths*) or internal triggers (e.g. *thoughts*, *images*). The thoughts of these patients are aimed at reaching the certainty not to run the risk they could be responsabile. It is important to elaborate the specific and idiosyncratic nature of the stimuli in order to plan a targeted therapy and help the patient accept the uncertainty (Mancini & Gangemi, 2016; Reddy et al., 2020).

It is important to adopt an integrated assessment procedure including different methods of investigation beyond the clinical interview, such as the use of the MMPI-2 (*Minnesota Multiphasic Personality Inventory*-2; Hathaway & McKinley, 1951), as a powerful broad-spectrum assessment tool (Femia et al., 2018). The most widely used methods (Steketee & Barlow, 2004) developed to assess obsessions and compulsions are structured interviews: the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989; Goodman, 1989), self-report questionnaires, and the Padua Inventory (PI; Sanavio, 1988).

The important role of the MMPI-2 in this integrated assessment methodology for OCD is to detect personality characteristics describing on a deeper functioning level the specific correlations of the OCD symptomatology.

The literature concerning the relationship between the MMPI-2 test and OCD reports that high scores in the "Pt" scale are connected to the presence of obsessive thoughts, mental rumination processes, rituals, and needs for checking behavior, in addition to a strong sensibility toward the strict compliance with rules and regulations (Fals-Stewart & Schafer, 1993; Femia et al., 2018; Maj, 2005).

High scores on the "Pt" scale suggest anxious, tense, and agitated behavior and show high discomfort and worry, apprehensive behavior, and difficulties in concentrating. These patients are overly ruminative, obsessive, and compulsive (Butcher, 2016).

Some authors have investigated the relationship between the elevation of the "Pt" scale and the interpersonal and cognitive features described above, confirming the relevant theoretical assumptions (Fals-Stewart et al., 1993; Femia et al., 2018; Monaco et al., 2005).

Authors like Samuel and Widiger (2010) state that patients with Obsessive-Compulsive Personality Disorder (OCDP) show, also, a significant experience of rage with low scores in the "Pt" scale, as also shown by a specific code characterized by the 4-9 code and therefore a parallel and significant elevation of the scale "Sc" and "Pd."

These data seem to differentiate the two diagnostic dimensions. The subjects with OCD show a pattern in which the "Pt" scale is always active between the high points (HPC code) while the "Sc" and "Pd" scales represent significant indicators for OCDP.

In the literature, the specific 2-7/7-2 code would outline the profile of an anxious subject as tense, nervous, depressed, unhappy, and with excessive worries (Archer et al., 1995; Butcher et al., 2015). This code is associated with exaggerated reactions to stress, somatic symptoms, overthinking, a search for perfectionism, a scrupulous, extremely moralistic, addictive behavior, and feelings of inferiority.

Therefore, it seems plausible to question the presence of peculiar phenomena within MMPI-2 profiles belonging to a clinical sample of OCD subjects (Abramowitz et al., 2007), according to which this discomfort would be grounded in hyper-prudential reasoning processes, rumination conduct, rigid patterns, guilt beliefs and the tendency to close oneself in a vicious circle of ruminative thoughts, to the point of experiencing feelings of inadequacy and demoralization (Wells & Papageorgiou, 1998).

The cognitive-behavioral models of OCD (Abramowitz, 2006) consider as a key feature of obsessional problems a pattern of typical responses to some developmental stimuli. Rachman (1993) and Salkovskis (1989) proposed that a key role is played by the appraisal of thoughts as highly significant, intrusive or threatening and responsible.

The cognitive-behavioral model also proposes that stimuli (external or mental) are feared signals that trigger an erroneus perception of threat and the subject develops compulsive behaviors and rituals to control them. The aim of the treatment will therefore be to disconfirm this perception and to help the patient understand that the stimuli are not dangerous. For the treatment of OCD, exposure therapies (verbal, imaginative or in vivo) have proven to be the most effective

ones and serve to prevent the subject's avoidance response. They initially lead to an increase in the fear reaction, but then to their extinction (Abramowitz, 2006; Kumar, 2017).

Individuals might be as concerned about failing to prevent bad outcomes (*sins of omission*) as they are with directly causing them (*sins of commission*; Wroe & Salkovskis, 2000). Even the remote possibility of highly unlikely events can become a source of great worry and can evoke deep feelings of anxiety and guilt (Abramowitz, 2006).

Consequently, the following study aims at identifying a specific MMPI-OCD profile characterized by the presence of markers describing the relevant psychological functioning, the key features both in cognitive, emotional, and affective terms. This pattern might distinguish the obsessive symptomatology from nonspecific disorders of the anxious spectrum and depressive conducts. Moreover, we would diminish the gap between the purely psycho-diagnostic assessments and the cognitivist clinical model confirming the relevant assumptions.

1.1 Research Assumptions

Considering the existing literature, we expect an increase of the high scores (HPC code) in the "Pt" scale, indicating the presence of hyper-prudential thought processes and obsessive behavior. Specifically, the following is assumed:

- An increase in the "Pt" scale highlighting the presence of reproaching thoughts, processes of low self-esteem, and behaviors of uncertainty and indecision.
- The prevalence of the "Pa" scale compared to the "Hy" scale, or an equality between the two scales that would detect suspicious processes and cores of distrust toward the motivations of others.
- Furthermore, a connection between the "Pt" scale and the "Mf" scale is assumed. This connection would plausibly lead to think of a relationship between feelings of guilt, need to control, and ruminative processes and problems pertaining to personal identity.
- A prevalence of the "Sc" scale compared to the "Hs" scale, or an equality, therefore a closure in a world made of fantasies and mental rumination processes.

This study proceeds by demonstrating how in these two sub-groups (depressed and anxious patients), there is a greater inclination toward complaints and the sharing of one's own illnesses with requests for reassurance and closeness as opposed to what would occur in "OCD" in which the phenomena of isolation would prevail.

Moreover, we expect the presence of a specific HPC configuration in OCD patients that distinguishes them from the control groups including patients with diagnoses of mood disorders and panic disorder, which is an increase of the "Pt," "D," and "Sc" scales.

2. Method

2.1 Participants

The sample consisted of 395 Italian clinical patients (212 females) with a mean age of 34.20 (SD_{age} = 10.57). Regarding job position, 22.3% were students, 30.1% employed, 25.8% self-employed, 1.8% homemaker, 4.3% unemployed, 1.8% retired and the remaining 13.9% did not provide this information. In terms of educational level, 3.5% had a middle school diploma, 44.1% a high school diploma, 42.5% a university degree, and 1.3% an advanced degree (e.g., Master or Doctorate). For 8.6% of participants, we did not receive information about their level of education.

2.2 Procedure

Consistently with the research purposes, participants were included in the study if their diagnosis, made by expert psychiatrists or psychotherapists, fell into one of the following three categories: 1) OCD disorder, 2) panic disorder and agoraphobia, or 3) mood disorder. As a result, 55% of the sample was diagnosed with OCD, 19.7% with panic disorder and agoraphobia, and 25.1% with mood disorder. Comorbidity of diagnoses and co-occurring symptoms among participants were checked and participants presenting comorbidities were excluded through the Structured Clinical Interview for DSM-5–Clinical Version (SCID-5-CV; First et al., 2015) and the Beck Depression Inventory-II (BDI-II; Beck et al., 1996).

In this research, personality disorders were excluded from the subject pool, and differential diagnoses were administered through the Structured Clinical Interview for DSM-5 (SCID-5-PD; First et al., 2016) clinical interview and the DES questionnaire used to exclude the presence of dissociative states, considering a cut-off score of 30 on the DES scale. SCID-5-PD and DES were administered to all participants, as well as the other measuring tools described above.

Participants were asked to fill out a structured questionnaire. At the beginning of the questionnaire, they were asked to provide demographic information (i.e., gender, age, employment status, and level of education). Subsequently, they were administered the basic clinical scales of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher et al., 1989) and the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989).

2.3 Measures

2.3.1 Self-report measures

Minnesota Multiphasic Personality Inventory-2 (MMPI-2). The MMPI-2 is a 567-item true-false self-administered inventory. The validity and reliability of the MMPI make it useful assessment tool in a range of clinical and non-clinical contexts due to its ease of administration and scoring, the presence of validity scales within the inventory, and the wide availability of normative data, differentiated by male and female subject pools, making this assessment method able to discriminate and measure psychopathological dimensions and normal personality functions and traits (Ben-Porath, 2012; Butcher et al., 2015).

Dissociative Experiences Scale-II (DES-II). The Dissociative Experiences Scale-II is a brief, 28 items self-report questionnaire that measures different types of dissociation, from non-clinical dissociation (e.g. day-dreaming) to more severe types of dissociative symptomatology (Carlson & Putnam, 1993). The DES-II is a screening tool for dissociative disorders, and it is useful to assess Dissociative Identity Disorder, Other Specified Dissociative Disorder and Post-traumatic Stress Disorder.

2.3.2 Interview-based measures

Yale-Brown Obsessive-Compulsive Scale (Y-BOCS). The Yale-Brown Obsessive Compulsive Scale was designed to provide a specific measure of the severity of symptoms of OCD considering the type and frequency of obsessions or compulsions present. The scale is a clinician-rated, 16-item scale, each item rated from 0 (no symptoms) to 4 (extreme symptoms; total range 0–40), with separate subtotals for severity of obsessions and compulsions (Goodman et al., 1989; Moritz et al., 2002). The first 10 items are about obsessions and compulsions, while the remaining 6 items explore the level of insight, avoidance, responsibility, pathological slowdown, and doubt. The Y-BOCS allows a good assessment of OCD symptomatology including the ability to evaluate the level of resistance of the symptoms.

Structured Clinical Interview for DSM-5 - Clinical Version (SCID-5 – CV) and *Structured Clinical Interview for DSM-5 - Personality Disorders (SCID-5-PD).* The Structured Clinical Interview for DSM-5 (SCID-5) is a structured diagnostic interview for making DSM-5 diagnoses (First et al., 2015). The SCID is a semi-structured interview, but the interviewer is required to add questions to gather sufficient information able to make a clinical judgment as to whether a DSM diagnostic criterion is met.

The sequence of questions in the SCID is designed to approximate the differential diagnostic process of a clinician by following the presence/absence and rating of DSM-5 criteria. Because

the DSM-5 diagnostic criteria are embedded in the SCID and are assessed as the interview progresses, the interviewer tests diagnostic hypotheses.

There are two different versions of the SCID-5 interview, the SCID-5-CV and the SCID-5-PD.

The SCID-5-CV covers the DSM-5 diagnoses most commonly seen in clinical settings: depressive and bipolar disorders, schizophrenia spectrum and other psychotic disorders, substance use disorders, anxiety disorders (panic disorder, agoraphobia, social anxiety disorder, generalized anxiety disorder), obsessive-compulsive disorder, posttraumatic stress disorder, attention-deficit/hyperactivity disorder, and adjustment disorder (First et al., 2015).

The SCID-5-PD is used to evaluate the 10 DSM-5 Personality Disorders, instead (First et al., 2015).

3. Results

3.1 Descriptive Statistics and Variables' Distribution

Table 1 reports descriptive statistics and normality indices for the variables involved in our parametric analyses. As can be seen in the table, although the sample consisted in its entirety of clinical patients, all the measures showed excellent skewness and kurtosis values. The dimensions of Hy and Pa of the MMPI were the unique to present kurtosis values slightly higher than 1. Anyway, also these values could be considered acceptable since between - 2 and + 2 (Field, 2009; Gravetter & Wallnau, 2014). Therefore, normality indices suggested that we could adequately test our hypotheses by implementing parametric analyses.

Table1. Descriptive Statistics of *Hypochondriasis* (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (MF), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical, and *Yale-Brown Obsessive-Compulsive Scale* (Y-BOCS).

Variable	Mean	SD	Skewness	Kurtosis	N
Hs	66.99	13.19	-.05	.66	395
D	77.80	15.04	.03	-.61	395
Hy	71.64	12.25	-.38	1.38	395
Pd	67.89	12.67	-.22	.91	395
Mf	51.94	14.17	.11	-.12	395
Pa	57.59	10.91	.34	1.38	395
Pt	70.34	13.81	.03	-.19	395
Sc	65.38	14.28	.41	-.18	395
Y-BOCS	23.27	6.43	-.28	.30	113

3.2 Multivariate Analysis of Variance

To draw up a MMPI profile of patients suffering from OCD, we conducted a multivariate analysis of variance (MANOVA). In this analysis, we were interested in discriminating which personality traits were the main and related to OCD regarding panic disorder (PD) and mood disorder (MD). Therefore, the disorder diagnosis represented the fixed factor, whereas the scores on each one of the 8 MMPI dimensions represented the dependent variables in the analysis. The MANOVA revealed a significant multivariate effect of the diagnosis among our criteria, λ =.76, $F(16, 770) = 7.01$, $p < .001$, $\eta^2 = .13$. As shown in Table 2, after deepening the analysis with univariate tests, no significant differences emerged between the three groups of patients about the dimensions of Hypochondriasis (Hs) and Hysteria (Hy). Univariate tests showed a significant main effect of diagnosis on the dimensions of Depression, instead (D), $F(2, 392) = 8.14$, $p < .001$, $\eta^2 = .04$, Psychopathic Deviate ("Pd"), $F(2, 392) = 6.70$, $p < .001$, $\eta^2 = .03$, Masculinity/Femininity (MF), $F(2, 392) = 15.14$, $p < .001$, $\eta^2 = .07$, Paranoia (Pa), $F(2, 392) = 5.83$, $p < .01$, $\eta^2 = .03$, Psychasthenia (Pt), $F(2, 392) = 14.98$, $p < .001$, $\eta^2 = .07$, and of Schizophrenia (Sc) $F(2, 392) = 12.76$, $p < .001$, $\eta^2 = .06$.

Table 2. One-way ANOVA Main effect of Disorder Diagnosis on *Hypochondriasis* (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (MF), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical scales.

Fixed Factor	*D.V.*	*df*	*F*	*p*	η^2
Diagnosis	Hs	2,392	1.15	.316	.006
	D	2,392	8.14	< .001	.040
	Hy	2,392	1.86	.157	.009
	Pd	2,392	6.70	< .001	.033
	Mf	2,392	15.14	< .000	.072
	Pa	2,392	5.83	< .01	.029
	Pt	2,392	14.98	< .001	.071
	Sc	2,392	12.76	< .001	.061

Note. Multivariate Test: $\lambda = .76$, $F(16, 770) = 7.008$, $p < .001$, $\eta^2 = .127$

The univariate tests provide an initial inside about our research purpose, allowing to outline a preliminary inference about the most salient MMPI dimensions for OCD (estimated marginal mean of each MMPI dimension for the three groups of patients are reported in Table 3).

Table 3. Estimated marginal means of *Hypochondriasis* (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (MF), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical scales between Obsessive-Compulsive Disorder (OCD), Panic Disorder (PD), and Mood Disorder (MD).

				95% CIs	
D.V.	*Diagnosis*	*Mean*	*SE*	*Lower*	*Upper*
Hs	OCD	67.06	.89	65.30	68.82
	PD	68.59	1.49	65.65	71.53
	MD	65.57	1.33	62.96	68.17
D	OCD	78.61	1.00	76.64	80.58
	PD	71.99	1.67	68.70	75.28
	MD	80.60	1.49	77.68	83.52
Hy	OCD	72.58	.83	70.95	74.21
	PD	71.40	1.38	68.68	74.12
	MD	69.74	1.23	67.32	72.15
Pd	OCD	69.39	.85	67.73	71.05
	PD	63.37	1.41	60.59	66.15
	MD	68.13	1.26	65.66	70.60
Mf	OCD	55.26	.93	53.44	57.08
	PD	49.39	1.56	46.34	52.43
	MD	46.66	1.38	43.95	49.36
Pa	OCD	58.87	.73	57.43	60.30
	PD	54.01	1.22	51.61	56.41
	MD	57.61	1.08	55.48	59.74
Pt	OCD	73.33	.90	71.55	75.10
	PD	63.99	1.51	61.02	66.96
	MD	68.78	1.34	66.14	71.41
Sc	OCD	68.30	.94	66.46	70.15
	PD	59.45	1.57	56.36	62.54
	MD	63.63	1.39	60.89	66.37

To draw more accurate conclusions about the results, we conducted a Sidak post-hoc test (Table 4).

Table 4. Sidak multiple comparisons among *Obsessive-Compulsive Disorder* (OCD), *Panic Disorder* (PD), and *Mood Disorder* (MD) on *Hypochondriasis* (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (Mf), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical scales.

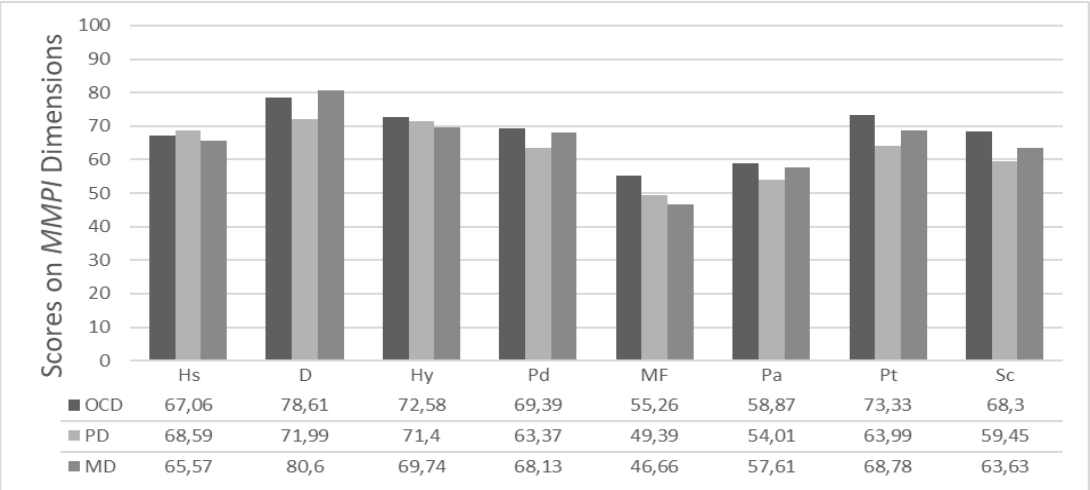
					95% CIs	
D.V.	*Diagnosis (I)*	*Diagnosis (J)*	*Mean Diff. (I - J)*	*SE*	*Lower*	*Upper*
Hs	OCD	PD	-1.53	1.74	-5.70	2.64
		MD	1.49	1.60	-2.34	5.33
D	OCD	PD	6.62**	1.95	1.95	11.30
		MD	-1.99	1.79	-6.28	2.31
Hy	OCD	PD	1.19	1.61	-2.68	5.05
		MD	2.85	1.48	-.71	6.40
Pd	OCD	PD	6.02***	1.65	2.07	9.97
		MD	1.26	1.51	-2.37	4.89
Mf	OCD	PD	5.87**	1.81	1.54	10.20
		MD	8.60***	1.66	4.62	12.58
Pa	OCD	PD	4.85**	1.42	1.44	8.26
		MD	1.26	1.31	-1.87	4.39
Pt	OCD	PD	9.34***	1.76	5.12	13.56
		MD	4.55*	1.62	0.67	8.42
Sc	OCD	PD	8.85***	1.83	4.46	13.24
		MD	4.68*	1.68	0.64	8.71

Note. $*p < .05$, $**p < .01$, $***p < .001$

In this case, we focused our attention on each dimension to better differentiate the OCD from the other two types of disorder. Regarding the Depression dimension, we found that OCD differed significantly only from the panic disorder, M_{OCD} = 78.61; SE = 1, M_{PD}= 71.99; SE = 1.67, mean difference = 6.62, SE = 1.95, $p < .01$, 95% CI = [1.95, 11.30], but not from the mood disorder, M_{OCD} = 78.61, SE = 1, M_{MD} = 80.60, SE = 1.48, mean difference = -1.99, SE = 1.80, $p = .61$, 95% CI = [-6.28, 2.31]. Similar results were found also for the Psychopathic Deviate dimension, M_{OCD} = 69.39, SE = .85, M_{PD}= 63.37; SE = 1.42, mean difference = 6.02, SE = 1.65, $p < .01$, 95% CI = [2.07, 9.97] and M_{OCD} = 69.39, SE = .85, M_{MD} = 68.13, SE = 1.25, mean difference = 1.26, SE = 1.51, $p = .79$, 95% CI = [-2.37, 4.89], as well as for the Paranoia dimension, M_{OCD} = 58.87, SE = .73, M_{PD}= 54.01; SE = 1.22, mean difference = 4.85, SE = 1.42, $p < .01$, 95% CI = [1.44, 8.26] and M_{OCD} = 58.87, SE = .73, M_{MD} = 57.61, SE = 1.08, mean difference = -1.26, SE = 1.31, $p = .71$, 95% CI = [-1.87, 4.39]. Analysis revealed that the dimensions which best discriminated OCD from both panic disorder and mood disorder

were represented by those of Masculinity/Femininity, Schizophrenia, and Psychasthenia. Indeed, the difference between the MF mean of OCD group, M = 55.26, SE = .93, and the PD group, M = 49.39, SE = 1.55, was equal to 5.87, SE = 1.81 $p < .01$, 95% CI = [1.54, 10.20], whereas that one between OCD group and the MD group, M = 46.66, SE = 1.38, was equal to 8.60, SE = 1.66, $p < .001$, 95% CI = [4.62, 12.58]. Even for the Schizophrenia dimension, participants with an OCD diagnosis reported higher scores (M = 68.30, SE = .94) than participants with PD diagnosis, M = 59.45, SE = 1.57, mean difference = 8.85, SE = 1.83, $p < .001$, 95% CI = [4.46, 13.24], and then participants with MD diagnosis, M = 63.63, SE = 1.39, mean difference = 4.68, SE = 1.68, $p < .05$, 95% CI = [0.64, 8.71]. Finally, the post-hoc comparisons revealed remarkable differences between patients with an obsessive-compulsive disorder and patients with a panic disorder, M_{OCD} = 73.33, SE = .90, M_{PD}= 59.45; SE = 1.57, mean difference = 9.34, SE = 1.76, $p < .001$, 95% CI = [5.12, 13.56] as well as between patients with OCD and patients with a mood disorder, M_{OCD} = 73.33, SE = .90, M_{MD} = 63.63, SE = 1.39, mean difference = 4.55, SE = 1.62, $p < .05$, 95% CI = [0.67, 8.42]. As can be seen in Figure 1, the above analysis allowed us to draw up an MMPI profile of patients affected by obsessive-compulsive disorder compared to patients with panic disorder and patients with mood disorder, identifying which MMPI personality traits were the main and related to OCD.

Figure 1. Observed means of *Hypochondriasis* (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (MF), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical scales among *Obsessive-Compulsive Disorder* (OCD), *Panic Disorder* (PD), and *Mood Disorder* (MD).



Note. Post-hoc comparison. MF: $M_{OCD} - M_{PD}$, $p < .01$, $M_{OCD} - M_{MD}$, $p < .001$; Pt: $M_{OCD} - M_{PD}$, $p < .001$, $M_{OCD} - M_{MD}$, $p < .05$; Sc: $M_{OCD} - M_{PD}$, $p < .001$, $M_{OCD} - M_{MD}$, $p < .05$

Multiple Linear Regression Analysis

From the multivariate analysis of variance, the Masculinity/Femininity, Schizophrenia, and Psychasthenia resulted to be the most relevant MMPI dimensions for the OCD (vs. PD and MD). To find further support and greater clarity about these results, we decided to implement a multiple linear regression model. Thus, pursuing the aim of identifying which MMPI dimensions were most important in predicting OCD, we included the 8 MMPI dimensions simultaneously as predictors in the regression model. The dependent variable was represented by the participants' scores on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989). As a consequence, only participants affected by OCD were examined. The analysis revealed a significant overall multiple linear regression model, $R^2 = .28$, $F(8, 104) = 5.04$, $p < .001$. From the analysis it has emerged that the most powerful MMPI dimension in predicting the severity of OCD symptoms was represented by the Psychasthenia. As shown in Table 5, it was the only predictor that remained significant by controlling for all the others, $B = .17$, $SE = .07$, $t = 2.26$, $p < .05$. Such a result is theoretically relevant, given that the Psychasthenia dimension concerns obsessions, doubts, and anxiety. Psychasthenia and OCD represent a failure in the attempt to resist the implementation of determinate actions and thoughts, despite their inadequacy, resulting from a real or experienced anxiety situation.

Table 5. Multiple linear regression model for predicting OCD symptoms (Yale-Brown Obsessive-Compulsive Scale) on the basis of *Hypochondriasis* (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (MF), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical scales.

Predictors	*B*	*SE*	*β*	*t*	*p*
Hs	-.01	.06	-.01	-.10	.91
D	.08	.05	.19	1.45	.15
Hy	-.07	.07	-.13	-.96	.34
Pd	-.05	.05	-.10	-1.01	.32
MF	-.05	.04	-.10	-1.08	.28
Pa	.11	.06	.18	1.70	.09
Pt	.17	.08	.36	2.26	.03
Sc	-.03	.07	-.06	-.41	.68

3.3 Discriminant Function Analysis

Although the multiple regression analysis showed that the MMPI dimension of Psychasthenia was the only one able to predict the symptoms of OCD, this result was only partially consistent with what emerged in the MANOVA. Therefore, we decided to conduct a discriminant function

analysis. It allows for estimating the discriminant function coefficient for assessing the importance of a particular variable. Since we were interested in discriminating OCD from both PD and MD, we gathered patients suffering from these two latter psychopathologies in a single group to obtain a unique discriminant function. Therefore, the analysis was aimed at maximizing the between-groups differences on discriminant scores and at minimizing the within-group differences. The analysis showed a moderated eigenvalue of .20 with a canonical correlation equal to .40. The estimated function discriminated the two groups, highlighting that the between-groups differences were greater than within-group differences. In addition, the analysis revealed also a Wilks' lambda equal to .83, $\chi^2(8) = 69.49$, $p = < .001$, showing how the group means significantly differed from each other.

The discriminant analysis indicated that the MMPI Psychasthenia traits exerted the largest effect. Such dimensions showed a standardized canonical discriminant coefficient equal to .92 and a loading of .56 (Table 5). Finally, the discriminant analysis also revealed that for the groups of OCD patients and patients with a PD or MD, a high percentage of the cases were correctly classified (75% and 60.5%, respectively), whereas 69.6% of all the original cases were correctly classified.

Table 6. Discriminant analysis for the OCD group based on Hypochondriasis (Hs), *Depression* (D), *Hysteria* (Hy), *Psychopathic Deviate* (Pd), *Masculinity/Femininity* (MF), *Paranoia* (Pa), *Psychasthenia* (Pt), *Schizophrenia* (Sc) MMPI clinical scales.

Predictors	*Standardized canonical discriminant function coefficients*	*Wilks' lambda*
Hs	-.57	.01
D	-.38	.14
Hy	.24	.20
Pd	-.01	.30
MF	.63	.61
Pa	-.16	.30
Pt	.92	.56
Sc	.31	.53

Note. Results for the canonical discriminant function: *Eigenvalue* = .20, Wilks' lambda = .84 (R^2 = .16), *Chi-square* = 69.494; *df* = 8, $p < .001$

4. Discussion

Statistical analysis shows a difference about the HPC-MMPI-2 code among subjects diagnosed with OCD, depression, and panic disorder. Obsessive patients appear to have high scores in the "Pt," "D," and "Sc" scales. Specifically, the "Pt" scale is associated with the "Sc" scale, which did not elevate in the other two control groups.

A discriminant analysis reveals a significant positive correlation between the "Pt" scale and the "Sc" and "Pa" scales. There is also a significant relationship between low scores on the "Mf" behavioral scale and the "Pt" scale.

The results of this study confirm what is already present in the literature as an empirical fact, namely that the "Pt" scale is an OCD-related recurring characteristic and how much the specific code 2-7 (D-PT) is predictive of obsessive symptomatology. These data correspond to experiences of anxiety, presence of intrusive thoughts, and secondary experiences of demoralization that are normally found in OCD in clinical practice (Mancini & Gragnani, 2004). On the other hand, the "Sc" scale is a specific indicator of the obsessive symptomatology capable of distinguishing this dimension from the panic anxiety spectrum and from the depressive frame.

This HPC code (2-7/7-2) can be really helpful to differentiate between OCD and other kinds of patients, including OCDP patients who are characterized by the 4-9 code (Samuel & Widiger, 2010).

We find, according to the literature (Butcher, 2016; Fals-Stewart & Schafer 1993; Femia et al., 2018; Maj, 2005; Samuel & Widiger, 2010), the presence of a specific HPC configuration in OCD patients that distinguishes them from the control groups including patients with diagnoses of mood disorders and panic disorder (Figure 1 and Table 2). This specific configuration is characterized by the elevation of "Pt," "D," and "Sc" scales (Tables 2 and 3).

The increase of the "Pt" scale could point out the presence of peculiar obsessive anxiety, the "D" scale might show a pessimistic polarization, while the "Sc" scale could indicate the presence of self-closure.

It confirms the cognitivist framework of OCD, which acknowledges the tendency to experience unwanted intrusive thoughts as fundamental underlying processes of the disorder. These are the sources of negative beliefs about the self that cause secondary feelings of demoralization and sadness together with cognitive rigidity and closure toward the others and the environment.

A positive correlation occurs between "Pt," "Sc," and "Pa" scales (Table 4), as the link between these scales would be empirical evidence of the common clinical experience marked by mistrust

toward other intentions and the need for control that occurs in the relational environment in patients diagnosed with OCD.

Secondly, the data show (Table 5) that the "Pt" scale is predictive of the severity of the OCD symptoms measured by the Yale-Brown clinical interview, highlighting a positive correlation between the two scores and suggesting that the "Pt" scale could be a good predictor of obsessive symptomatology. It is possible to report a significant correlation between the clinical "Pt" scale and the behavioral "Mf" scale (Tables 2 and 6).

The correlation reported between the "Pt" and the "Mf" scales suggests a link between the ruminative processes and the personal identity area, possible doubts about the self, behavioral/interpersonal attitudes, and/or the sexual behavior sphere.

When its value reaches a very high or low score, the "Mf" scale is often associated with issues about the interpersonal, sexual, or love sphere (Butcher et al., 2015).

This occurrence could be explained by the presence of "forbidden thoughts," otherwise described by Mancini et al. (2016) as the kind of thoughts occurring when the OCD patient experiences a specific kind of guilt known as "moral guilt", the feeling of trespassing a perceived moral rule and the possible harmful consequences.

The experience of trespassing a moral rule with their own thoughts can often lead to an obsessive symptomatology and ritualistic processes of mental neutralization in this kind of patient. We could investigate this correlation by examining its occurrence among different OCD subtypes (Checking, Washer, Symmetry and Ordering, Ruminations/Intrusive Thoughts).

Moreover, the specific HPC configuration found in the OCD sample and considered in this paper ("Pt" – "D" – "Sc") could give evidence to resolve the doubts coming from considering OCD in an ambiguous position between psychotic and neurotic functioning.

The classical scoring criteria from the interpretation manuals for the clinical MMPI-2 scales (Greene, 2011), identify three main indexes: a neurotic index ("Hs," "D," and "Hy"), a sociopathic index ("Pd" and "Mf"), and a psychotic index ("Pa," "Pt," and "Sc"). The "Pt" scale and the "Sc" scale, commonly associated with a psychotic functioning index (*ibidem*), might have a different meaning for OCD: the increase of scores on these scales are not necessarily an index of a deficit in thought processing and/or an altered reality check. These scores reflect instead the fear of the person to be or to become insane because of the presence of obsessive thoughts, making the score on the "Sc" scale increase (Friedman et al., 2014), as usually happens in situations characterized by high situational stress (Butcher et al., 2015) such as OCD.

The elevation of the "Sc" scale could classify the OCD symptomatology on the border between psychotic and neurotic functioning. In the HPC pattern evidenced by the present study, the "Sc" scale differentiates the OCD group from the control group, but the "Sc" scale does not indicate the presence of psychotic self-closure, nor hostility or detachment processes, except those cases in which there are strange ideations. The elevation of the "Sc" scale could instead be a consequence determined by the obsessions that lead to avoidance and, consequently, a deficit in interpersonal processes.

A similar phenomenon has already been investigated (Femia et al., 2018) for the "PSY – Psychoticism" scale of the SCL-90-R (De Rogatis & Unger, 2010). In conclusion, this paper confirms some of the precedent findings in literature about MMPI recurring features of OCD patients, and highlights new as the elevation of the "Sc" scale and the correlation between the "Mf" and "Pt" scores, advancing possible explanations of this phenomenon from a cognitive-behavioral point of view.

4.1 Limitations

A first necessary limitation for this study was the need to consider only data from participants that did not have comorbidities. It also describes an uncommon situation in clinical practice, since the high comorbidity that often occurs between OCD and mood and anxiety disorders.

A second limitation could be addressed in the need for a larger sample, so to analyze the differences between the groups.

A third and last limitation is the focus on the clinical scales of MMPI-2, even if despite the presence of more updated versions of the MMPI-2 (Ben-Porath, 2012; Graham, 2012; Sellbom et al., 2008), the basic clinical scales seem to highlight a psychological functioning that positively correlates with the specific self-report questionnaires used to detect obsessive symptomatology, like the correlation we have found (Table 5) between the "Pt" scale and the global score of the Y-BOCS.

5. Conclusions

This study confirms how often OCD can trigger fears of madness in the patient, make him feel far from reality, and lead him to be wary of his cohesiveness of thought.

The hyper-prudential reasoning could therefore be reflected in the tests and lead these subjects to answer affirmatively to the items that investigate the coherence and quality of thought.

The rise of the SC scale of the MMPI-2 test of this study could support the clinician during the assessment phases.

A direction for future research could be to elaborate more about the emerging differences between the different OCD types and to determine which scales have the major impact on the various specific obsessive content of each subtype, trying to master the relationship between the behavioral "Mf" scale and the clinical "Pt" scale.

A further research goal could be to deeply investigate the correlation between the "Pt" scale of the MMPI-2 and the scores of the Yale-Brown Interview by comparing the results with the scores of other methods that assess the obsessive symptomatology like the OCI-R (Obsessive-Compulsive Inventory – Revised; Foa et al., 2002) and the Padua Inventory (Sanavio, 1988), trying to understand if the "Pt" scale correlates more with a specific factor or OCD subtype.

References

1. American Psychiatric Association (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Publisher. http://dx.doi.org/10.1176/appi.books.9780890425596
2. Abramowitz, J. S. (2006). *Understanding and treating obsessive-compulsive disorder: A cognitive behavioral approach*. New York: Routledge. https://doi.org/10.4324/9781410615718
3. Abramowitz, J. S., Nelson, C. A., Rygwall, R., & Khandker, M. (2007). The cognitive mediation of obsessive-compulsive symptoms: a longitudinal study. *Journal of Anxiety Disorders*, *21*(1), 91-104. https://doi.org/10.1016/j.janxdis.2006.05.003
4. Archer, R. P., Griffin, R., & Aiduk, R. (1995). MMPI-2 Clinical Correlates for Ten Common Codes. *Journal of personality assessment*, *65*(3), 391-407. https://doi.org/10.1207/s15327752jpa6503_1
5. Ben-Porath, Y. S. (2012). *Interpreting the MMPI-2-RF*. Minneapolis, MN, US: University of Minnesota Press.
6. Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.
7. Berrios, G. E. (1989). Obsessive-compulsive disorder: its conceptual history in France during the 19th century. *Comprehensive psychiatry*, 30(4), 283-295. https://doi.org/10.1016/0010-440X(89)90052-7
8. Butcher, J. N. (2016). *Preparing for Court Testimony Based on the MMPI-2 Guide 6th Edition*. Minneapolis: Department of Psychology University of Minnesota. http://mmpi.umn.edu/documents/Preparing%20for%20Court%20Testimony%20Based%20on%20the%20MMPI-2.pdf
9. Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989*). Manual for the restandardized Minnesota Multiphasic Personality Inventory: MMPI–2*. An administrative and interpretive guide. Minneapolis: University of Minnesota Press.
10. Butcher, J. N., Hass, G. A., Greene, R. L., & Nelson, L. D. (2015). *Using the MMPI-2 in forensic assessment*. Washington, DC: American Psychological Association.
11. Carlson, E. B., & Putnam, F. W. (1993). An update on the Dissociative Experiences Scale. *Dissociation: Progress in the Dissociative Disorders, 6*(1), 16–27.
12. Derogatis, L. R., & Unger, R. (2010). *Symptom checklist-90-revised. The Corsini encyclopedia of psychology*, 1-2. https://doi.org/10.1002/9780470479216.corpsy0970
13. Fals-Stewart, W., & Schafer, J. (1993). MMPI correlates of psychotherapy compliance among obsessive-compulsives. *Psychopathology*, *26*(1), 1-5. https://doi.org/10.1159/000284793
14. Femia, G., Visco-Comandini, F., Cosentino, T., Sorbara, F., & Gragnani, A. (2018). Identification of specific correlations in obsessive-compulsive disorder among different measures. *Clinical Neuropsychiatry*,*15*(6), 379-383.
15. Field, A. (2013). *Discovering statistics using IBM SPSS statistics (4th ed)*. London: Sage.

16. First, M. B., Williams, J. B. W., Karg, R. S., & Spitzer, R. L. (2015). *Structured clinical interview for DSM-5 disorders, clinician version (SCID-5-CV)*. Arlington, VA: American Psychiatric Association. https://doi.org/10.1007/978-981-287-087-2_80-1

17. First, M. B., Williams, J. B., Benjamin, L. S., & Spitzer, R. L. (2016). *SCID-5-PD: Structured clinical interview for DSM-5® personality disorders*. American Psychiatric Association Publishing.

18. Foa, E. B., Huppert, J. D., Leiberg, S., Langner, R., Kichic, R., Hajcak, G., & Salkovskis, P. M. (2002). The Obsessive-Compulsive Inventory: development and validation of a short version. *Psychological assessment*, 14(4), 485-496. https://doi.org/10.1037/1040-3590.14.4.485

19. Friedman, A. F., Nichols, D. S., Levak, R. W., & Webb, J. T. (2014). *Psychological assessment with the MMPI-2*. New York: Routledge.

20. Goodman, W. K., Price, L. H., Rasmussen, S. A., Razure, C., Fleischmann, R. L., Hill, C. L., … & Charney, D. S. (1989). The Yale-brown obsessive compulsive scale: I. Development, use, and reliability. *Archives of General Psychiatry* 46(11), 1006-1011. https://doi.org/10.1001/archpsyc.1989.01810110048007

21. Graham, J. R. (2012). *MMPI–2: Assessing personality and psychopathology (5th ed.)*. New York, NY: Oxford University Press.

22. Gravetter, F., & Wallnau, L. (2014). *Essentials of statistics for the behavioral sciences (8th ed)*. Belmont: Wadsworth.

23. Greene, R. L. (2011). *The MMPI-2/MMPI-2-RF: an interpretive manual*. Boston, MA: Allyn & Bacon. Minneapolis, MN: University of Minnesota Press.

24. Haberkamp, A., Schmidt, F., Hansmeier, J., & Glombiewski, J. A. (2019). Contamination-fear in subclinical obsessive-compulsive disorder: A further proof for no preferential processing of disorder-related stimuli. *Journal of Obsessive-Compulsive and Related Disorders*, 21, 26-36. https://doi.org/10.1016/j.jocrd.2018.11.004

25. Hathaway, S. R., & McKinley, J. C. (1951). *Minnesota Multiphasic Personality Inventory; Manual, revised*. New York: Psychological Corporation.

26. Knowles, K. A., Jessup, S. C., & Olatunji, B. O. (2018). Disgust in anxiety and obsessive-compulsive disorders: recent findings and future directions. *Current psychiatry reports*, 20(9), 68. https://doi.org/10.1007/s11920-018-0936-5

27. Kumar, R. (2017). Verbal exposure for irrational fears: New directions in research and applications. *Clinical and Experimental Psychology*, 3(3), 1-2. https://doi.org/10.4172/2471-2701.1000157

28. Maj, M. (Eds.). (2005). *Personality disorders: Evidence and Experience in Psychiatry* (Volume 8). London: John Wiley & Sons.

29. Mancini, F., Fadda, S., & Rainone, A. (2016). Le caratteristiche del DOC e gli interrogativi che solleva. In F. Mancini (Ed.), *La Mente Ossessiva.* Milano: Raffello Cortina Editore (pp. 3-38).

30. Mancini, F., & Gangemi, A. (2016). I processi cognitivi nel DOC. In F. Mancini (Ed.), *La Mente Ossessiva.* Milano: Raffello Cortina Editore (pp. 69-90).

31. Mancini, F., & Gragnani, A. (2004). Gli Homework nel Disturbo Ossessivo-compulsivo. In F. Baldini (Ed.), *Homework: un'antologia di prescrizioni terapeutiche.* Milano: McGraw Hill (pp. 105-136).

32. McGuire, J. F., Orr, S. P., Wu, M. S., Lewin, A. B., Small, B. J., Phares, V., ... & Storch, E. A. (2016). Fear conditioning and extinction in youth with obsessive-compulsive disorder. *Depression and anxiety*, 33(3), 229-237. https://doi.org/10.1002/da.22468

33. Menzies, R. E., & Dar-Nimrod, I. (2017). Death anxiety and its relationship with obsessive-compulsive disorder. *Journal of Abnormal Psychology*, 126(4), 367-377. https://doi.org/10.1037/abn0000263

34. Monaco, F., Cavanna, A., Magli, E., Barbagli, D., Collimedaglia, L., Cantello, R., & Mula, M. (2005). Obsessionality, obsessive–compulsive disorder, and temporal lobe epilepsy. *Epilepsy & Behavior*, *7*(3), 491-496. https://doi.org/10.1016/j.yebeh.2005.07.003

35. Moritz, S., Meier, B., Kloss, M., Jacobsen, D., Wein, C., Fricke, S., & Hand, I. (2002). Dimensional structure of the Yale–Brown obsessive-compulsive scale (Y-BOCS). *Psychiatry Research*, *109*(2), 193-199. https://doi.org/10.1016/S0165-1781(02)00012-4

36. O'Connor, K., & Audet, J. S. (2019). OCD is not a phobia: an alternative conceptualization of OCD. *Clinical Neuropsychiatry*, 16(1), 39-46.

37. Rachman, S. (1993). Obsessions, responsibility and guilt. *Behavior Research and Therapy, 31*(2), 149–154. https://doi.org/10.1016/0005-7967(93)90066-4

38. Reddy, Y. J., Sudhir, P. M., Manjula, M., Arumugham, S. S., & Narayanaswamy, J. C. (2020). Clinical Practice Guidelines for Cognitive-Behavioral Therapies in Anxiety Disorders and Obsessive-Compulsive and Related Disorders. *Indian Journal of Psychiatry*, 62(Suppl 2), S230-S250. Available from: https://www.indianjpsychiatry.org/text.asp?2020/62/8/230/276100

39. Ruscio, A. M., Stein, D. J., Chiu, W. T., & Kessler, R. C. (2010). The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. *Molecular psychiatry*, *15*(1), 53-63. https://doi.org/10.1038/mp.2008.94

40. Salkovskis, P. M. (1989). Cognitive-behavioral factors and the persistence of intrusive thoughts in obsessional problems. *Behavior research and therapy*, *27*(6), 677-682. https://doi.org/10.1016/0005-7967(89)90152-6

41. Samuel, D. B., & Widiger, T. A. (2010). A comparison of obsessive–compulsive personality disorder scales. *Journal of personality assessment*, *92*(3), 232-240. https://doi.org/10.1080/00223891003670182

42. Sanavio, E. (1988). Obsessions and compulsions: the Padua Inventory. *Behavior research and therapy*, *26*(2), 169-177. https://doi.org/10.1016/0005-7967(88)90116-7

43. Sellbom, M., Ben-Porath, Y. S., & Bagby, R. M. (2008). Personality and psychopathology: Mapping the MMPI-2 Restructured Clinical (RC) Scales onto the five factor model of personality. *Journal of Personality Disorders*, *22*(3), 291-312. https://doi.org/10.1521/pedi.2008.22.3.291

44. Settineri, S., Merlo, E. M., Alibrandi, A., Sicari, F., Dritto, I. P., Strangis, F., & Frisone, F. (2019). Personality and phobias in adolescence: age and gender in psychopathological expressions. *Journal of Mind and Medical Sciences*, 6(2), 304-310. https://doi.org/10.22543/7674.62.P304310

45. Steketee, G., & Barlow D. H. (2004). Obsessive-Compulsive disorder. In D. H. Barlow (Ed.) *Anxiety and its disorders: the nature and treatment of anxiety and panic*, pp. 516-550. New York: Guilford Press.

46. Wells, A., & Papageorgiou, C. (1998). Relationships between worry, obsessive–compulsive symptoms and meta-cognitive beliefs. *Behavior research and therapy*, *36*(9), 899-913. https://doi.org/10.1016/S0005-7967(98)00070-9

47. Wroe, A. L., & Salkovskis, P. M. (2000). Causing harm and allowing harm: A study of beliefs in obsessional problems. *Behavior Research and Therapy, 38,* 1141–1162. https://doi.org/10.1016/S0005-7967(99)00145-X

DOI: 10.6092/2282-1619/mjcp-2554