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Comparing the Interpersonal Profiles of Obsessive-Compulsive Personality Disorder and Avoidant Personality Disorder: Are There Homogeneous Profiles or Interpersonal Subtypes?

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Previous studies have shown that individuals with personality disorder (PD) suffer from significant interpersonal distress. Some PDs, such as avoidant personality disorder (AvPD), have been characterized with a clear homogeneous interpersonal profile. Other PDs, such as obsessive-compulsive personality disorder (OCPD), have shown significant heterogeneity rather than a distinct profile. Our study aimed to compare these two PDs and determine their interpersonal profiles. Analyses included 43 patients with OCPD and 64 with AvPD recruited in 2 clinical trials. They completed the Inventory of Interpersonal Problems at baseline (Alden, Wiggins, & Pincus, 1990). Structural summary and circular statistic methods were used to examine group interpersonal profile. Cluster analysis was used to identify subtypes within the OCPD and AvPD samples. The AvPD sample demonstrated a homogeneous interpersonal profile placed in the socially avoidant octant of the circumplex. In contrast, the OCPD group exhibited a heterogeneous interpersonal profile, with two subtypes on opposite sides of the circumplex: (a) "aggressive" (i.e., vindictive-domineering) and (b) "pleasing" (i.e., submissive-exploitable). Both clusters demonstrated homogeneous, prototypical, and distinct interpersonal profiles. Our findings show that individuals with either OCPD or AvPD exhibit significant interpersonal distress. Although AvPD may be inherently an interpersonal PD, OCPD cannot classified into one homogenous profile, but rather two distinct interpersonal subgroups. The heterogeneity may be explained by the presence of interpersonal subtypes. Detection of subtypes can inform future research on treatment targets as well as personalized interventions, tailored to patients' specific interpersonal difficulties.

Keywords: obsessive-compulsive personality disorder, avoidant personality disorder, interpersonal problems, personality disorders, subtypes

Personality disorders (PDs) are characterized with significant difficulties in interpersonal-social functioning. Individuals with PD experience difficulties developing and maintaining adaptive and healthy relationships and struggle in social interactions with others (American Psychiatric Association, 2013). Interpersonal problems are associated with significant psychological distress and psychiatric symptoms, as well as poor response to treatment (Berghout, Zevalkink, Katzko, & de Jong, 2012; Wilson, Stroud, & Durbin, 2017). Thus, understanding the nature of interpersonal distress patients with PD is crucially important. In this study, we focused on two common PDs—obsessive–compulsive personality disorder (OCPD) and avoidant personality disorder (AvPD)—associated with significant psychosocial impairment and interpersonal difficulties which are stable over time (Skodol, 2018; Skodol et al., 2005).

OCPD is one of the most common PDs in the general population, with estimated prevalence ranging from 2.1% to 7.9%, according to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM–5*; American Psychiatric Association, 2013). However, despite its prevalence, it is largely understudied (de Reus & Emmelkamp, 2012; Grant, Mooney, & Kushner, 2012). Many studies have shown that interpersonal distress is a core feature of personality disorders, including OCPD (Girard et al., 2017; Hopwood, Wright, Ansell, & Pincus, 2013; Wilson et al., 2017). Some studies highlighted the centrality of rigidity, negative affectivity, and interpersonal aggression, as well as need to control

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others as central components (Ansell et al., 2010; Pulay et al., 2008; Steenkamp, Suvak, Dickstein, Shea, & Litz, 2015; Villemarette-Pittman, Stanford, Greve, Houston, & Mathias, 2004). Others argued that individuals with OCPD are characterized with insecure avoidant attachment style (Wiltgen et al., 2015) and experience loneliness and social isolation due to their difficulty establishing and maintaining warm and intimate relationships, especially with aging (de Reus & Emmelkamp, 2012). Findings are mixed regarding the interpersonal prototypicality of OCPD, with some reports of low and interpretable levels (Wilson et al., 2017), and others of levels comparable with those in other PDs (Girard et al., 2017).

However, some work suggests that OCPD is not an interpersonal disorder in nature. Proponents of the five-factor model (FFM; Widiger & Crego, 2019; Widiger & Trull, 2007) argue against an interpersonal model for all personality disorders, including OCPD. The FFM includes not only two interpersonal factors but also three factors that are defined as noninterpersonal: neuroticism, openness, and conscientiousness (Samuel, Riddell, Lynam, Miller, & Widiger, 2012; Samuel & Widiger, 2011; Widiger, 2015). In a recent study, depressed patients with OCPD showed similar interpersonal distress levels as depressed without personality pathology (Erkens et al., 2018).

The current literature suggests a complex and nuanced interpersonal profile of OCPD that warrants further investigation. Understanding the underlying causes for the variability in the interpersonal presentation of patients with OCPD can guide development of personalized psychosocial interventions targeted to patients' specific difficulties. One of the most well validated and widely used measures to study interpersonal features of PD is the Inventory of Interpersonal Problems (IIP; Horowitz, Rosenberg, Baer, Ureño, & Villaseñor, 1988). Scores can be interpreted within a circumplex with two orthogonal axes: a vertical axis (of status, dominance, power, or control) and a horizontal axis (of affiliation, friendliness, warmth, or love; Alden et al., 1990). Since its development, the interpersonal circumplex has been adopted as a conceptual interpersonal framework to describe personality disorders. In the case of OCPD, studies suggested that different interpersonal profiles on the circumplex emerge when different measures are used. Solds, Budman, Demby, and Merry (1993) found that patients with OCPD fell in the aloof-introverted octant (i.e., cold-socially avoidant), when a self-report measure (the Millon Clinical Multiaxial Inventory) was used, but results from a structured clinical interview (the Personality Disorder Examination) placed the same patients near the center, indicating that they are not well represented in circumplex space. Similarly, in another study, self-reports placed OCPD patients on the domineering-intrusive quadrant while observer ratings placed them in the socially avoidant-nonassertive quadrant (Sim & Romney, 1990). Recent evidence suggests there may be interpersonal subtypes of OCPD. Cain, Ansell, Simpson, and Pinto (2015) found that individuals with OCPD + Obsessive-Compulsive Disorder (OCD) reported submissive interpersonal problems, whereas individuals with OCPD (without comorbid OCD) were located in the hostile-dominant interpersonal octant of the circumplex. In another study, Ansell et al. (2010) also found two interpersonal subtypes in a large sample of Hispanics with OCPD: aggressive (high scores on the interpersonal rigidity factor) and depressive (high scores on perfectionism). Finally, some argued that given the mixed results regarding a specific interpersonal profile of OCPD, it is possible it is not an interpersonal disorder in nature (Widiger & Hagemoser, 1997). These findings highlight the interpersonal heterogeneity among individuals with OCPD and the need to develop a better understanding of their interpersonal profile.

In contrast to the mixed findings in research of interpersonal features of OCPD, consistent evidence supports a distinct interpersonal profile for AvPD. Thus, it could be considered an optimal comparison group in the exploration of interpersonal profile to OCPD (Barber, Morse, Krakauer, Chittams, & Crits-Christoph, 1997). OCPD and AvPD are both characterized with interpersonal distress, classified as cold, nonassertive, and socially avoidant, with higher levels of interpersonal distress in AvPD (Erkens et al., 2018; Girard et al., 2017; Wilson et al., 2017).

The prevalence of AvPD is approximately 1.5% to 2.5%, although estimates vary (see Lampe & Malhi, 2018 for a recent review). Studies have consistently showed that individuals with this disorder suffer from interpersonal difficulties (Frandsen, Simonsen, Poulsen, Sørensen, & Lau, 2019; Lampe & Malhi, 2018; Weinbrecht, Schulze, Boettcher, & Renneberg, 2016). They typically map onto the aloof-introverted octant on the circumplex, as they tend to experience anxiety and embarrassment in social contexts and difficulty managing social interactions (Alden & Capreol, 1993; Sim & Romney, 1990; Solds et al., 1993). This interpersonal profile is in line with the *DSM–5* criteria, which includes an "active-detached" pattern of interpersonal interactions—a pervasive tendency to avoid social interaction due to fear of rejection and feelings of personal inadequacy (American Psychiatric Association, 2013; Lampe & Malhi, 2018). A recent study found that patients with social anxiety disorder (SAD), AvPD, or AvPD + SAD showed a homogenous IIP interpersonal profile of nonassertiveness, with three subgroups within this octant: nonassertive, friendly submissive, and cold-submissive (Frandsen et al., 2019).

In summary, research has shown that individuals with AvPD may be a homogenous group and present with a consistent pattern of interpersonal problems, whereas individuals with OCPD demonstrate variability in profiles. Our study compared the interpersonal profiles of these two groups. We aimed to identify whether particular interpersonal subtypes can be detected among individuals with OCPD. Based on previous research, we predicted that the AvPD group will be mapped onto the aloof-introverted octant of the IIP. In contrast, we predicted that the OCPD group will not map onto a specific octant. Given the mixed findings in the literature, we hypothesized that subtypes will be detected within the OCPD group. Because previous findings regarding the presence of interpersonal subtypes are inconsistent, we did not formulate specific subtypes hypotheses, and our analyses were exploratory.

Method

Participants

A sample of 107 patients (43 patients with OCPD and 64 with AvPD) were recruited at two sites in two treatment trials: University of Pennsylvania (UPenn) Medical Center and Mount Sinai Beth Israel Hospital (MSBI). The study was approved by the institutional review boards of both institutions. The UPenn study

was a pilot treatment trial that assessed the efficacy of supportive-expressive psychodynamic therapy for OCPD and AvPD (Barber et al., 1997). The MSBI study was a randomized clinical trial comparing alliance-focused integrative therapy with a short-term dynamic and cognitive–behavioral therapies for patients with Cluster C (anxious-avoidant) personality disorders (Muran, Safran, Samstag, & Winston, 2005; Muran, 2002). Our analyses included patients who were diagnosed at baseline with OCPD or AvPD as a primary Axis II diagnosis through a structured clinical interview. All diagnostic measures were administered by trained and reliable diagnosticians with excellent interrater reliability (see Barber et al., 1997; Muran et al., 2005 for details).

Patients were aged 19 to 66 (M = 36.93; SD = 11.63); 51% were women; 86% were Caucasian, 1%, Hispanic American, and 8%, African American, 5%, "other." At UPenn, patients were interviewed by PhD-level trained diagnosticians using the Structured Clinical Interview for *DSM–III–R*, which was used in this clinical setting at the time of data collection (Spitzer, Williams, Gibbon, & First, 1992). In all, 68% had a comorbid depressive disorder, 66% had anxiety disorder, and 5% had "other Axis I disorder" (e.g., eating disorder or adjustment disorder). Exclusion criteria included (a) substance abuse or dependence disorder in the last 12 months, (b) OCD, (c) concurrent psychotic or bipolar disorder, (d) organic dysfunction, (e) schizotypal or borderline personality disorders, (f) active suicidal ideation. At MSBI, PhD-level diagnosticians administered the Structured Clinical Interview for the *DSM–IV* (First, Spitzer, & Williams, 1995). In all, 55% met criteria for a current primary diagnosis of mood disorder, 28% anxiety disorder, 13% V code, and 4% adjustment disorder on Axis I of *DSM–IV*, and 35% met for multiple Axis I diagnoses. Exclusion criteria included (a) evidence of organic disorders, psychosis, mania, impulse control, and compulsive disorder (e.g., current eating and OCD), (b) current substance use disorder, and (c) use of psychotropic medication or involvement in another psychosocial treatment.

Measure

Inventory of Interpersonal Problems. The Inventory of Interpersonal Problems (IIP-64) is a self-report questionnaire of interpersonal difficulties that was administered at both sites with high internal consistency for subscales (Cronbach's αs ranged from .74 to .93; Table 1; Horowitz et al., 1988). It includes two types of items: interpersonal behaviors that are "hard for you to do" (e.g., "it is hard for me to be self-confident when I am with other people") and interpersonal behaviors that "you do too much" (e.g., "I open up to people too much"). Patients are asked to rate how distressing these problems are for them on a 5-point scale, ranging from *not at all* to *extremely*. Psychometric properties of the IIP are well-documented (Alden et al., 1990). As mentioned earlier, the items can be mapped on to the interpersonal circumplex across these eight subscales (i.e., octants): domineering, vindictive, cold, socially avoidant, nonassertive, exploitable, overly warm, and intrusive.

Statistical Analysis

Our analysis focused on the interpersonal circumplex of the IIP by comparing the mean scores of the octants and of the overall distress in the two samples (Alden et al., 1990). We conducted a structural summary analysis that examines the extent to which the interpersonal profile is prototypical to a specific group (i.e., common among individuals in the group) following the recommendations of Wright, Pincus, Conroy, and Hilsenroth (2009). Amplitude scores represent the difference between the group mean (i.e., average level of distress), and peak values (i.e., most predominant type of interpersonal problem) represent the degree of group profile differentiation. Higher amplitude reflects a distinct set of interpersonal problems. An amplitude value of 0 indicates a flat (i.e., undifferentiated) profile with no identifiable peak in the group (Gurtman & Balakrishnan, 1998). We also calculated the interpersonal profile's goodness of fit (R^2), which reflected the extent to which the group's circumplex scores (i.e., elevation, amplitude, and displacement) conform to the sinusoidal pattern expected from the circumplex. A low fit ($R^2 < .70$) reflects a complex profile in which the information cannot be represented accurately by the profile's amplitude and displacement, whereas a high fit ($R^2 > .80$) indicates a prototypical pattern. Finally, we analyzed the circumplex circular statistics, an alternative to linear statistics, which takes into the account mathematical properties of circular data, by using circular means as opposed to traditional linear means (see Wright et al., 2009 for details on this methodology).

We initially examined whether there are differences in interpersonal distress in patients with OCPD and AvPD and whether these differences are a function of demographics. Then, we followed a three-step framework. First, we compared the general level of interpersonal distress in OCPD and AvPD from the reported normative cohort (reported in Horowitz, Alden, Wiggins, & Pincus, 2003) as well as differences between OCPD and AvPD. The normative cohort comprised 800 adults aged 18 to 89, representative of the demographics of the U.S. population. We conducted these comparisons by calculating the differences between the mean interpersonal distress of each diagnostic group, as well as the mean interpersonal distress in each of the eight IIP subscales through a series of t tests.

Second, we used the structural summary method to explore whether a uniform interpersonal profile exists in the OCPD and AvPD groups by examining the group profile amplitude and goodness of fit. If one uniform interpersonal profile was not detected (i.e., $R^2 < .70$ and low amplitude), a third step was identification

Table 1
Descriptive Statistics for the Inventory of Interpersonal Problems Unstandardized Scores

IIP octants	N	M	SD	Cronbach's α
Domineering	107	7.96	6.36	.83
Vindictive	104	9.52	5.74	.78
Cold	104	13.07	7.02	.85
Socially avoidant	107	17.36	7.99	.89
Nonassertive	104	17.98	7.46	.88
Exploitable	107	14.79	6.46	.81
Overly nurturant	104	13.92	6.43	.82
Intrusive	106	7.71	5.31	.75
Total IIP Score	95	101.81	33.88	.93

Note. IIP = Inventory of Interpersonal Problems; IIP scales were not standardized on the respective national norm.

Table 2
Descriptive Statistics for the Inventory of Interpersonal Problems Unstandardized Scores for OCPD and AvPD and Differences Compared With the Normative Population

IIP	Full sample OCPD *M* (*SD*)	Difference OCPD vs. normative sample *t*	Full sample AvPD *M* (*SD*)	Difference AvPD vs. normative sample *t*
Total IIP score	85.29 (31.53)	6.31***	113.64 (32.36)	14.10***
Octants				
Domineering	8.30 (7.21)	3.06**	7.73 (5.77)	3.86**
Vindictive	8.55 (6.18)	3.38**	10.35 (5.37)	7.64***
Cold	10.79 (6.67)	5.47***	14.73 (7.10)	9.97***
Socially avoidant	11.16 (5.43)	5.23***	21.53 (6.62)	20.18***
Nonassertive	14.53 (7.51)	6.11***	20.42 (6.39)	16.48***
Exploitable	12.84 (6.69)	4.85***	16.25 (5.89)	12.25***
Overly nurturant	12.24 (6.80)	3.82**	15.03 (5.98)	9.95***
Intrusive	7.88 (5.79)	2.42*	7.67 (4.96)	3.80**

Note. OCPD = obsessive-compulsive personality disorder; AvPD = avoidant personality disorder; IIP = Inventory of Interpersonal Problems.
* $p < .05$. ** $p < .01$. *** $p < .001$.

of distinct interpersonal subtypes through cluster analysis using the MCLUST package in R (Fraley & Raftery, 2006).[1] The clusters were constructed based on the two IIP axes (i.e., dominance and affiliation) as the criteria for similarity versus dissimilarity. The number of clusters was determined by the best fitting model identified by the clustering procedure, as defined by the Bayesian Information Criterion (BIC). The structural summary and circular statistics methods were then applied once again to determine if the subtypes have distinct homogenous interpersonal profiles. We compared the mean scores of the octants to determine the level of interpersonal distress between the two groups and in comparison to the normative population.

Results

We did not find any significant differences in demographic and clinical characteristics of IIP scores between samples in the two sites, and thus, we combined the samples in our analyses (Table 1). In the OCPD sample, women reported significantly greater interpersonal distress, $M = 96.72$, $SD = 25.27$, than men, $M = 75.35$ ($SD = 34.24$), $t(41) = -2.33$, $p = .02$. In the AvPD sample, we found a negative correlation between the level of education and interpersonal distress, such that patients with lower education level reported higher interpersonal distress, $r = -.31$, $p = .01$. No other significant effects emerged.

Table 3
Differences in Interpersonal Distress and Problems Between OCPD and AvPD Samples

IIP	Full sample OCPD *M* (*SD*)	Full sample AvPD *M* (*SD*)	Difference test *t*	ES (d)
Dominance	−.22 (.92)	−.87 (.72)	−4.10***	−.78
Affiliation	−.04 (.82)	−.36 (.68)	−2.18	
Distress	1.01 (.92)	1.81 (.94)	4.33***	−.86
Octants				
Domineering	.75 (1.60)	.63 (1.28)	−.45	
Vindictive	.63 (1.21)	.98 (1.05)	1.59	
Cold	.86 (1.13)	1.53 (1.20)	2.88**	−0.57
Socially avoidant	.81 (.95)	2.63 (1.16)	8.51***	−1.71
Nonassertive	1.17 (1.23)	2.13 (1.04)	4.34***	−.83
Exploitable	.95 (1.26)	1.59 (1.11)	2.78**	−.53
Overly nurturant	.73 (1.23)	1.24 (1.08)	2.24*	−.44
Intrusive	.45 (1.20)	.40 (1.03)	−.24	

Note. OCPD = obsessive-compulsive personality disorder; AvPD = avoidant personality disorder; IIP = Inventory of Interpersonal Problems. IIP scales are standardized on national gender norm.
* $p > .05$. ** $p > .01$. *** $p > .001$.

Interpersonal Profile of the OCPD and AvPD Groups in Comparison With the Normative Population

Compared to the normative sample (Horowitz et al., 2003), higher interpersonal distress levels were reported by patients with OCPD, $t(841) = 6.31$, $p < .0001$; as well as those with AvPD, $t(863) = 14.10$, $p < .0001$ (Table 2). Both groups showed significantly elevated distress on all octants compared with the normative population.

Comparison of Interpersonal Problems Between the OCPD and the AvPD Groups

Participants with AvPD disorder reported a significantly higher level of the overall interpersonal distress than those with OCPD (Table 3). This difference was driven mainly by a greater area of distress on the agency/dominance axis of the circumplex in AvPD. On the individual octant level, significant differences between the groups were found in the cold, socially avoidant, nonassertive, exploitable, and overly nurturant octants (Table 3; Figure 1).

[1] The number of observations needed for clustering depends on the number of variables used (i.e., the dimension), the number of true clusters, and the quality of clusters (i.e., degree of separation). The present study included a small number of variables so that a relatively small sample size may be adequate. Due to the lack of clear guidelines regarding the minimal required sample size, several rules of thumb exist in the literature; one of the most stringent ones from the latent class analyses literature indicates that the minimal sample size should include no less than 2 × k cases (k = number of variables), preferably 5× 2 × k. The present study meets this criterion.

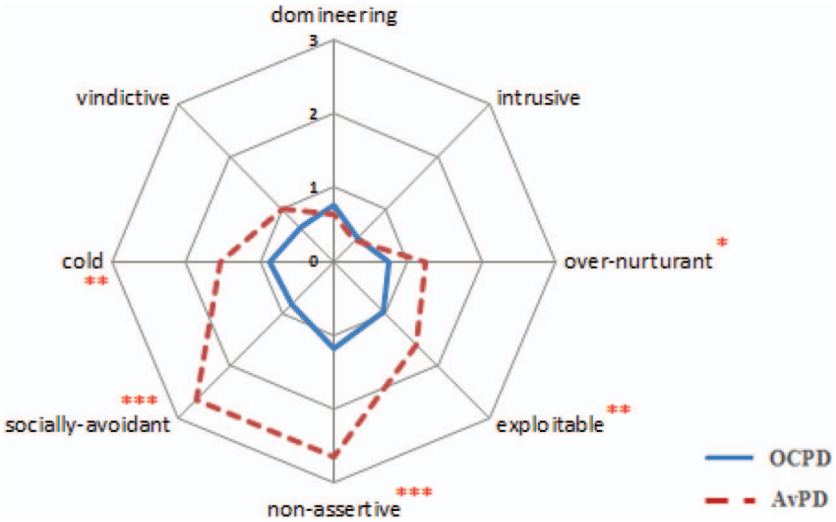

Figure 1. Differences in interpersonal profiles of OCPD and AvPD on the interpersonal circumplex. OCPD = obsessive-compulsive personality disorder; AvPD = avoidant personality disorder. The figure represents interpersonal profiles of the OCPD and AvPD groups as described in Tables 4 and 5. See the online article for the color version of this figure.

The structural summary analysis suggested that both the OCPD and AvPD groups exhibited an elevated peak in the avoidant/nonassertive octant of the circumplex (an angle of 259.51 and 247.68, respectively; Table 4). The similar angles for the two groups indicated similarity in specific interpersonal profiles. The higher elevation in AvPD patients (1.39) when compared with OCPD (.79) suggests that the former report greater interpersonal distress. The higher amplitude in AvPD compared with OCPD (.94 vs. .22, respectively) indicated that the AvPD sample has a more differentiated interpersonal profile.

To interpret the structural summary parameters of each PD with confidence, we examined the goodness-of-fit of each group with the pattern expected from the circumplex. The AvPD cohort had an acceptable goodness-of-fit (R^2 = .88, Wright et al., 2009), whereas the OCPD group had a lower goodness-of-fit (R^2 = .56), below the cutoff point (Wright et al., 2009). Thus, the interpersonal profile of the OCPD group was not prototypical for the interpersonal circumplex and did not meet the prerequisite requirements needed for the structural summary analysis. Therefore, the amplitude and displacement could not be interpreted. However, the elevation, derived from the average of all subscale scores is still meaningful.

As an additional step to compare between OCPD and AvPD, we applied circular statistics to analyze the circumplex data (Wright et al., 2009). The circular means of the two personality disorder groups also suggests that they were close to each other. The overlap in their confidence intervals indicated that the two profiles were not distinct interpersonally (Table 5). Because the AvPD group has a homogenous interpersonal profile, while OCPD did not, it is possible that the lack of distinctiveness in the two profiles is driven by the less defined interpersonal properties of the OCPD cohort.

Identifying Subgroups Within the OCPD Group

To test the possibility that multiple groups of individuals with distinct interpersonal profiles exist within our sample of patients with OCPD, we conducted a cluster analysis on the two dimensions of the IIP. The best fitting model (BIC value = −253) yielded a two-cluster solution with spherical covariance matrix and no constraint on cluster sizes. The next best fitting model (BIC value = −255) also yielded a two-cluster solution of a model with spherical covariance and equal cluster sizes. The mean posterior

Table 4
Comparison of OCPD and AvPD on Structural Summary Parameters

Diagnosis	*N*	Angle	Elevation	Amplitude	R^2
OCPD	43	259.51	.798	.227	.561
AvPD	64	247.68	1.39	.949	.887

Note. OCPD = obsessive-compulsive personality disorder; AvPD = avoidant personality disorder; angle = circumplex location of the predominant interpersonal problem in degrees; elevation = an index measure of interpersonal distress; amplitude = a measure of profile differentiation. R^2 represents interpersonal prototypicality.

Table 5
Empirical Comparison of (a) OCPD With AvPD and (b) the Interpersonal Clusters Using the Circular Statistics

Diagnosis	Circular *M*	Circular variance	95% circular CIs
OCPD	255.81°	77°	[232.76, 278.86]
AvPD	249.16°	38°	[236.45, 261.87]

Note. CI = confidence interval. All values reported in degrees; circular *M* = the mean of the angular displacements for each individual within the cluster; circular variance = represents the angular displacements of individuals within a cluster around the circular mean; 95% circular CIs = 95% circular CIs that identify reliable differences in circular means.

Table 6
Comparison of the Two Clusters of OCPD on Structural Summary Parameters

OCPD cluster	*N*	Angle	Elevation	Amplitude	R^2
Cluster 1	10	138.06	.940	1.33	.955
Cluster 2	33	293.72	.755	0.611	.863

Note. OCPD = obsessive-compulsive personality disorder; AvPD = avoidant personality disorder; angle = circumplex location of the predominant interpersonal problem in degrees; elevation = an index measure of interpersonal distress; amplitude = a measure of profile differentiation; R^2 represents interpersonal prototypicality.

probability for cluster membership in the best-fitting solution was 0.89. Moreover, 49% of cases (n = 21) were classified with probabilities greater than .95. Taken together, there was substantial evidence that the identified two-cluster solution was a good fit to the structure of the data, and thus, the first two-cluster solution was selected and interpreted as the optimal model. The two clusters consisted of 10 and 33 OCPD patients. Based on the interpersonal characteristics of the clusters described in the following text, we label them as "aggressive" and "pleasing" subgroups.

Structural summary analysis showed that the interpersonal profile for Cluster 1 (n = 10) had an elevated peak at 138.06° on the interpersonal circumplex, indicative of a vindictive/self-centered or hostile/dominant interpersonal profile (i.e., readily experiencing and expressing anger and irritability, preoccupation with getting revenge, and fighting too much with others). Cluster 2 (n = 33) fell at 293.72° on the interpersonal circumplex, indicative of submissive-exploitable interpersonal problems (i.e., friendly submissiveness, as a way to please other people and win their approval, coupled with self-doubting and unassertiveness with a severe lack of self-confidence and self-esteem; Table 6). Figure 2 represents the two interpersonal clusters in the OCPD group, which likely account for the low interpersonal prototypically and the low amplitude (0.22) of the entire OCPD cohort.

We investigated the distinctiveness of the two interpersonal clusters by examining the goodness of fit with the sinusoidal pattern of the circumplex and circular statistics. We found that both clusters meet the goodness of fit prerequisite requirement ($R^2 \geq .70$; Wright et al., 2009). In addition, circular statistics suggested that the confidence intervals (CIs) of the clusters did not overlap, providing further evidence that individuals within each of these clusters reported distinct interpersonal problems.

As a final step, we explored differences in demographic and diagnostic profiles between individuals included in the clusters we identified. No significant differences were found for any demographic variables, age, r = .07, p = .61; sex, $\chi^2(1)$ = 2.33, p = .12, Cramer's V = .23; marital status, $\chi^2(3)$ = .86, p = 83, Cramer's V = .14; ethnicity, $\chi^2(3)$ = 1.65, p = .64, Cramer's V = .20; employment, $\chi^2(2)$ = 1.09, p = .57, Cramer's V = .16; education, $\chi^2(3)$ = 1.98, p = .57, Cramer's V = .22. In addition, χ^2 analyses indicated no significant differences in the percentage of patients from each of the two sites (UPenn and MSBI) in each cluster. We also did not find any significant differences between the clusters on the presence of comorbid Axis-I disorder, $\chi^2(2)$ = 2.69, p = .26, Cramer's V = .25 for the number of depression-related diagnoses; $\chi^2(2)$ = .29, p = .86, Cramer's V = .82 for the number of anxiety disorders.

Discussion

Our results suggested that patients in both OCPD and AvPD groups reported significantly higher levels of interpersonal distress compared with the normative population, exhibiting elevated distress in all octants of the circumplex. These findings are in line with previous studies supporting the centrality of interpersonal difficulties in both of these disorders (Cain et al., 2015; Frandsen et al., 2019; Girard et al., 2017; Hopwood et al., 2013; Lampe &

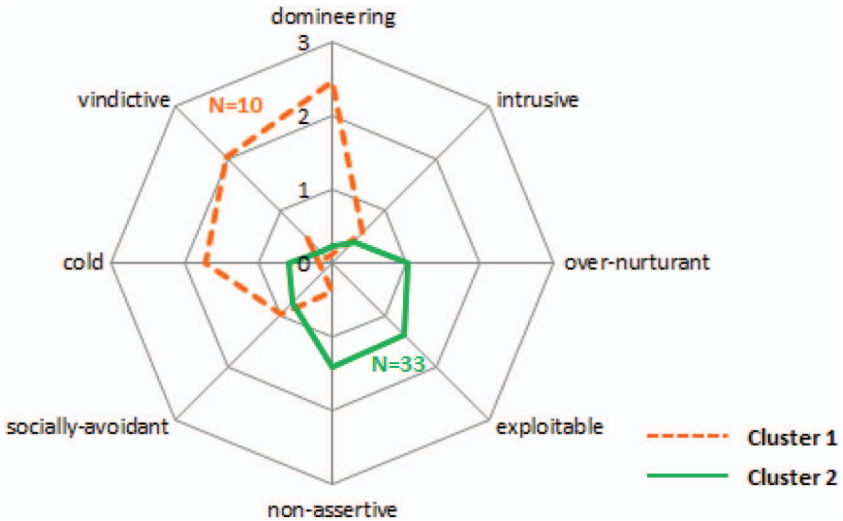

Figure 2. Differences in interpersonal profiles of two clusters of OCPD on the interpersonal circumplex. OCPD = obsessive-compulsive personality disorder; AvPD = avoidant personality disorder. The figure represents the OCPD clusters as described in Tables 6 and 7. See the online article for the color version of this figure.

Table 7
Comparison of the Two OCPD Interpersonal Clusters Using the Circular Statistics

OCPD cluster	Circular *M*	Circular variance	95% circular CIs
Cluster 1 (n = 10)	136.52°	18°	[114.52, 158.53]
Cluster 2 (n = 33)	283.42°	53°	[262.15, 304.69]

Note. CI = confidence interval. All values reported in degrees; circular *M* = the average of the angular displacements for each individual within the cluster; circular variance = the dispersion of the angular displacements of individuals within a cluster around the circular mean; 95% circular CIs = 95% circular CIs that identify reliable differences in circular means.

Malhi, 2018). In addition, we found that although both groups exhibit problems in the avoidant/nonassertive domain, AvPD patients reported greater distress on all octants of the agency/dominance category, compared with patients with OCPD. This finding is in line with previous work showing relative high levels of interpersonal distress in AvPD (Alden & Capreol, 1993; Frandsen et al., 2019; Girard et al., 2017; Sim & Romney, 1990; Solds et al., 1993; Wilson et al., 2017). Our results replicated previous findings showing that AvPD is a relatively homogenous group with a clearly identifiable interpersonal profile characterized by submissiveness/nonassertiveness problems (Frandsen et al., 2019).

Our findings suggested that OCPD is a heterogeneous interpersonal disorder that cannot be mapped onto a single interpersonal profile. We found two interpersonal subtypes of OCPD: (a) the "aggressive" subtype, characterized with a vindictive/self-centered or hostile/dominant interpersonal profile (i.e., tendency to experience and express anger and irritability, preoccupation with revenge, frequent interpersonal conflicts); (b) the "pleasing" subtype, characterized with a submissive-exploitable interpersonal profile (i.e., overly friendly and submissive, preoccupation with others' approval, increased self-doubt, lack of confidence and low self-esteem). Within each of these clusters individual differences were relatively low, suggesting high subtype homogeneity. These OCPD subtypes are somewhat consistent with previous studies showing two main OCPD dimensions: aggressive and depressive/perfectionistic (Ansell et al., 2010; Hummelen, Wilberg, Pedersen, & Karterud, 2008). Our findings correspond with Cain et al.'s (2015), who showed a hostile-dominant interpersonal profile for OCPD and a submissive profile for OCPD + OCD.

We acknowledge that the nonunified profile of OCPD found in our study may be due to our focus on the IIP as the primary measure. It is possible that there are other important personality features, defined as noninterpersonal in nature, such as conscientiousness, which may be central to the classification of homogeneity across patients with OCPD. This possibility is aligned with the FFM (Widiger, 2017), supported in other studies (Samuel et al., 2012; Samuel & Widiger, 2011; Widiger, 2015). Further work, using additional measures of personality traits among OCPD patients could address these questions.

Overall, the delineation of the two OCPD subtypes advances our understanding of the potential underlying causes for the heterogeneity in OCPD. Our subtypes integrate findings from previous studies demonstrating that interpersonal aggression and disinhibition are core features of OCPD (Pulay et al., 2008; Steenkamp et al., 2015; Villemarette-Pittman et al., 2004), with those highlighting the submissive and interpersonally avoidant features of OCPD (Solds et al., 1993; Wiltgen et al., 2015). Our study shows that identification of data-driven subtypes could explain heterogeneity in patients' functioning (Zilcha-Mano et al., 2015).

Limitations

Our findings should be considered in the context of several limitations. The first is the moderate sample size of our OCPD sample, especially because it was divided into two subgroups within the cluster analysis. Second, our study focused on the IIP and did not include additional measures of personality pathology that may be crucial in classification of patients' profiles. Third, the inclusion/exclusion criteria in our clinical trials excluded patients with various comorbidities. Although such criteria allow to control for potential confounds, it may limit generalizability of our findings to patients with comorbid conditions. Fourth, patients at UPenn were diagnosed using the *DSM–III–R*, as it was the diagnostic system used at the clinical setting at the time. Finally, although the self-report IIP is a well-validated and widely used measure, our findings could be affected by self-report biases such as social desirability of responders.

Clinical Implications

Our findings highlight the importance of assessing AvPD and OCPD patients' individual interpersonal distress at the outset of treatment. Tailoring interventions to patients' specific interpersonal profiles could potentially increase its efficacy. For example, patients with AvPD or OCPD submissive-pleasing subtype may benefit from assertion training, whereas patients with OCPD-aggressive subtype may respond to affect-focused, interpersonal conflict resolution and anger management techniques. Future studies could investigate whether use of techniques, tailored to patients' specific interpersonal difficulties, increase the efficacy of psychotherapies in these clinical populations.

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