Original

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Dimensional Personality Assessment among a Chronic Fatigue Syndrome (CFS) sample with Personality Inventory for DSM-5 (PID-5)

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Introduction. Personality Disorders (PD) are highly prevalent among Chronic Fatigue Syndrome (CFS) patients, but studies based on the DSM-5 are still scarce. Validated instruments have not yet been specifically used in CFS patients. Therefore, our aim was to analyze the differences in personality facets and domains profiles among CFS patients with and without a PD using the Personality Inventory for DSM-5 (PID-5). Additionally, we analyzed the ability of this instrument to predict PD in a sample of CFS patients. This instrument is validated for PDs, but not for CFS.

Methods. All of the 84 CFS patients were evaluated through a clinical interview and underwent psychopathological evaluation with the SCID I and SCID II. Dimensional personality facets and domains were evaluated with the PID-5, according to DSM-5.

Results. In our sample, 54 (64%) of the patients fulfilled the criteria of a PD. The most significant facets in CFS with PD in comparison to those patients without a PD were Separation Insecurity, Perseveration, Withdrawal, Depressivity, Rigid Perfectionism, Unusual Beliefs and Experiences. Negative Affectivity and Detachment were the two significant domains in CFS-PD patients. In the regression analyses, only Detachment and Rigid Perfectionism constituted a prognostic factor leading to high probability of an endorsed PD.

Conclussion. According to these results, the PID-5 domains and facets could be adequate and useful to differentiate between PD and non-PD patients in clinical samples and suggest a more frequent dimensional personality profile in CFS patients.

Keywords: Chronic fatigue syndrome, Personality Disorders, PID-5, DSM-5, Dimensional personality

Valoración Dimensional de la Personalidad en pacientes con Síndrome de Fatiga Crónica (SFC) con el Inventario de Personalidad del DSM-5 (PID-5)

Introducción. Los Trastornos de Personalidad (TP) resultan altamente prevalentes entre pacientes con Síndrome de Fatiga Crónica (SFC), pero los estudios basados en el DSM-5 resultan escasos. Aún no han sido usados Instrumentos validados específicamente en pacientes SFC. Por este motivo, nuestro objetivo fue analizar las diferencias en las facetas de la personalidad y perfiles de dominios entre los pacientes con SFC con y sin un TP utilizando el Inventario de Personalidad para DSM-5 (PID-5). Además, se analizó la capacidad de este instrumento para predecir la presencia de TP en una muestra de pacientes con SFC.

Método. Un total de 84 pacientes con SFC fueron evaluados mediante entrevista clínica y realizaron evaluación psicopatológica con las entrevistas SCID I y SCID II. Las facetas y dominios dimensionales de la personalidad se evaluaron con el PID-5, de acuerdo con DSM-5. Ese instrumento ha sido validado para TPs, pero no en CFS.

Resultados. De la muestra, 54 (64%) de los pacientes cumplieron con los criterios de un TP. Las facetas más fre-

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cuentes en SFC con TP, en comparación con aquellos pacientes sin TP, fueron: Inseguridad de Separación, Perseveración, Aislamiento, Depresividad, Perfeccionismo Rígido, Creencias y Experiencias Inusuales. La Afectividad Negativa y el Desapego fueron los dos dominios significativos en pacientes con SFC-TP. En los análisis de regresión, sólo el Desapego y Perfeccionismo Rígido constituyen un factor pronóstico que conduce a una alta probabilidad de padecer un TP.

Conclusión. De acuerdo con estos resultados, los dominios y facetas PID-5 podrían ser adecuados y útiles para diferenciar entre los pacientes con TP de los no-TP en muestras clínicas y sugieren un perfil de personalidad dimensional más frecuente en pacientes con SFC.

Palabras Clave: Síndrome de Fatiga Crónica, Trastornos de Personalidad, PID-5, DSM-5, Personalidad Dimensional

INTRODUCTION

Chronic Fatigue Syndrome (CFS) is characterized by severe and prolonged fatigue and other nonspecific symptoms and signs which remain medically unexplained[1]. The cause might be of multifactorial nature, but research has been unable to describe an exact pathophysiology[2]. From a psychopathological perspective, a line of research has focused on psychiatric and psychological factors on CFS predisposition, development and maintenance. The role of personality features of CFS patients has been specifically studied, suggesting that maladaptive personality traits foster the development of CFS symptoms (as a risk factor) and help to perpetuate them (as a perpetuating and prognosis factor)[3-6]. However, there is little consensus on the relationship between personality features, disorders and CFS. This might be due to several methodological issues, such as the heterogeneity of theoretical personality models and evaluation instruments[2,7].

In terms of theoretical personality models and the resulting assessment instruments, there are two perspectives: the categorical and the dimensional model of personality. In the categorical approach, Personality Disorders (PD) have been assessed according to the different versions of the Diagnostic and Statistical Manual of Mental Disorders classification, 4th and 5th Edition (DSM-IV, DSM-5)[8,9], which offers clinical descriptions with an arbitrary cut-off threshold. Studies based on the DSM-IV/DSM-5 use objective assessment instruments to evaluate PD, based on interviews, such as the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II), and self-reports, such as the Personality Diagnostic Questionnaire-4+ (PDQ-4+) and the Assessment of DSM-IV Personality Disorders Questionnaire (ADP-IV)[3-5,10-13]. Among these categorical studies there is a lack of consensus about the PD prevalence in CFS patients, varying from 15%[11,13] up to 50%[3,4,7]. When it comes to PD

clusters, some studies have concluded that there is a predominance of cluster C and B, with a high percentage of Dependent, Histrionic and Borderline patients[14,15]. Nevertheless, other recent studies suggest that Cluster C is the most common personality cluster and that Obsessive Compulsive is the most prevalent PD[3,5,7,13,14] ranging from 9%[13,14] up to 40%[7]. All in all, the results indicate that, although PDs may be frequent in CFS patients, no specific personality type has been found homogenously among CFS patients.

The lack of consensus is also found in the dimensional approach, in which personality is assessed according to the different models, such as the psychobiological model of Cloninger (Temperament and Character Inventory-Revised; TCI-R), the five factor model (Neuroticism, Extroversion, Openness Personality Inventory-Revised; NEO-PI-R, and Neo Five-Factor Inventory; NEO-FFI), Zuckerman–Kuhlman Personality Questionnaire (ZKPQ) or Eysenck Model (Eysenck Personality Questionnaire; EPQ). CFS patients score high on Harm Avoidance, Reward Dependence and Persistence and low Self-Directedness and Novelty Seeking[16-18], high in Conscientiousness[19] and Neuroticism[6,19-23] and low on Extroversion[20,22]. Additionally, some authors have found interactions between Neuroticism and Perfectionism[6,22,23] and others claim that depression in CFS patients might be a moderating factor of neuroticism[6]. In a unified model, a recent study showed that the dimensional traits (Neuroticism, Conscientiousness, and low Extroversion) fit perfectly in the Cluster C personality disorders among the CFS sample[10] and are also correlated to fatigue severity.

All in all, an integrative model would give a more comprehensive assessment of personality, gaining a better understanding of the psychopathological factors. In this sense, the recent DSM-5 maintains its categorical PD taxonomy, but also includes a dimensional alternative model for personality disorders that has been published in Section III[9]. It has been suggested that this model might provide more empirical support, a better interpretation of comorbidity patterns and treatment structure in PD[24]. It encompasses 25 pathological facets that can be grouped into five basic domains: Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Each domain is associated with a combination of facets (i.e., six facets characterizing Negative Affectivity, and three facets characterizing Psychoticism), and some facets are simultaneously represented in various domains (i.e., Hostility in Negative Affectivity and Antagonism domains). On another hand, only six of the ten PDs considered in the DSM-IV or in DSM-5 Section II have been retained in the integrative model, and each PD has a specific combination of domains and facets.

This trait of the DSM-5 model is assessed through the Personality Inventory for DSM-5 (PID-5)[25] which was developed according to the existing models and measures of mal-

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adaptive personality traits. A recent psychometric review has shown adequate psychometric properties when it comes to internal consistency, factor structure and concurrent validity[26]. PID-5 has also been adapted to other languages and cultures, such as: Dutch[27], German[28], Italian[29], French[30] and Spanish[31], obtaining acceptable results[26]. It has mostly been used with non-clinical samples (volunteers, undergraduates, general population), and only a few studies have been conducted with clinical samples[26,32]. To our knowledge, no study has attempted to assess the PID-5 among a CFS sample.

In view of the above, the current study aims to extend the empirical studies on the personality features of CFS patients using the PID-5 that allows a dimensional approach. Although the use of PID-5 has not been validated in patients with CFS, until date, to date no study has evaluated PT in using this self-report, until date, no study has evaluated PD in these samples using the self-report. Therefore, the present study wants to investigate the presence of a PD in a sample of adult CFS patients and to compare differences in personality facets and domains between CFS patients with and without a PD using the PID-5.

METHODOLOGY

Participants

This is an observational, cross-sectional study of a total number of 88 patients with CFS meeting the inclusion criteria. 4 were excluded because they did not complete the entire evaluation protocol. The total response rate was 95.5%. The final sample consisted of 84 CFS patients (83.3% women, age=51.0 years, *SD*=8.33, range=35-72 years). CFS diagnosis was established according to the Centers for Disease Control and Prevention criteria (CDC)[1].

Inclusion criteria were being older than 18 years, having a CFS diagnosis according to the CDC criteria, having completed the clinical assessment, and having signed an informed consent to participate. Exclusion criteria were: under 18 years; lower than average intelligence; current diagnosis of schizophrenia, bipolar I disorder, or active substance dependence disorder (except nicotine); suffering from any organic condition that could better explain the symptoms; and learning disabilities.

Measures

The psychopathological evaluation was carried out in three sessions by a psychiatrist and a clinical psychologist with experience both in PD diagnoses, who interviewed the patient, recorded sociodemographic and clinical data, con-

ducted a psychopathological examination, applied the Spanish version of the Structured Clinical Interview for DSM-IV (SCID-II)[33] and the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)[34], and administered the Spanish version of the PID-5. The order in which the material was administered was the same for all patients. All patients completed the interviews and self-reports.

The Spanish version of the SCID-II was used to assess the diagnosis of PDs according to DSM-IV/DSM-5 criteria. The final diagnoses were endorsed according to SCID results. However, in case of discrepancies with the clinical evaluation, the patient was reevaluated in order to confirm the results. To determine current Axis I comorbid disorders, the SCID-I was conducted.

The Personality Inventory for DSM-5, PID-5[25] Spanish translation[31] is a 220-item self-report inventory which measures the dimensional pathology model proposed in Criterion B of the DSM-5 Section III. The 4-point Likert-type scale ranges from 0 (*very false or often false*) to 3 (*very true or often true*) and includes 25 first-order facets that can be grouped into 5 second-order domains: Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Each facet is assessed by various items, and domains were calculated by averaging items (for more details, see Krueger et al.[25]). Gutiérrez et al.[31] validated the Spanish version of the PID-5 and found high internal consistency (median α=.86 in the clinical sample), consistent with the original versions[25,35] and has been tested in a clinical sample[36].

Procedure

All patients were referred to the Department of Internal Medicine at the tertiary University Hospital of Barcelona, Spain. Experienced physicians in the diagnosis of CFS completed an extensive evaluation and recorded the presence of other functional somatic syndromes, including Fibromyalgia and Irritable Bowel Syndrome. Other medical conditions causing fatigue were excluded. The evaluation protocol included an extensive physical examination and a complete blood analysis. In case of diagnoses controversy, neuroimaging, sleep pattern, and tilt-table test were also registered. When patients met the possible CFS diagnosis criteria, participants were referred to the Department of Psychiatry at the same hospital in order to complete a psychiatric assessment.

The study was approved by the Ethics Committee of the Hospital Research Institute. All patients provided written informed consent for participation.

Statistical Analyses

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Statistical analyses were performed with the PASW statistics package (version 17.0) for Windows (SPSS Inc.; Chicago, Illinois). Statistical significance for intergroup differences was assessed by the chi-square test (χ^2) for categorical variables and the independent *t*-test or Mann-Whitney *U* test for continuous variables because preliminary analyses revealed that some variables were non-normally distributed.

To analyze the association between PID-5 domains and facets in a CFS sample Pearson correlations were applied. To test differences in all PID-5 domains and facets between patients with and without a PD Mann-Whitney *U* tests were applied. To avoid type I error inflation, a Benjamini-Hochberg correction [p_m=p (m+1)/2m] for multiple tests was used[37].

Formerly, to determine the final key domains and facets that were more specific in the differentiation between patients with and without a PD, two analyses were performed. The first analysis included logistic regression, with a condition entrance, where the predictors were only the domains that had presented a significant effect in the previous bivariate analyses. The aim of this was to delimit the final significant domains, using a multivariate approach. The second logistic regression included only the facets that constituted the domains that remained in the final model in the previous analysis. Again, a conditional entrance strategy was considered, so only the significant and definitive facets remained in the model.

RESULTS

Of the 84 patients who completed the evaluation protocol, 54 (64.3%) fulfilled the criteria of a PD. Demographic and clinical variables are summarized in

Table 2 presents the Pearson correlations among the PID-5 domains for the whole sample. In general, the correlation coefficients were significantly positive (*p*<0.01) among all five domains. The lowest cross-domain correlations were between Antagonism and Negative Affectivity and Detachment (0.29 and 0.13, respectively). The highest correlations were between Negative Affectivity and Detachment and Psychoticism (0.78 and 0.77, respectively).

Means (M), standard deviations (SD) and Mann-Whitney (*U*) test differences and Cohen's *d* (*d*) of the PID-5 facets and domains in patients with and without a PD are reported in table 3. Comparing the means of the two samples, the highest scores for all facets, except for Risk Taking and Impulsivity, were observed in the patients with a PD. However, after the Benjamini and Hochberg corrections, the differences were statistically significant only for Separation Insecurity, Perseveration, Withdrawal, Depressivity, Rigid Perfectionism, Unusual Beliefs and Experiences (*p*= 0.021, 0.018, 0.018,

Table 1	Demographic characteristics of CFS patients (n = 84)
Category	**Mean ± SD or N (%)**
Age (years) (Mean ± SD)	51.0±8.3
Female	70 (83.3)
Level of education	
Primary or less	35 (41.7)
Secondary	35 (41.7)
University degree	14 (16.7)
Civil status	
Single	13 (15.5)
Married or with partner	68 (81.0)
Widow	3 (3.6)
Occupation	
Employed	19 (22.6)
Unemployed	70 (83.3)
Student	1 (1.2)

0.002, 0.001, 0.023, respectively). In relation to the five domains included in PID-5, all presented higher scores in the group with a PD, although the differences were statistically significant for Negative Affectivity and Detachment (*p*= 0.004 and 0.011, respectively). The PID-5 Total Score showed significant differences between both groups (*p*=0.008) (see Table 3). On another hand, the significant facets showed Cohen's d's ranging from 0.34 to 0.81, while the significant domains presented Cohen's d's around 0.6.

In the logistic regression analyses, the obtained models showed that having high scores on the trait-domain Detachment (Wald=6.97, *p*=0.008, OR=3.62, CI 95 =1.39- 9.40) and on the facet Rigid Perfectionism (Wald=8.66, *p*=0.003, OR=2.92, CI 95%=1.43-5.97) constituted a prognostic factor leading to high probability of an endorsed PD.

DISCUSSION

The present study analyzed the utility of the Spanish version of the PID-5 in the PD diagnosis in a CFS sample. Until date, this study is the first one that explores personality according to DSM-5 properties in a sample of CFS patients. In general, the findings suggest that some PID-5 domains and facets could be adequate and useful to differentiate between PD and non-PD presence in patients with CFS. Thus, the current results validate the PID-5 as an

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Table 2	Pearson's Correlations Coefficients among PID-5 Domains				
PID-5 Trait Domain	Negative affectivity	Detachment	Antagonism	Disinhibition	Psychoticism
Negative affectivity	–				
Detachment	0.78	–			
Antagonism	0.29	0.13	–		
Disinhibition	0.73	0.52	0.46	–	
Psychoticism	0.77	0.66	0.41	0.72	–

PID-5: Personality Inventory for DSM-5.
All correlations were significant at $p < 0.01$ except Antagonism and Detachment ($p=0.11$).

evaluation instrument for pathological personality traits, according to the alternative hybrid model proposed in the DSM-5.

Consistent with published studies, our results support the use of the PID-5 to diagnose PD in clinical samples[24,27,36,38-40]. Among CFS patients, the PD group obtained significantly higher total scores compared with non-PD patients. The significant facets of the PD group were Separation Insecurity, Perseveration, Withdrawal, Depressivity, Rigid Perfectionism and Unusual Beliefs and Experiences. When analyzing the PID-5 domains, two of them differentiated PD from non-PD CFS patients: Negative Affectivity and Detachment. This suggests that PID-5 is able to discriminate between PD and non-PD patients in a CFS sample.

On the other hand, in the regression models, only the trait-domain Detachment and the facet Rigid Perfectionism predicted PD presence. The fact that other domains and facets were not involved in PD prediction could be attributed to the large association among PID-5 variables in this study and due to the difficulty to differentiate PD from other subclinical personality traits and CFS personality traits. Moreover, the PID-5 traits are conceptualized as continuous dimensions.

Our findings are in line with other dimensional personality studies with CFS samples in which low scores on Self-Directedness and Cooperativeness[10], and high scores on Harm Avoidance, Reward Dependence, Persistence have found to be associated with PDs[16-18]. Also the fact that Rigid Perfectionism predicted PD in our study is consistent with other results that suggest Perfectionism in CFS as an expression of Neuroticism and Anxiety, which might be moderated by depressive symptoms[6]. In this sense, Rigid Perfectionism and Depressivity were significant facets of the PD group. Two new facets, Separation Insecurity (related to Anxiety) and Unusual Beliefs and Experiences (related to Psychoticism), have emerged as significant in this study and might

shed some light on the type of anxiety and cognitions that CFS patients suffer. These results also suggest that a dimensional instrument allows a more comprehensive vision of the personality associated with a somatic disease, leading to a better knowledge of the psychopathological factors implicated in CFS.

When it comes to the dimensions, Negative Affectivity and Detachment have shown to be significant in the PD group. These dimensions are correlated with Neuroticism and Introversion of the Five Factor model[26] and they have been widely related to PDs in CFS patients[6,10,19-23]. Even though only Detachment predicted PD presence, it is noticeable how the significant facets and dimensions of the CFS patients of this study suggest a Cluster C Personality Disorder type. Cluster C PDs are characterized by anxiety, pessimism, danger anticipation, perfectionism and social isolation[17], but the question whether the PD personality traits are a predisposing factor or whether they develop after CFS remains unclear. Longitudinal studies are needed to clarify the causes of this relationship.

There are several limitations associated with our study. First, this is an exploratory study using a small sample, thus limiting statistical power. Second, the sample was recruited from a tertiary center and, consequently, the results may be biased, presenting a more severe clinical profile. Further studies should be performed in larger samples and with CFS patients from other treatment settings in order to confirm and generalize the results obtained in this study. Finally, there was no control group to explore the possible differences between non-clinic and maladaptative personality profiles with and without CFS.

Overall, this study is the first to examine PID-5 characteristics in CFS sample comparing PD to non-PD patients. The results support the validity of the PID-5 as an assessment tool for the dimensional diagnosis of PD proposed in the DSM-5. Our results suggest that some domains and fac-

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Table 3	Descriptive Statistics (Mean Differences) in PID-5 Trait Facets and Domains between patients CFS with and without a Personality Disorder (PD)						
	PD (n = 54)		Non-PD (n = 30)				
	M	(SD)	M	(SD)	U	p	d
PID-5 Trait Facets							
Emotional Lability	1.69	(0.11)	1.43	(0.11)	640.00	0.112	2.36
Anxiousness	1.61	(0.91)	1.31	(0.13)	595.00	0.044	0.46
Separation Insecurity	1.02	(0.95)	0.70	(0.11)	564.00	0.021*	0.48
Submissiveness	1.13	(0.11)	0.66	(0.14)	556.50	0.029	3.73
Hostility	1.07	(0.92)	0.85	(0.10)	630.00	0.127	0.34
Perseveration	1.39	(0.58)	1.05	(0.66)	535.50	0.018*	0.55
Restricted affectivity	0.92	(0.49)	0.78	(0.56)	586.50	0.096	0.27
Withdrawal	1.16	(0.71)	0.75	(0.56)	546.50	0.018*	0.64
Intimacy Avoidance	0.69	(0.71)	0.54	(0.61)	685.50	0.415	0.23
Anhedonia	1.53	(0.80)	1.12	(0.75)	573.00	0.027	0.53
Depressivity	1.11	(0.73)	0.60	(0.51)	471.50	0.002*	0.81
Suspiciousness	1.11	(0.66)	0.80	(0.46)	582.00	0.043	0.26
Manipulativeness	0.44	(0.52)	0.43	(0.44)	798.00	0.908	0.01
Deceitfulness	0.42	(0.48)	0.28	(0.33)	662.00	0.242	0.34
Grandiosity	0.41	(0.47)	0.38	(0.38)	766.50	0.872	0.07
Attention Seeking	0.41	(0.47)	0.45	(0.61)	790.00	0.847	-0.07
Callousness	0.24	(0.31)	0.21	(0.23)	796.50	0.898	0.10
Irresponsibility	0.54	(0.46)	0.42	(0.36)	704.50	0.321	0.29
Impulsivity	0.76	(0.64)	0.81	(0.69)	784.00	0.807	-0.08
Distractibility	1.56	(0.85)	1.25	(0.94)	624.00	0.128	0.35
Risk Taking	1.12	(0.81)	1.26	(0.68)	696.50	0.289	-0.19
Rigid Perfectionism	1.60	(0.67)	1.06	(0.82)	440.00	0.001*	0.34
Unusual Beliefs and Experiences	0.67	(0.67)	0.37	(0.52)	547.50	0.023*	0.50
Eccentricity	0.73	(0.69)	0.51	(0.58)	650.00	0.133	0.35
Cognitive and Perceptual Dysregulation	0.88	(0.68)	0.56	(0.50)	565.00	0.038	0.54
PID-5 Domain							
Negative affectivity	1.26	(0.43)	0.99	(0.44)	502.00	0.004*	0.62
Detachment	1.11	(0.59)	0.77	(0.41)	537.00	0.011*	0.67
Antagonism	0.38	(0.34)	0.35	(0.31)	775.00	0.744	0.09
Disinhibition	1.12	(0.35)	0.96	(0.45)	631.50	0.096	0.40
Psychoticism	0.75	(0.61)	0.49	(0.46)	585.00	0.036	0.48
PID-5 Total Score	0.96	(0.38)	0.71	(0.32)	408.00	0.008*	0.71

Facets and Domains in bold type are significant.

* After Benjamini-Hochberg corrections, statistically significant p for PID-5 facets was 0.026 and for PID-5 domains 0.030.

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ets proposed by the DSM-5 are useful to discriminate between PD and non-PD CFS patients. More research is needed to detect PD psychopathology in clinical practice with the PID-5, especially among CFS patients, as the PD comorbidity has been related with fatigue severity and depression. Our results suggest that there might be a CFS-PD subtype with specific predisposing and perpetuating factors. Therefore, future research is needed to confirm these results in order to gain knowledge of clinical profiles and therapeutic approaches in CFS patients.

CONFLICTS OF INTEREST

The authors declare no financial conflicts of interest with respect to the research, authorship, and/or publication of this article.

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