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Personality organization and its association with clinical and functional features in borderline personality disorder

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ABSTRACT

Patients with borderline personality disorder (BPD) show poor psychosocial functioning over the course of their lives. To date, predictors of functionality in BPD patients have remained mostly unexplored. In this study, we aimed to assess the association between personality organization and clinical and functional features in a sample of 50 patients with BPD referred to a specialized outpatient clinic. We used the Structured Interview of Personality Organization (STIPO) to assess personality organization and the Global Assessment of Functioning (GAF) scale to measure functionality. Clinical and demographic associations with personality organization were also explored. STIPO scores were negatively correlated with GAF scores (i.e. higher scores in the STIPO dimensions, which reflected greater personality pathology, were significantly associated with lower psychosocial functioning). After controlling for potential confounders, the STIPO domain "identity" significantly accounted for 26.7% of the variance in the GAF, while the STIPO subscale "sense of self" significantly accounted for 31.2% of the variance in the GAF. These findings suggest that identity and its pathological correlate, identity diffusion, may play a key role in the functional prognosis of BPD patients.

1. Introduction

The psychiatric community's belief that borderline personality disorder (BPD) is a stable and chronic disorder affecting adults has been questioned in recent years. Nowadays, there is solid evidence pointing to earlier onset and a much more heterogeneous course, with high "symptom" remission rates and persistent functional impairment over time (Biskin, 2015; Leichsenring et al., 2011). At the same time, the current categorical diagnosis of BPD has been challenged, with various authors proposing the addition of dimensional personality models to the diagnosis of BPD (Clarkin and De Panfilis, 2013; Gunderson, 2010) and the inclusion in section III of DSM-5 of a criteria-based alternative hybrid model for personality disorders, in which personality functioning has a central diagnostic role (American Psychiatric Association, 2013; Oldham, 2015).

Long-term prospective studies implemented in the last decade in the US have shown that 78–99% of BPD patients achieve sustained symptomatic remission over time, although approximately half achieve good psychosocial functioning (Gunderson et al., 2011; Zanarini et al., 2012). The Collaborative Longitudinal Personality Disorders Study (CLPS) found that only 21% of BPD patients achieved functional recovery, defined as scores of 71 or higher in the Global Assessment of Functioning (GAF) scale, after a 10-year follow-up (Gunderson et al., 2011). Using a threshold of 61 or higher in the GAF, the McLean Study of Adult Development (MSAD) found that only 40–60% of BPD patients achieved functional recovery after a 16-year follow-up (Zanarini et al., 2012).

Research on predictors of functionality in BPD has been scarce. To date, demographic features such as younger age and higher educational level have been consistently related to better psychosocial functioning (Gunderson et al., 2011; Zanarini et al., 2006), while clinical features such as the absence of hospitalizations prior to the index hospitalization, higher IQ, good previous vocational functioning, absence of a cluster C comorbidity, and high extraversion and high agreeableness

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traits have been identified as predictors to recovery (Zanarini et al., 2014). However, the relationship between the functional outcome of BPD and the core etiological features of the disorder according to the three major evidence-based treatment models (Gunderson, 2016)—emotion dysregulation, mentalizing deficits, and syndrome of identity diffusion—has been mostly unexplored. From the perspective of biosocial theory, higher levels of emotional dysregulation have been related to poorer psychosocial functioning (Wilks et al., 2016), while from the perspective of structural personality organization, lower levels of personality organization have been associated with greater clinical severity of the disorder (Hörz et al., 2010).

The structural personality organization construct is essentially a dimensional model of personality that proposes four broad types of personality organization (normal, neurotic, borderline, and psychotic) (Kernberg, 1967). In this model, borderline personality organization (BPO) is defined by the syndrome of identity diffusion, the pervasive use of primitive defensive mechanisms, and intact reality testing with exceptional alterations related to stressful situations, as well as several manifestations of ego weakness. From a clinical point of view, BPO includes some of the most severe personality disorders, including BPD (Kernberg, 1984). The domains of functioning central to the personality organization model can be assessed using a semi-structured interview, the Structured Interview of Personality Organization (STIPO) (Clarkin et al., 2003).

In this study, we provide a novel approach to the study of structural personality organization by using a dimensional measure such as that provided by the STIPO and focusing specifically on its association with functionality and specific clinical features in BPD. We hypothesized that, among the dimensions assessed with the STIPO, the syndrome of identity diffusion and the predominant use of primitive defenses (i.e. the core features of Kernberg's model) would be significantly associated with poor functionality.

2. Methods

2.1. Participants and data collection

Fifty patients with a presumptive diagnosis of BPD were referred between January and June 2015 to a specialized outpatient unit for evaluation by a consultant psychiatrist specialized in BPD (JLC). The inclusion criteria were age ≥18 years, and a confirmed diagnosis of BPD according to DSM-IV criteria after the initial clinical assessment. The exclusion criteria were having a lifetime diagnosis of psychotic, bipolar or organic brain disorder, or being diagnosed in the initial clinical evaluation of a current major depressive episode or mental retardation. 43 patients (86%) fulfilled the clinical diagnostic criteria for BPD after the initial evaluation and were included in the study. Of the seven patients who did not fulfill diagnostic criteria for BPD after the initial clinical evaluation and were excluded from the study, five had a lifetime diagnosis of a psychotic disorder, one had a lifetime diagnosis of a bipolar disorder, and one had a lifetime diagnosis of a non-specified eating disorder.

JLC administered the clinical and demographic questionnaires, the GAF, the CTQ, the CGI-BPD and the SCID II to the 43 patients finally included in the study, while an independent consultant psychiatrist (AE) administered the STIPO. Every scale was administered by a single interviewer, and both interviewers were blind to the results of the assessments they did not conduct. The study was approved by the local ethics committee, and written consent was obtained from all the participants after they received a complete explanation of the study.

2.2. Materials

2.2.1. Assessment of personality organization

We used a Spanish translation of STIPO 1.07, which is a newer and shorter version of the original 100-item STIPO, used mainly in research studies (Clarkin et al., 2007). STIPO 1.07 has 87 individual items divided into six main domains and eight secondary subscales. Each item is rated from zero (no pathology) to two (clear pathology). The domains and subscales of the interview are “identity” (with three subscales: “capacity to invest”, “sense of self – coherence and continuity”, and “sense of others”); “object relations” (with three subscales: “interpersonal relationships”, “intimate relations and sexuality”, and “internal working model of relationships”); “primitive defenses”; “adaptive coping vs. rigidity”; “aggression” (with two subscales: “self-directed aggression” and “other-directed aggression”); and “moral values”. Domain and subscale scores were calculated according to five-point rating scales, which are rated from one (no pathology) to five (severe pathology) based on scores in the individual STIPO items, the examinee's non-verbal behavior during the interview, and the interviewer's clinical sense of the examinee. The STIPO has shown good psychometric properties both in its English (intraclass correlations 0.96 for identity, 0.97 for primitive defenses; Cronbach's alpha 0.86 for identity, 0.85 for primitive defenses) (Stern et al., 2010), and German versions (intraclass correlations between 0.89 and 1.0 for the STIPO dimensions; Cronbach´s alpha between 0.80 and 0.93 for the STIPO dimensions) (Doering et al., 2013). Competent administration requires familiarity with the constructs underlying assessment of personality organization, formal training as a clinical interviewer, and experience administering semi-structured interviews (Clarkin et al., 2007). The psychiatrist who administered the STIPO (AE) received training during a fellowship at the Personality Disorders Institute, consisting in theoretical lessons, and assessment followed by supervision of STIPO video-recorded interviews with trained interviewers. One of the original authors of the interview, John Clarkin, gave his permission for the application of the STIPO in this study.

2.2.2. Assessment of psychosocial functioning

We used the DSM-IV Axis V Global Assessment of Functioning - GAF- score (American Psychiatric Association, 1994) as the measure of functioning in our sample. The GAF scale is based on a continuum between mental health and mental disease and is divided into 100 points, with *“100”* representing the maximum level of functioning and *“1”* the minimum level of functioning. We used the GAF scale both as a dichotomous and as a continuous variable. When used as a dichotomous variable, good psychosocial functioning was defined as a GAF score of 61 or higher, because this score offers a reasonable description of a good overall outcome, including at least one significant interpersonal relationship and an acceptable vocational record (i.e. some mild symptoms or some difficulty in social, occupational or school functioning, but generally functioning quite well; has some meaningful interpersonal relationships). This GAF cut-off point of *“61”* has been used in previous research studies on functionality in BPD (Zanarini et al., 2012).

2.2.3. Clinical assessment

We created a specific clinical questionnaire to assess clinical features - history of non-suicidal self-injury, history of suicide attempts (SA), comorbidity with substance use disorders (SUD - alcohol, cannabis, and stimulants), and attention-deficit hyperactivity disorder (ADHD) - found to be relevant in BPD (Oldham, 2006; Philipsen et al., 2008; Tomko et al., 2014; Zanarini et al., 2011, 2013). We assessed these variables as dichotomous variables (yes/no). Both trauma history and sexual abuse history were assessed based on the Spanish version of the Childhood Trauma Questionnaire (CTQ), which has previously shown good internal consistency reliability (Hernandez et al., 2013) We used the Spanish version of the Clinical Global Impression-Borderline Personality Disorder (CGI-BPD) scale as a measure of clinical severity (Cronbach´s alpha 0.85, intraclass correlations from 0.78 for rage to 0.93 for paranoid ideation) (Perez et al., 2007), and the Spanish version of the Structured Clinical Interview for DSM IV Axis II Disorders (SCID II) (First et al., 1999) as a measure of comorbidity with other cluster B

personality disorders. The SCID-II has shown good reliability and validity (First et al., 1995; Skodol et al., 1988) and has been previously validated in Spanish (Gómez Beneyto et al., 1994)

2.3. Statistical analysis

Normality of all variables was tested using the Kolmogorov-Smirnov test. Non-parametric tests were used for variables not showing a normal distribution. To analyze the association between the STIPO scores and dichotomous clinical and functional measures (using a cut-off point for the GAF of 61), data were analyzed using the Mann-Whitney test. The correlation between the scores in the STIPO and the GAF scale as a continuous variable was assessed using the Spearman rank correlation coefficient. Finally, we designed two predictive multiple linear regression models using a stepwise backward elimination method to assess the effect of personality organization on functionality, with the GAF as the dependent variable and the STIPO domains or subscales as independent measures, controlling for potential confounders (sex, age, trauma, suicide attempts, comorbidity with cluster B personality disorder, ADHD, and SUD). The linear regression model assumptions (homoscedasticity, linear relationship, multivariate normality, lack of auto-correlation and multicollinearity) were tested for both models.

The significance threshold was set at $P < 0.05$, and a Bonferroni correction for multiple comparisons was applied when needed. These analyses were performed using SPSS (v.18.0). Effect sizes (ES) were reported with η^2 for parametric and non-parametric tests (Rosenthal and DiMatteo, 2001).

3. Results

The demographic and clinical characteristics of the sample are presented in Table 1. STIPO scores on the five-point rating scales for the six domains and eight subscales of the interview are presented in Fig. 1.

Higher scores in the STIPO domains reflecting the core features of Kernberg's personality organization model (identity and use of primitive defenses) were found in patients with comorbid antisocial personality disorder (identity, $U = 52.5$, $p = 0.002$; $\eta2 = 0.23$; use of primitive defenses, $U = 39$, $p < 0.001$; $\eta2 = 0.31$) and with greater clinical severity (CGI-BPD scores ≥ 5 reflecting a clinical severity of "markedly ill" or greater) ($U = 94.5$, $p = 0.008$, $\eta2 = 0.17$ for identity; and $U = 95$, $p = 0.008$, $\eta2 = 0.16$ for use of primitive defenses). Higher scores in the domain identity were also associated with a history of childhood sexual abuse ($U = 77.5$, $p = 0.016$, $\eta2 = 0.16$). Associations between STIPO domains and subscales and clinical features are shown in Table 2.

Using scores in the GAF as a dichotomous variable, significant differences were found in the STIPO scores between the groups with good functionality (GAF $\geq$ 61) and poor functionality (GAF < 61) in all domains except for "aggression" and "moral values" and in all subscales except for "internal working model of relationships" and "self-directed aggression", with the largest ES found in the following subscales of identity: "capacity to invest" ($U = 64.5$, $p = 0.001$, $\eta2 = 0.24$); "sense of self" ($U = 60.5$, $p = 0.001$, $\eta2 = 0.28$), and "sense of others" ($U = 78.5$, $p = 0.003$, $\eta2 = 0.20$) (see Fig. 2). Using the GAF scale as a continuous variable, GAF scores were significantly correlated with the scores in all domains of the STIPO except for "aggression" and in all subscales of the STIPO except for "self-directed aggression". The largest ES were found for the correlations between the GAF scores and the scores in the domain "identity" ($r = -0.552$, $p < 0.001$, $\eta2 = 0.30$) and in the subscales "capacity to invest" ($r = -0.577$, $p < 0.001$, $\eta2 = 0.33$) and "sense of self" ($r = -0.581$, $p < 0.001$, $\eta2 = 0.34$).

In the linear regression predictive models, the STIPO domain "identity" ($B = -6.3$; 95% CI –9.4 to –3.1; $p < 0.001$; $\eta2 = 0.267$) was the only statistically significant predictor of GAF scores (functionality); among the STIPO subscales, "sense of self" was the only statistically significant predictor of functionality ($B = -6.4$; 95% CI –9.3 to –3.5;

Table 1
Clinical and demographic characteristics of the sample (N = 43).

Age, years[a]	31.74 (9.2); [18 to 50]
Sex, female[b]	35 (81)
Marital status, single[b]	39 (91)
Educational status[b]**:**	
Elementary school	2 (5)
High school	24 (56)
College	17 (40)
Employment status[b]**:**	
Employed	9 (20)
Unemployed	16 (37)
Student	13 (30)
Pensioner	5 (12)
Certified disability[b]	8 (19)
Age at first consultation, years[a]	19.44 (7.5); [7 to 43]
Years of treatment[a]	12.30 (8.1); [0 to 34]
Current treatment[b]**:**	
Untreated	3 (7)
Outpatient unit	23 (53)
Partial hospitalization	15 (35)
Inpatient unit	2 (5)
Pharmacological treatment, any kind[b]	38 (88)
History of suicide attempts[b]	28 (65)
Suicide attempts[a]	2.56 (5.1); [0 to 32]
History of non-suicidal self-injuries[b]	32 (74)
History of trauma[a]	26 (60)
Sexual abuse[c]	13 (30)
ADHD diagnosis[b]	3 (7)
Cannabis use[b]	19 (44)
Stimulant use[b]	11 (26)
Substance dependence, any kind[b]	6 (14)
Comorbid cluster A personality disorder, SCID II[db]	21 (51)
Paranoid personality disorder SCID-II	19 (46)
Schizoid personality disorder SCID-II	10 (24)
Schizotypal personality disorder SCID-II	7 (17)
Comorbid cluster B personality disorder, SCID II[db]	17 (41)
Histrionic personality disorder SCID-II	6 (15)
Antisocial personality disorder SCID-II	9 (22)
Narcissistic personality disorder SCID-II	9 (22)
Comorbid cluster C personality disorder, SCID II[db]	27 (66)
Dependent personality disorder SCID-II	15 (37)
Avoidant personality disorder SCID-II	20 (49)
Obsessive-compulsive personality disorder SCID-II	15 (37)
CGI BPD[a]	3.63 (1.3); [2 to 6]
CGI BPD ≥ 5[b]	12 (28)
CGI BPD < 5[b]	31 (72)
GAF[a]	70.23 (10.7); [50 to 90]
GAF < 61[b]	11 (26)
GAF ≥ 61[b]	32 (74)

[a] Quantitative variables are presented as mean (SD); [range].
[b] Qualitative variables are presented as N (%).
[c] All cases of sexual abuse were in female patients.
[d] SCID II scores were only assessed in 41 patients.

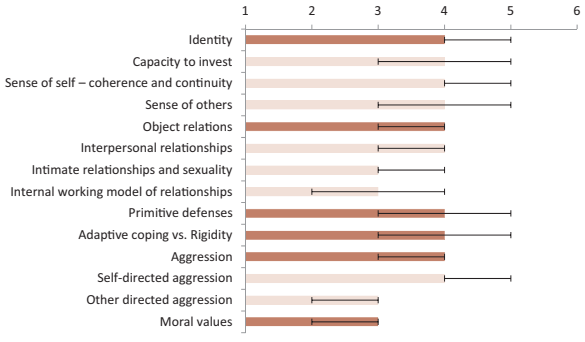

Fig. 1. STIPO domains[1] and subscales[2] 5-point rating scales (shown as median values and interquartile ranges). [1]STIPO domains median values are shown in red, [2]STIPO subscales median values are shown in pink.

Table 2
Association between STIPO domains and identity domain subscales based on clinical features of the sample (N = 43) (Effect sizes shown as η2).

STIPO	Identity	Capacity to invest	Sense of self	Sense of others	Object relations	Primitive defenses	Adaptive coping vs. rigidity	Aggression	Moral values
Sex (female)	0.006	0.02	0.01	0.06	0.13*	0.005	< 0.001	0.004	0.03
Sexual abuse (N = 35)[a]	0.16*	0.06	0.12*	0.26**	0.08	0.06	0.2**	0.05	0.02
NSSI	0.02	0.002	< 0.001	0.02	0.05	0.04	0.003	0.02	0.005
SA	< 0.001	< 0.001	< 0.001	< 0.001	0.02	0.007	< 0.001	0.07	0.001
Cluster A PD (N = 41)[b]	0.07	0.06	0.06	0.01	0.03	0.05	0.06	0.003	0.01
Cluster B PD (N = 41)[b]	0.09	0.11*	0.02	0.11*	0.04	0.16**	0.06	0.05	0.07
Cluster C BPD (N = 41)[b]	0.04	0.05	0.06	< 0.001	0.01	0.03	0.02	0.009	0.003
APD (N = 41)[b]	0.23**	0.23**	0.05	0.15*	0.12*	0.31†	0.2**	0.13*	0.14*
SDD	0.02-	0.006	0.02	< 0.001	0.006	0.003	0.003	< 0.001	0.01
CGI ≥ 5	0.17**	0.18**	0.19**	0.09	0.14*	0.16**	0.14*	0.05	0.14*

SA = suicide attempts.
NSSI = non-suicidal self-injuries.
PD = personality disorder.
APD = antisocial personality disorder.
SDD = substance dependence disorder (alcohol, cannabis, or stimulants [including cocaine]).
CGI ≥ 5 = clinical global impression score of "markedly ill", "severely ill", or "among the most extremely ill patients".
* $p < 0.05$.
** $p < 0.01$.
† $p < 0.05$ after Bonferroni correction.
[a] All cases of sexual abuse were in female patients. The analysis was made with the female subsample.
[b] SCID II data for other cluster A, cluster B and cluster C PD comorbidities were only available for 41 patients.

$p < 0.001$; $\eta2 = 0.312$).

Considering the significant association found between history of childhood sexual abuse and the STIPO domain "identity", we made a sensitivity analysis restricted to the sample of patients without history of childhood sexual abuse. In this analysis, we obtained similar results for the linear regression predictive model assessing the effect of the STIPO domains, being "identity" (B = −6.6; 95% CI −10.1 to −3.0; $p = 0.001$; $\eta2 = 0.310$) the only statistically significant predictor of GAF scores. In the linear regression predictive model including the STIPO subscales as independent measures, we found that the subscales "sense of self" (B = −4.4; 95% CI −8.2 to −0.6; $p = 0.027$; $\eta2 = 0.092$) and "interpersonal relationships" (B = −3.7; 95% CI −6.8 to −0.6; $p = 0.024$; $\eta2 = 0.330$) were statistically significant predictors of functionality.

4. Discussion

To our knowledge, this is the first study to specifically assess which domains of the structural personality organization model might be associated with functionality in BPD patients. The importance of the functional assessment of BPD patients has been highlighted by several authors. Functional impairment of BPD patients, which is similar to that of patients with other serious mental illnesses, often goes unnoticed by patients themselves and their therapists, thus generating misleading optimism in the assessment of their adaptive capacities (Gunderson and Links, 2008). In our study, the "identity" domain and the "sense of self" subscale were the only significant predictors of functionality between the STIPO domains and subscales, after controlling for potential

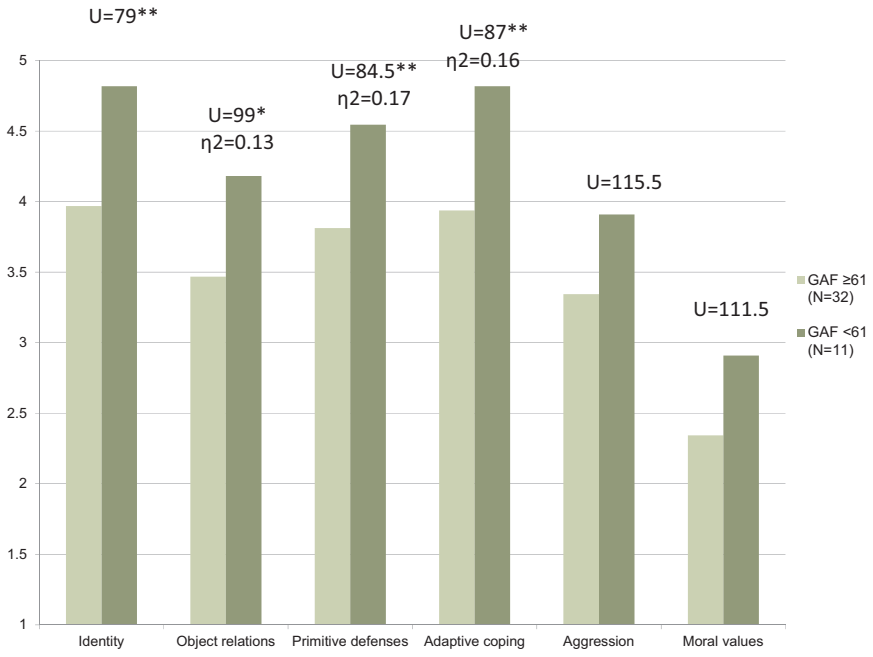

Fig. 2. Differences in STIPO domains between patients with good (GAF ≥ 61) and poor (GAF < 61) psychosocial functioning[1] (N = 43) (Effect sizes shown as η2). [1]STIPO scores are graphically expressed with the statistical value "mean". *p < 0.05; **p < 0.01, U = Mann-Whitney U test.

confounders. Specifically, we found that for each point that the STIPO "identity" domain score increased, the GAF score decreased 6.284 points; while for each point that the STIPO "sense of self" subscale score increased, the GAF score decreased 6.451 points. Although we can assume that there is some overlap between the STIPO domain identity and the GAF scale (in particular between the "capacity to invest" subscale and the GAF score, which focus on school and work functioning), we believe that both scales assess different constructs, with the identity construct in particular including an assessment of the inner world of the patient alongside its behavioral correlate. In fact, in the STIPO subscales, the "sense of self" subscale, which focuses on the inner experience of the patient, was the only significant predictor of functionality. Our finding of an association between higher scores in the STIPO and lower GAF scores, which indicates that lower levels of personality organization were associated with poorer psychosocial functioning, is consistent with the findings of a previous study in a German population (Hörz et al., 2010), in which the impact of specific dimensions was not assessed. Taking into account this study as a preliminary, exploratory assessment of the personality organization model in a Spanish BPD sample, these results suggest that identity diffusion might be useful in the prediction of functional outcomes in BPD. Identity diffusion is a concept that was first described by Erikson in his seminal work on ego identity, in which he referred to the subjective experience of the self, defined as an absence or loss of the normal capacity for self-definition and reflected in the presence of an emotional breakdown in moments of physical intimacy, vocational election, competition, and increased need for a psychosocial definition (Erikson, 1956). This concept was later developed by Kernberg as the cornerstone of his personality organization model, adding the subjective experience of the other to Erikson's concept of identity, within an object relations theoretical framework (Kernberg, 1967, 2006); and was recently addressed in the first two items (identity and self-direction) of the Level of Personality Functioning Scale included in the DSM-5 section III alternative hybrid model for personality disorders (American Psychiatric Association, 2013).

In the subsample of patients without history of childhood sexual abuse, we found the same results in the regression analyses including the STIPO domains as independent measures to those found in the whole sample, supporting the role of the "identity" domain as a predictor of functionality in patients with BPD. However, there were some differences in the predictors identified in the analyses assessing the effect of the STIPO subscales on functionality, with the object relations subscale "interpersonal relationships" accounting for a greater amount of variance than the "sense of self" subscale. This suggests that in those patients without a history of childhood sexual abuse, who we could assume to have a more integrated sense of self, functionality scores would rely mostly on interpersonal relationships, a very relevant aspect for assessing functionality using the GAF.

Our study also showed other interesting findings. Patients with more severe BPD, as measured with the CGI-BPD, showed higher scores in all STIPO domains except aggression, and in most STIPO subscale scores, with the largest ES of the association in the subscales "capacity to invest" and "sense of self", both of which belong to the identity domain. Thus, patients with more clinically severe BPD showed higher levels of identity pathology, particularly with respect to their capacity to invest in work, school, or free time activities and to the degree of integration and stability of their sense of self. This result is coherent with Kernberg's model, in which the patients with the most clinically severe BPD are those with lower-level BPO, who are characterized by higher levels of identity pathology (Kernberg, 1984). The finding is also consistent with those of previous studies that have linked identity diffusion to the presence of more general psychopathology (Sollberger et al., 2012). Our findings suggest that STIPO scores, especially those assessing identity and its subscales, could provide additional useful dimensional information for the assessment of severity in BPD in clinical settings, thus complementing current measures.

STIPO scores in the domains reflecting the core features of the personality organization model (identity diffusion and use of primitive defenses) were significantly associated with clinical features of considerable importance in BPD, such as the presence of childhood sexual abuse or comorbidity with any other cluster B personality disorder, especially antisocial personality disorder. The presence of significant trauma during the psychological growth of the child has been found to be a key etiological factor for the subsequent development of BPO (Kernberg, 1975). The relationship between trauma and both a lower level of personality organization (Yalch and Levendosky, 2014) and higher levels of clinical severity and functional impairment in BPD was recently studied (Frías and Palma, 2015). Comorbidity with any other cluster B personality disorder has been related to higher clinical severity (Barrachina et al., 2011) and a lower level of personality organization (Hörz et al., 2010). The association between higher scores in the STIPO domains "identity" and "primitive defenses" and the presence of a comorbid antisocial personality disorder is concordant both with the personality organization model, in which antisocial personality disorder is placed at the lowest level of BPO (Kernberg, 1984) and with the view of other authors who favor a phenomenological approach and who consider antisocial personality disorder to be related to a marked functional disability in adulthood (Black, 2015; Paris et al., 2013).

The distribution of STIPO scores in the sample, with mean domain values between three and four, matched the BPO prototype suggested in a previous study (Hörz et al., 2009) and was similar to the distribution of the STIPO domain scores shown in other studies in which the STIPO was administered to German and Austrian patients (Doering et al., 2013; Fischer-Kern, 2010).

Finally, STIPO scores on the main domains of the structural personality organization model (identity diffusion and predominant use of primitive defenses) were not significantly associated with suicidal attempts, non-suicidal self-injuries, ADHD, or SUD. Although a worse level of personality organization has been associated to suicidal attempts in previous studies (Hörz et al., 2010), our results are in line with other findings of a lack of association of the main domains of the structural personality organization model with suicidality, when explored independently (Baus et al., 2014). Overall, these clinical features are included in the psychopathological factor "behavioral dyscontrol", which is related to the psychobiological domain "impulsive aggression" (Gunderson, 2010; Siever and Davis, 1991). This finding is concordant with those of a recent study on familial aggregation of candidate phenotypes for BPD, in which aggressiveness was only weakly related to BPD, suggesting that this phenotype may not represent an essential feature of BPD (Ruocco et al., 2015).

Our study is subject to a series of limitations. First, we did not include a control/comparison group, which made us unable to state whether similar associations between personality organization and psychosocial functioning would have been found in patients with no BPD. Further studies including a control/comparison group could help draw more definitive conclusions about this association. Second, the STIPO has not yet been validated in a Spanish population, thus limiting the scope of the results obtained. We took this limitation into account before starting the study. However, considering the characteristics of the STIPO as a semi-structured interview and our application of the study as a preliminary, exploratory assessment of the personality organization model in a Spanish BPD sample, we believe that this limitation did not represent an insurmountable barrier for performance. That said, the development of a validated Spanish version of the STIPO would enable a more detailed study of the relationship between identity pathology and functional disability in Spanish BPD patients. Additionally, it should be considered that there is a degree of subjectivity in the STIPO assessment that we tried to minimize using a single trained interviewer (AE), although we did not have any external supervision or gold standard comparison, which would have helped to reduce the degree of subjectivity of the interview. Third, the use of the GAF scale as a measure of functionality results in a number of

limitations, mainly because it provides a single rating of overall functioning based on a mix of symptoms and functioning without the detail of a more specified measure of functionality. Also, problems with both the reliability and validity of GAF have been found (Aas, 2010). However, the GAF has been widely used and adopted as valid measure of psychosocial functioning in multiple clinical and research settings (Gold, 2014). Fourth, the diagnosis of BPD was not confirmed using a structured interview. Nevertheless, all diagnoses were confirmed by a clinical psychiatrist with extensive experience in the assessment and treatment of BPD using DSM-IV criteria after a thorough clinical evaluation. Fifth, the small sample size might have affected our results to some extent and contributed to the absence of significant associations between the STIPO scores and comorbidities of BPD such as ADHD and SUD. Sixth, our sample was mainly composed of outpatients residing in an area in Madrid of medium-high socio-economic status, which could explain, at least to some extent, the better-than-expected functionality level of the sample. Finally, we lacked a measure of impulsivity, which would have been of great interest for testing its association with the core features of the personality organization model, along with a measure of aggression in a broad sense, including both overt and covert forms of aggression (i.e. psychosomatic disorders). Future studies should also assess the impact of other potentially relevant predictors of functionality in BPD, such as neurocognition or social cognition (Meehan et al., 2017; Ruocco, 2005).

Following the proposal of testing dimensional models of personality, this study suggests that the structural personality organization model, as assessed through the STIPO interview, might be a useful model for the conceptualization and diagnosis of personality disorders in clinical settings. We focused on aspects such as identity, which was significantly associated with functional outcome in patients with BPD in our study. In 2009, the American Journal of Psychiatry included an editorial stating the following: “Borderline patients, 20 or 30 years after completion of treatment, still show impoverishment of their personality: a lack of effectiveness and satisfaction in their lives, in their work and professions, and a lack of stability in intimate love and sexual relationships, in establishing families, and difficulty overcoming social isolation” (Kernberg and Michels, 2009). We think that the results of this study suggest that identity and its pathological correlate identity diffusion might be involved in the difficulties that BPD patients experience with functionality and life adjustment over the course of their lives. Therefore, psychotherapy and treatment strategies targeting the resolution of the syndrome of identity diffusion and the construction of an integrated and solid identity might help improve the functional outcome of patients of BPD.

Competing interests

The authors declare no competing interests related to this work.

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