

A (Re)-Evaluation of the Symptom Structure of Borderline Personality Disorder

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Objective: Despite evidence of significant symptom heterogeneity and excessive diagnostic comorbidity, many contend that borderline personality disorder (BPD) is unidimensional, an assumption that rests primarily on results from factor analytic investigations of BPD symptom criteria. We note several limitations in the literature and argue that the symptom structure of BPD can be best clarified by using both factor analytic techniques and examining the BPD symptom dimensions in relation to external criteria (that is, personality traits). Our goals were to: examine if the symptoms of BPD are best conceptualized as unidimensional or multidimensional, and determine the extent to which personality traits account for any symptom dimensions that underlie BPD.

Method: All published structural models of the BPD symptom criteria were identified and tested for statistical fit using confirmatory factor analysis in a sample of 373 patients who had completed the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders–Axis II Personality Questionnaire BPD scale. Dimensions from the best fitting model were examined in relation to traits from the Five-Factor Model (FFM) and the Personality Psychopathology Five (PSY-5) using correlational and regression analyses.

Results: Sanislow's 3-factor model, containing affect dysregulation, behavioural dysregulation, and disturbed relations symptom dimensions, provided the best fit; the unidimensional model produced the worst. The symptom dimensions of the 3-factor model were differentiable from one another and had unique associations with the FFM and PSY-5 personality traits.

Conclusion: BPD is a multidimensional construct.

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Clinical Implications

- BPD is a heterogeneous diagnostic construct and the dimensions that underlie it need to be considered.
- In the treatment of BPD, clinicians should consider which set of symptoms predominant their patient's clinical picture, which might inform the target of intervention.
- Assessment of personality traits may serve useful in identifying symptom type and in directing treatment.

Limitations

- The Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders–Axis II Personality Questionnaire, like most BPD diagnostic measures, has a limited number of variables assessing each of the symptom criterion.
- Our analyses may not generalize to interview measures or other self-report measures.
- It is possible that different results may emerge in a sample of patients with a primary diagnosis of BPD.

Key Words: *personality, personality disorders, borderline personality disorder, symptom structure, confirmatory factor analysis, Five-Factor Model*

One of the most frequently studied PDs,¹ BPD first appeared in the third edition of the DSM.² Since that time, the BPD diagnostic criteria have remained mostly unchanged; the only significant modification was the addition of a ninth criterion—stress-related paranoia or dissociative symptoms—in DSM-IV. Although the DSM-5 PD Work Group has proposed a radical reworking of Axis II in DSM-5, replacing the polythetic algorithm for PD diagnosis (for example, at least 5 of the 9 criteria for a diagnosis of BPD) with a prototype matching system, all 9 of the BPD criteria in DSM-IV are represented in the proposed BPD type description on which the prototype matching is based.¹

One of the long-standing and primary criticisms of BPD is the wide-ranging breadth of the symptoms that ostensibly compose this syndrome. The diagnostic breadth and symptom diversity of the BPD criteria has led to the assertion that BPD is one of the most heterogeneous psychopathological constructs³ and that it “has little intrinsic value because it is so heterogeneous.”^{4, p 2096} In fact, there are 256 different symptom combinations that can result in meeting diagnostic criteria for BPD and it is even possible for 2 people diagnosed with BPD to only share a single symptom. Although the proposed changes in DSM-5 would eliminate the polythetic system, it has been argued that the prototype ratings could lead to increased heterogeneity.⁵

In addition to subsuming a diverse set of symptoms, BPD is highly comorbid with a wide range of Axis I and II disorders,⁶ including internalizing⁶⁻⁸ and externalizing disorders.^{9,10} Although the reduction from 10 PDs in DSM-IV to 5 PD types in DSM-5 should reduce comorbidity within Axis II,¹ it is unlikely to affect BPD comorbidity rates more broadly. BPD also co-aggregates with Axis II, internalizing, and externalizing disorders in family studies.¹¹ This co-aggregation and high rates of comorbidity across

diverse manifestations of psychopathology indicate that BPD subsumes symptoms from many different domains, providing further evidence of the significant symptom heterogeneity of BPD.

We believe, as do others,¹² that if the symptoms that underlie BPD do not form a cohesive construct then both research endeavours exploring BPD and clinical matters related to the management and treatment of this diagnosis are compromised. For example, the broad range of symptoms make any investigation of brain structures that may underlie the diagnosis less than clear, and efforts to identify genetic vulnerabilities of BPD are mostly futile in the absence of an exclusively discrete disorder phenotype. From a clinical perspective, such heterogeneity can compromise treatment if significant differences exist between patients. In fact, many have argued for various BPD subtypes, with certain symptom sets characterizing unique BPD patient types.¹³⁻¹⁶ Subtypes are “an implicit [at times, explicit] recognition that an existing category is too heterogeneous to be maximally informative.”^{17, p 236}

The diagnostic heterogeneity of the BPD construct has resulted in considerable interest in its symptom structure. Factor analytic techniques, which are used to identify underlying latent symptom dimensions (for example, impulsivity) that are hypothesized to explain the associations among observed symptoms or behaviours (for example, substance abuse, unsafe sex, or reckless driving), have been most commonly used to address this issue. Investigators have subjected the BPD symptom criteria to both EFA and CFA procedures in an attempt to clarify the latent symptom structure (Table 1). As is evident from Table 1, numerous different factor solutions have been extracted across these various studies, including 1-, 2-, 3-, and 4-factor solutions. Moreover, even when studies have extracted the same number of factors, the composition of those factors often differs. This lack of clarity is likely attributable to differences in instrumentation,¹⁸ factor analytic procedures (for example, EFA, compared with CFA, whether the dichotomous nature of variables is considered), interpretational strategies of the factor analytic results, and comparison models included in the analyses.

Despite the apparent heterogeneity of BPD symptoms, many researchers have argued that BPD is either a unidimensional construct^{19,20} or a multi-dimensional construct whose dimensions are so highly correlated that they should be considered unidimensional for the sake of parsimony.^{19,21,22} We believe this conclusion is premature given the heterogeneity of symptom presentation and observed comorbidity patterns. Moreover, we think there are several limitations in the previous factor analytic investigations of the BPD criteria, on which the assumption of unidimensionality is based, that need to be addressed before BPD can be considered unidimensional. For example, most EFA studies did not use adequate sample sizes²³⁻²⁸; no CFA study compared all previously published models (a single study did include 4 models²⁰; however, the remainder

Abbreviations

AIC	Akaike information criterion
BIC	Bayesian information criterion
BPD	borderline personality disorder
CFA	confirmatory factor analysis
DSM	Diagnostic and Statistical Manual of Mental Disorders
EFA	exploratory factor analysis
FFM	Five-Factor Model
MMPI	Minnesota Multiphasic Personality Inventory
NEO-PI-R	Revised NEO Personality Inventory
PD	personality disorder
PSY-5	Personality Psychopathology Five
SCID-PQ	Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders—Axis II Personality Questionnaire

Table 1 Summary of factor analytic studies of BPD diagnostic criteria			
Study	Size (type)	DSM	Factors (criterion included)
EFA			
Feske et al ¹⁹	353 (p/c)	DSM-III-R	1 Single borderline dimension
Rosenberger and Miller ²³	106 (u)	DSM-III	1 Interpersonal disturbance (12379) 2 Instability (4568)
Benazzi ⁷²	209 (p)	DSM-IV	1 Affective instability (23678) 2 Impulsivity (1459)
Clarkin et al ²⁴	75 (BPD)	DSM-III-R	1 Identity problems and interpersonal difficulties (12379) 2 Affect difficulties and (or) self-harm (568) 3 Impulsivity (4)
Blais et al ²⁵	91 (p)	DSM-IV	1 Interpersonal instability (137) 2 Affective and (or) cognitive Instability (89) 3 Impulsive self-damaging behaviours (2456)
Sanislow et al ²⁶	141 (p)	DSM-III-R	1 Affective dysregulation (168) 2 Behavioural dysregulation (45) 3 Disturbed relatedness (2379)
Taylor and Reeves ²⁷	82 (u)	DSM-IV	1 Self-other instability (237) 2 Affective instability (46) 3 Stress-related paranoia (89)
Becker et al ²⁸	123 (p)	DSM-III-R	1 Self-negating and (or) depressive aspects (57) 2 Affective dysregulation-irritability (368) 3 Interpersonal dysregulation (129) 4 Impulsiveness (4)
CFA			
Fossati et al ²⁰	564 (p)	DSM-IV	1 Single borderline dimension
Feske et al ¹⁹	353 (p)	DSM-III-R	1 Single borderline dimension
Johansen et al ²¹	930 (p)	DSM-IV	1 Single borderline dimension
Clifton and Pilkonis ²²	411 (p/c/u)	DSM-III-R	1 Affective dysregulation (168) 2 Behavioural dysregulation (45) 3 Disturbed relatedness (2379)
			1 Single borderline dimension
			1 Affective dysregulation (168) 2 Behavioural dysregulation (45) 3 Disturbed relatedness (2379)
Sanislow et al ³⁰	668 (p/c)	DSM-IV	1 Identity and (or) interpersonal (12379) 2 Affect difficulties and (or) self-harm (568) 3 Impulsivity (4)
			1 Affective dysregulation (168) 2 Behavioural dysregulation (45) 3 Disturbed relatedness (2379)
			1 Affective dysregulation (168) 2 Behavioural dysregulation (45) 3 Disturbed relatedness (2379)
Some studies indicated multiple models.			
c = community members; p = all other psychiatric patients; u = undergraduate students			
Criterion: 1 = Avoidance of abandonment; 2 = Unstable relationships; 3 = Identity disturbance; 4 = Impulsivity; 5 = Suicidal and self-mutilative behaviour; 6 = Affective instability; 7 = Emptiness; 8 = Inappropriate anger; 9 = Stress-related paranoid behaviour			

compared fewer); and only a few^{19-21,24} accounted for the dichotomous nature of the BPD criteria. Failure to account for dichotomous variables can result in difficulty factors that do not represent substantive dimensions.²⁹ Accounting for the dichotomous nature of the BPD criteria and including all published models would provide a more stringent test of whether BPD is unidimensional or multi-dimensional. We believe it is necessary for the above limitations to be addressed simultaneously in a single study.

We also think that the symptom structure of BPD should be clarified not only through an examination of its internal structure but also as to how any symptom dimensions relate to external criteria. If multiple dimensions are present, then before declaring BPD a unidimensional construct, it needs to be documented that the correlations between the BPD dimensions approach unity and the BPD dimensions have identical associations with external variables of interest, so valuable information would not be lost. In fact, Sanislow et al³⁰ explicitly called for an examination of the external correlates of BPD dimensions in his seminal paper on BPD symptom factor structure; however, this call appears to have gone largely unheeded.

One candidate for these analyses, as suggested by Sanislow et al,³⁰ is personality traits. During the past several decades, there has been considerable interest in the association between PDs and personality traits, especially those in the FFM of personality.³¹⁻³³ The FFM is the most widely used trait model of personality.³⁴ It subsumes the vast majority of other trait models,³⁴ and it has been shown to be valid and reliable in psychiatric populations.³⁵ The FFM traits are heritable,³⁶ biologically based,³⁷ and are universal in that they generalize across languages, cultures, and countries.^{38,39} The FFM contains 5 broad trait domains of personality: Neuroticism, defined as the tendency to experience negative emotions (for example, depression, anxiety, or anger) and psychological stress; Extraversion, the tendency to be sociable, lively, and experience positive emotions; Openness, comprised of aesthetic sensitivity, intellectual curiosity, and having nondogmatic attitudes; Agreeableness, consisting of trust, altruism, and sympathy; and Conscientiousness, encompassing being responsible, disciplined, and successful in pursuing goals.⁴⁰

Meta-analyses have documented that PDs, including BPD, are positively correlated with neuroticism and negatively correlated with agreeableness and conscientiousness.^{41,42} Despite the significant interest in associations between personality traits and BPD,⁴³⁻⁴⁵ only Clarkin et al²⁴ reported the association between BPD dimensions and personality traits (see, however, Kendler et al⁴⁶). They documented differential associations between their BPD dimensions and the FFM. Their results, although based on a relatively small sample, further suggest it may be premature to consider BPD unidimensional.

Beyond scientific interest in the association between PDs and personality traits, widespread dissatisfaction with the DSM-IV taxonomy of PDs has resulted in numerous calls

for its replacement with a dimensional system, the leading candidate model being based on the FFM.^{44,47} Researchers have documented that personality traits from the FFM and those underlying the DSM PDs reside in the same overlapping structure^{48,49} and that most DSM PDs can be represented by the FFM.^{42,50-53} Recent studies, however, have concluded that facet-level analyses are necessary to most adequately capture the DSM-IV-PD constructs.^{41,47,53} If personality traits provide sufficient coverage of the dimensions that underlie PDs then it has been argued that elimination of the current PDs from the nosology is justified.^{18,41}

Although the FFM is a universal model of personality traits, it was primarily derived from research in normal-range populations and, as such, measures of the FFM (and arguably to some degree the model itself) were not designed to capture personality variation in the pathological range.⁵⁴ For this reason, the DSM-5 PD Work Group incorporated models based on analyses conducted in the context of PDs.⁵⁴ One such model is Harkness's PSY-5, which was developed from analyses of fundamental topics of PDs in the DSM-III-R.⁵⁵ The PSY-5 contains 5 dimensions, 2 of which Neuroticism or Negative Affect and Extraversion or Positive Affect, are extremely similar to their FFM counterparts. Additionally, Aggression can be conceived of as a more extreme inverted version of FFM Agreeableness. There are, however, some differences between the FFM and the PSY-5. For example, Disconstraint differs from Conscientiousness in that it includes risk aversion, impulsivity, and criminality. Finally, Psychoticism includes the tendency to experience breaks from reality, to have unusual beliefs, and experience unusual perceptions. Psychoticism is generally regarded as not having a counterpart in the FFM^{54,56} although some researchers have argued that it is a maladaptive variant of Openness.⁵⁷ Whether BPD is unidimensional or multi-dimensional, what dimensions might underlie it, and the extent to which personality traits (for example, the FFM and PSY-5) provide coverage of BPD dimensions are important questions for DSM-5.

Our first goal is to address the limitations outlined above to determine if BPD is a unidimensional construct. To accomplish this, we conducted an examination of all the DSM BPD symptom structures identified in the published literature in a large diagnostically heterogeneous psychiatric patient sample. In our analyses, we accounted for the categorical nature of the BPD criteria and directly pitted the models against each other. Moreover, we used multiple fit indices that empirically address the issue of parsimony. A second goal is to provide additional information regarding the unidimensionality of BPD beyond analyses of its internal structure by examining the association of any BPD dimensions with personality traits. Any BPD symptom dimensions that emerge must have correlations near unity with each other and identical external correlates before they can be collapsed into a single dimension. The third goal is to examine the extent to which personality traits provide coverage of the BPD dimension(s).

Table 2 Model fit indices				
Model	ln(L)	K	AIC	BIC
Single factor	-2191.763	30	5223.527	5341.174
2-factor models				
Rosenberger	-2572.33	31	5206.66	5328.229
Benazzi	-2572.504	31	5207.007	5328.576
Sanislow	-2576.246	31	5214.491	5336.06
3-factor models				
Sanislow	-2552.219	33	5170.516 ^a	5299.928 ^a
Clarkin	-2570.623	33	5207.247	5336.659
Taylor	-2571.499	33	5208.998	5338.41
Blais ^b	na	na	na	na
4-factor models				
Becker	-2569.147	36	5210.294	5351.47
<i>n</i> = 373				
ln(L) = log-likelihood; K = number of parameters; na = not applicable				
^a Best-fitting model for each criterion				
^b Seven parameters would need to be fixed to avoid singularity, as such the model was not interpreted.				

Methods

Sample

The sample was taken from a database of patients who had been referred for psychological assessment at a tertiary care, university affiliated psychiatric centre (*n* = 373, 19.4% female, mean age = 38.94 years, SD 10.17). All patients who completed the measures included in our study and provided consent for the use of their information in clinical research were included. The research was approved by the Research Ethics Board at the Centre for Addiction and Mental Health. A portion of these participants were included in previously published research⁵³ but with a different focus.

Measures

SCID-PQ.⁵⁸ The SCID-PQ is a self-report screening measure designed to assess DSM-IV Axis II PDs. It contains 119 yes or no items corresponding to symptoms and features of the DSM-IV PDs. The SCID-PQ is widely used in PD research.^{59,60} The BPD scale contains 15 items. In general, each BPD criteria is represented by a single item; however, criteria 3, 5, and 8 are assessed with multiple items.

NEOPI-R.⁶¹ The NEO-PI-R is a 240-item self-report measure that assesses the 5 personality domains of the FFM—Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness—as well as 6 facets for each of the domains. Each item is answered using a 5-point Likert-type scale, with responses ranging from strongly disagree to strongly agree.

PSY-5.⁵⁶ The MMPI-2 PSY-5 was developed to assess Harkness's pathological personality model. It consists of 5 scales—Aggression, Psychoticism, Disconstraint,

Neuroticism or Negative Affect, and Extraversion or Positive Affect—derived from the MMPI-2. The PSY-5 has demonstrated adequate reliability and validity.⁵⁶ Krueger et al⁵⁴ cited the PSY-5 as contributing to the DSM-5 PD Work Group's trait model.

Statistical Analysis. Mplus version 5.2⁶² was used to evaluate model fit owing to its ability to properly handle both continuous and categorical variables. A robust maximum likelihood estimator, designed to select the model most likely to have resulted in the observed data, was used and factors were permitted to correlate. Maximum likelihood estimation is robust to nonnormality^{63,64} and allows for the use of the AIC and the BIC. The AIC and BIC penalize models for each additional parameter and thus specifically support models that represent the observed data in the most parsimonious manner.⁶⁵ The models tested included all published EFA and CFA models (Table 1). Several of the models were originally formulated using DSM-III-R criteria. Therefore, all analyses were rerun without the additional DSM-IV criterion; doing so did not affect any of the conclusions drawn.

On determination of the best fitting model, unit weighted scales were created to assess the dimensions that emerged. Unit weighted scales were used because CFAs suppress cross loadings, which leads to artificially inflated interfactor correlations.^{66,67} This is especially problematic for constructs in which the symptom criteria are likely to have significant cross loadings, as is the case for BPD. SAS version 9.2 (SAS Institute, Cary, NC) was used to analyze the correlates of the BPD dimensions and conduct regression analyses to determine the extent to which personality traits accounted for the BPD dimension(s).

Scale	Affective dysregulation	Behavioural dysregulation	Disturbed relations
BPD factors			
Affective dysregulation	(0.75)		
Behavioural dysregulation	0.51 ^a	(0.61)	
Disturbed relations	0.72 ^a	0.54 ^a	(0.81)
NEO-PI-R domains			
Neuroticism	0.53 ^a	0.50 ^a	0.55 ^a
Extraversion	-0.11	-0.09	-0.24 ^a
Openness	0.11	0.17 ^b	0.13
Agreeableness	-0.33 ^a	-0.22 ^a	-0.25 ^a
Conscientiousness	-0.41 ^a	-0.45 ^a	-0.44 ^a
PSY-5			
Aggression	0.18 ^a	0.10	0.09
Psychoticism	0.42 ^a	0.34 ^a	0.43 ^a
Disconstraint	0.18 ^a	0.26 ^a	0.20 ^a
NEM and (or) Neuroticism	0.49 ^a	0.35 ^a	0.44 ^a
Introversion and (or) low PEM	0.17 ^a	0.15 ^a	0.21 ^a

NEM = negative emotionality; PEM = positive emotionality
 The interfactor correlation matrix diagonal is Cronbach's alpha; $n = 185$ for the NEO-PI-R correlations, $n = 369$ for the PSY-5 correlations
^a Correlation is significant at the 0.01 level (2-tailed); ^b Correlation is significant at the 0.05 level (2-tailed)

BPD factor	NEO domains		NEO facets		PSY-5		NEO facets and PSY-5	
	R^2	$F(5,184)$	R^2	$F(30,184)$	R^2	$F(5,368)$	R^2	$F(35,368)$
Affective dysregulation	0.37	20.80 ^a	0.48	4.77 ^a	0.28	27.98 ^a	0.53	4.86 ^a
Behavioural dysregulation	0.33	17.30 ^a	0.49	4.94 ^a	0.20	18.00 ^a	0.54	4.90 ^a
Disturbed relations	0.35	19.15 ^a	0.47	4.57 ^a	0.26	25.19 ^a	0.53	4.84 ^a

$n = 185$ for NEO analyses, 396 for PSY-5 analyses
^a Correlation is significant at the 0.01 level (2-tailed)

Results

Fit statistics for the 9 BPD models are presented in Table 2. Both the AIC and BIC indicated that the Sanislow 3-factor model provided the best fit to the data (AIC = 5170.516 and BIC = 5299.928). Note that the 1-factor (unidimensional) model demonstrated the worst fit relative to all the other models (AIC = 5223.527 and BIC = 5341.174). The correlations between the BPD symptom dimensions for the Sanislow model are presented in Table 3. The correlations were moderate in size (mean $r = 0.59$), further indicating that BPD is a multi-dimensional construct.

We next examined the association of each of the BPD dimensions with the NEO-PI-R (Table 3). All 3 of the BPD dimensions are strongly correlated with Neuroticism and strongly negatively correlated with Conscientiousness and Agreeableness. However, the BPD dimensions also demonstrated unique correlates. For example, Disturbed

Relations is the only dimension significantly correlated with Extraversion, and Behavioural Dysregulation is the only dimension associated with Openness. To support an argument of unidimensionality, the BPD dimensions had to demonstrate identical correlational patterns; this was not the case. Finally, note that most BPD dimensions are as strongly correlated with Neuroticism (mean $r = 0.53$) as they are with each other.

A similar pattern of common and unique associations was observed with the PSY-5 (Table 3). As expected, all 3 BPD dimensions are correlated with Negative Emotionality or Neuroticism, although Behavioural Dysregulation demonstrated more modest correlations. All 3 dimensions also demonstrated significant associations with Psychoticism and Disconstraint. However, only Affective Dysregulation had a meaningful association with Aggression.

We conducted separate regression analyses using the NEO-PI-R domains, the NEO-PI-R facets, and the PSY-5 as the predictor variables (entered as a single block for each analysis) and each of the BPD dimensions as the criterion variables. We also conducted regression analyses with the NEO-PI-R facets and PSY-5 jointly to determine the overall predictive power of the included trait measures. The results of these analyses are presented in Table 4. Although all predictors were significant, the NEO-PI-R facets were particularly effective at capturing the BPD dimensions, predicting almost 50% of the variance in each dimension. The NEO-PI-R domains and PSY-5 predicted about 33% and 25% of the variance, respectively. Finally, the NEO-PI-R facets and the PSY-5 jointly accounted for over 50% of the variance in the BPD dimensions.

Discussion

Our analyses indicate that BPD is not a unidimensional construct. This assertion is supported by the results of the CFAs, which empirically addressed parsimony, and indicated that Sanislow's 3-factor model provided the best fit to the data and the unidimensional model the worst fit. In addition, the moderate correlations (mean $r = 0.59$) between the BPD dimensions, which do not approach unity, indicate the dimensions are differentiable. Additionally, the BPD dimensions demonstrate some unique associations with personality traits. The above results are particularly telling because they emerged even with the confines of the limited number of BPD variables available. Such constraints restrict valid dimensions from emerging⁶⁸⁻⁷⁰ and can lead to heterogeneous factors and increased interfactor correlations.

As might be expected based on past meta-analyses of PDs,^{41,42} as well as the BPD literature,⁴⁵ all BPD dimensions were correlated with Neuroticism, Conscientiousness, and Agreeableness. However, they also demonstrated specific associations that were generally consistent with the content they subsumed. For example, Disturbed Relations was the only dimension associated with NEO-PI-R Extraversion (-0.24) and Affective Dysregulation, which contains the inappropriate anger criteria, was the only dimension associated with PSY-5 Aggression. Interestingly, Affective Dysregulation and Disturbed Relations were both strongly related to PYS-5 Psychoticism. Markon⁷¹ found that unstable relations (part of Affective Dysregulation) and fears of abandonment (part of Disturbed Relations) both fell under a higher-order Thought Disorder factor while the remaining criteria from both Affective Dysregulation and Disturbed Relations fell under the internalizing or externalizing factors. The current results are in line with that finding as Psychoticism assesses content similar to thought disorder. However, because both Affective Dysregulation and Disturbed Relations contain symptoms that were subsumed under different higher order factors in Markon⁷¹ suggests that the Sanislow factors are quite heterogeneous. Finally, Openness was related to Behavioural Dysregulation suggesting that it might have some use for assessing BPD.

Our study documented that a faceted FFM measure, which was not designed to assess psychopathology (NEO-PI-R), can account for about 50% of the variance within each of the BPD dimensions. Additionally, 2 of the BPD dimensions were as strongly associated with Neuroticism as they were other BPD dimensions. If there was a single factor underlying BPD, which was specific to BPD and not psychopathology in general, then the dimensions would demonstrate stronger correlations with each other than they did with neuroticism. Instead, the current pattern of associations suggests that the glue that holds the BPD construct together may largely represent the general dysfunction or misery common across all forms psychopathology and not just BPD.

Conclusion

Our analyses document the multi-dimensional nature of BPD. In addition, they provide further support for Sanislow's³⁰ model, indicating that BPD contains Affective Dysregulation, Behavioural Dysregulation, and Disturbed Relations dimensions. The moderate correlations (mean $r = 0.59$) between the BPD dimensions, provide support for one argument (the BPD dimensions cohere with each other) published by the DSM-5 PD Work Group¹ in favour of retention of BPD as a type. However, it is possible (based on the limited number of variables in the current analyses and on the heterogeneity of Sanislow's factors as suggested by the Markon⁷¹ study) that additional factors underlie BPD. Moreover, whether or not the dimensions underlying BPD demonstrate at least moderate correlations with each other is only one consideration when determining if BPD should be retained as a type in DSM-5. In this regard, it is important to note that measures of personality traits, not designed to assess personality pathology, accounted for about 50% of the variance within each of the BPD dimensions. This suggests that pathological trait models of personality, like those proposed for DSM-5,⁵⁴ might provide sufficient coverage of BPD to make a BPD type unnecessary. Future researchers should investigate this issue using the specific traits proposed for DSM-5.

As previously noted, one limitation of all structural analyses of BPD, is that most BPD measures have a limited number of variables representing each DSM criterion. This can set strict limits on the number of factors that can emerge. As such, it is possible that the symptom structure of BPD contains additional factors that could make the BPD diagnosis less cohesive (for example, the dimensions would demonstrate lower correlations with each other) than present findings indicate. Therefore, future researchers should examine the structure of BPD using multiple indicators (for example, at least 4) for each DSM criterion. Such an assessment would allow for more advanced techniques that correct for measurement error, such as Exploratory Structural Equation Modeling,^{66,67} than was used in our study. Additionally, the current results are based on analyses using the SCID-PQ and, given the nature of PD assessment,¹⁸ may not generalize to other self-report or interview measures. Moreover, the association of the BPD dimensions with

additional constructs of clinical significance (for example, treatment response or self-injurious behaviours), as well as experimental or neurological and biological markers should be examined.

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Résumé : Une (ré)-évaluation de la structure des symptômes du trouble de la personnalité limite

Objectif : Malgré les preuves d'une hétérogénéité des symptômes significative et d'une comorbidité diagnostique excessive, bon nombre soutiennent que le trouble de la personnalité limite (TPL) est unidimensionnel, une hypothèse qui repose principalement sur les résultats d'études par analyse factorielle des critères des symptômes du TPL. Nous relevons plusieurs limitations dans la littérature et alléguons que la structure des symptômes du TPL peut être mieux clarifiée tant en utilisant les techniques de l'analyse factorielle qu'en examinant les dimensions des symptômes du TPL en relation aux critères externes (c'est-à-dire, les traits de la personnalité). Nos objectifs étaient : examiner si les symptômes du TPL sont mieux conceptualisés comme étant unidimensionnels ou multidimensionnels, et déterminer la mesure dans laquelle les traits de la personnalité représentent une dimension des symptômes sous-jacente de la TPL.

Méthode : Tous les modèles structurels publiés des critères des symptômes du TPL ont été identifiés et mis à l'essai pour l'ajustement statistique à l'aide d'une analyse factorielle confirmatoire dans un échantillon de 373 patients qui avaient répondu à l'entrevue clinique structurée du Manuel diagnostique et statistique des troubles mentaux – axe II, Échelle TPL du questionnaire de la personnalité. Les dimensions du modèle le mieux ajusté ont été examinées relativement aux traits du modèle à 5 facteurs (FFM) et de psychopathologie de la personnalité 5 (PSY-5) à l'aide d'analyses corrélationnelles et de régression.

Résultats : Le modèle à 3 facteurs de Sanislow, contenant des dimensions des symptômes de la dysrégulation de l'affect, de la dysrégulation comportementale, et de relations perturbées, présentait le meilleur ajustement; et le modèle unidimensionnel produisait le pire. Les dimensions des symptômes du modèle à 3 facteurs étaient différenciables les unes des autres et elles avaient des associations uniques avec les traits de la personnalité du FFM et de PSY-5.

Conclusion : Le TPL est un construit multidimensionnel.

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