Published in final edited form as:

J Consult Clin Psychol. 2010 August ; 78(4): 585–589. doi:10.1037/a0019003.

Borderline personality traits and disorder: predicting prospective patient functioning

Christopher J. Hopwood and
Michigan State University

Mary C. Zanarini
McLean Hospital and Harvard Medical School

Abstract

Objective—Decisions about the composition of personality assessment in DSM-V will be heavily influenced by the clinical utility of candidate constructs. This study addressed one aspect of clinical utility by testing the incremental validity of five-factor model personality traits and Borderline Personality Disorder (BPD) symptoms for predicting prospective patient functioning.

Method—Five-factor personality traits and BPD features were correlated with one another and predicted 2, 4, 6, 8, and 10-year psychosocial functioning scores for 362 personality-disordered patients.

Results—Traits and symptom domains related significantly and pervasively to one another and to prospective functioning. FFM extraversion and agreeableness tended to be most incrementally predictive of psychosocial functioning across all intervals; cognitive and impulse action features of BPD features incremented FFM traits in some models.

Conclusions—These data suggest that BPD symptoms and personality traits are important long-term indicators of clinical functioning that both overlap with and increment one another in clinical predictions. Results support the integration of personality traits and disorders in DSM-V.

Keywords

borderline personality disorder; five-factor model; personality; DSM-V; functioning

Skodol and Bender (2009) recently reported that the DSM-V Personality and Personality Disorder work group is considering the assessment of both personality disorders (PDs) and personality traits. These authors also note, however, that “much work will be done to determine how best to assess personality and personality disorders in DSM-V” (p. 390). In particular, further research is needed to demonstrate that the additional clinical resources required to assess both personality traits and disorders is justified by a meaningful increment in the clinical information that is thereby obtained. Results from studies that have examined clinical utility by asking clinicians to use and rate different systems have been mixed, with some studies generally suggesting a clinical preference for the disorder model (e.g., Rottman, Ahn, Sanislow, & Kim, 2009; Sprock, 2003) and others supporting normative dimensional models (Lowe & Widiger, 2009; Samuel & Widiger, 2006). However, another key utility criterion involves the ability of candidate models to predict functional difficulties (First et al., 2004).

Morey and Zanarini (2000) showed that FFM traits and Borderline PD (BPD) diagnoses increment one another in predicting patient functioning through 4 years and that, while some elements of BPD strongly overlap with FFM traits (e.g., affect problems with neuroticism), other elements such as impulse actions (e.g., suicidal behavior and substance abuse) were relatively independent. These authors hypothesized that “one interpretation of this result may reside in the distinction between a disorder and a trait. BPD may represent a disorder that waxes and wanes in severity over time, whereas neuroticism reflects a putatively stable trait . . . (that) could be expected to provide better estimates of outcome over a longer time span” (p. 737). However, because they only followed patients for 4 years, their analyses were unable to fully test this hypothesis. Furthermore, although they showed differential relations of BPD features to FFM traits, they did not test the incremental validity of each trait and each BPD feature.

Trull, Widiger, Lynam, and Costa (2003) found that BPD scales and an FFM BPD prototype incremented one another to predict concurrent functioning. Their results were similar to those reported by Morey and Zanarini (2000) in suggesting that the FFM and BPD may be complementary in terms of clinical utility. However, these authors conceptualized the FFM as a BPD prototype score rather than in terms of traits, and they did not assess prospective functioning. Morey et al. (2007) compared the validity of FFM traits and all DSM-IV personality disorders and reported that each domain incremented one another for clinical predictions. Consistent with the Morey and Zanarini (2000) hypothesis, whereas FFM traits were relatively stable in their predictive validity, the validity of PDs diminished at 4-year follow-ups. However, these analyses included an assessment of several DSM-IV PDs that are unlikely to be included in DSM-V, which will only include “major” PDs such as BPD (Skodol & Bender, 2009). Further, although several PDs have distinct subcomponents (Sanislow et al., 2002), the PDs assessed in this study were considered only at the level of diagnosis. Finally, this study assessed functioning through four years. Whereas it is now well-established that normal traits and PD features provide incremental information about patient functioning in shorter-term follow-ups, limited research has investigated this issue in longer-term follow-up studies.

To extend the literature on the clinical utility of FFM traits and BPD features, this study compared the validity of FFM traits and BPD features to indicate prospective functioning using long-term data from the sample used by Morey and Zanarini (2000). It advances previous research in that specific BPD symptom domains and FFM traits were compared to assess which features tend to overlap, and are thus diagnostically redundant, and which are unique. It further increments previous studies in that prospective functioning was assessed through 10 years to assess the validity of BPD and FFM models for predicting long-term functioning, and to provide a test of the hypothesis that traits will tend to outperform BPD symptoms at longer-term intervals.

Method

Inpatients (N = 362) in the McLean Study of Adult Development (MSAD; Zanarini et al., 2003, 2005) were consented and screened to be between 18 and 35 years old (mean = 27, S.D. = 6.3), free from mental retardation, serious organic conditions, schizophrenia, schizoaffective disorder, or bipolar I disorder, and diagnosed with a personality disorder upon admission. Most participants were women (279, 77%) and were Caucasian (315, 87%). As reported in Zanarini et al. (2005), approximately 77% of the sample met criteria for BPD. Overall, study attrition was low: 90.1% (N=309) of surviving patients were re-interviewed at all five follow-up waves. Sample sizes were as follows: baseline = 362, 2 years = 342, 4 years = 333, 6 years = 327, 8 years = 316, and 10 years = 309. Participants who did and did

not provide data at 10 years did not significantly differ on trait, BPD, or functioning scores at an alpha level of .05.

BPD symptoms were assessed with the *Revised Diagnostic Interview for Borderlines* (DIB-R; Zanarini et al., 1987) at baseline. The DIB-R is a structured interview with scores for four components of BPD: affect (Mean = 9.04, S.D. = 1.78), cognition (3.69, 1.92), impulse action patterns (5.55, 2.24), and interpersonal features (11.75, 3.71). The inter-rater kappas for determining clinical status of DIB-R component scores in a baseline subsample (N = 45) ranged from .80 to .99 (Zanarini, Frankenburg, & Vujanovic, 2002). Personality traits were assessed with the self-report *NEO Five Factor Inventory* (NEO-FFI; Costa & McCrae, 1992). This 60-item measure has scales indicating neuroticism (Mean = 33.34, S.D. = 8.00), extraversion (23.20, 7.02), openness to experience (29.95, 6.63), agreeableness (30.81, 6.74), and conscientiousness (28.57, 7.69). Functioning was assessed by trained interviewers every 2 years for 10 years of follow-up with the *Revised Borderline Follow-up Interview* (Zanarini, Frankenburg, Reich, Hennen, & Silk, 2005), an interview that measures relational, vocational, and leisure functioning. A composite psychosocial functioning score was used as a prospective outcome variable in this study. Raters blind to baseline or concurrent diagnostic and trait status assessed psychosocial functioning at every follow-up. In conjoint interviews from a baseline subsample, median intraclass correlations for the psychosocial functioning scores in baseline sub-samples of conjoint and videotaped interviews were > .90 (Zanarini et al., 2005).

The BPD feature scores and FFM traits were correlated with one another to assess their overlap and were correlated with functioning scores at each follow-up interval to assess their predictive validity. Hierarchical regression models were then constructed to test the increment of baseline BPD features and FFM traits relative to one another in predicting prospective functioning. To test the increment of BPD symptoms over FFM traits, NEO-FFI scores were entered in step 1 followed by DIB-R scores; to assess the increment of FFM traits, the order was switched. The statistical significance of the change in variance explained as a consequence of the second steps indicated incremental validity. Significance tests for Beta coefficients from the full models (including FFM traits and BPD features) were used to indicate which elements of each domain were incrementally important for clinical predictions. Similar regression models were also constructed with baseline functioning as a step 1 predictor and the FFM or BPD as step 2 and 3 predictor sets, in order to test the ability of these models to increment one another in predicting functional changes. Effects achieving Type I errors of probabilities < .05 were regarded as significant and effect sizes were computed for all analyses.

Results

Overlap between FFM traits and BPD features is presented in Table 1. Consistent with previous research suggesting a strong relation between neuroticism and BPD, this trait generally had the strongest positive correlations with affective, cognitive, and interpersonal features of BPD. Extraversion was significantly and negatively associated with these features, but at a lesser absolute magnitude than neuroticism. Agreeableness had the strongest negative correlation with impulse actions, and also had significant relations with cognitive and interpersonal features. Openness and conscientiousness did not significantly relate to BPD features.

Correlations between personality traits and BPD features with functioning scores over time are given in Table 2. Overall, these correlations were in the small to moderate range (|.09| to |.36|). All BPD features significantly related to functioning at each interval. Neuroticism, extraversion, and agreeableness significantly related to functioning scores at each interval,

whereas openness and conscientiousness generally showed more limited relations in terms of magnitude and number of significant effects.

Results from hierarchical regression models predicting functioning scores are reported in Table 3. Four regressions were conducted at each interval. In the first, FFM traits were the first step and BPD features the second. In the second, BPD features were the first step and FFM traits the second. In the third and fourth, these models were repeated but with baseline functioning as the first step and FFM traits or BPD features as the second and third steps. FFM traits as a group significantly predicted functioning in every model, before and after controlling for baseline functioning and BPD symptoms. Extraversion provided the most robust increment over other traits and BPD features as it was significant in all models. Agreeableness was significant in three models (2-, 4-, and 8-years), but only incremented other traits, BPD features, and functioning in one (4-years). BPD features as a group provided a significant increment over FFM traits in 2-year and 10-year predictions, but the increments tended to be quite small. When BPD features were significant, they involved cognitive or impulse action features of the disorder.

Discussion

This study assessed the overlap of BPD symptom sets and FFM traits and compared the validity of BPD features and FFM traits to predict prospective patient functioning through 10 years of follow-up. There were four overall findings. First, BPD features correlated positively with neuroticism and negatively with extraversion and agreeableness. Second, all of the BPD features and almost all of the traits significantly predicted functioning at every follow-up, although effects were strongest for BPD features, neuroticism, extraversion, and agreeableness. Third, traits tended to be more predictive of prospective and particularly longer-term (4 or more years after baseline) functioning, than BPD features. However, baseline BPD features continued to significantly relate to functioning through 10-years, and incremented traits in predicting 10-year functioning. Thus overall, the hypothesis that stable trait propensities would be more useful for longer-term predictions and less stable psychopathological symptoms would be more useful for short-term predictions was supported but only modestly so.

Fourth, certain features seemed to emerge as particularly important for different kinds of functioning. Among the FFM traits, neuroticism, agreeableness, and extraversion were significant predictors of functioning, but only the interpersonal traits extraversion and agreeableness incremented BPD features. This finding might suggest the importance of social contexts to mediate disorder-functional relations. It may also highlight the importance of adaptive or positive features that are not fully captured by diagnostic variables. For instance, the lack of severe interpersonal disruption does not necessarily portend skilled interpersonal behavior. This result therefore underscores the importance of assessing adaptive as well as maladaptive personality characteristics in the DSM-V. In contrast to these adaptive traits, the lack of incremental validity provided by neuroticism, despite its bivariate validity, may be explained by its strong overlap with maladaptive features of BPD.

This can also be seen in the validity patterns for BPD features. For instance, affective features of the disorder relate at the bivariate level to neuroticism and to functioning but the BPD affective component was not incrementally valid in regression models, suggesting that neuroticism and BPD affective features may have cancelled each other out to an extent. Among BPD symptoms, cognitive and impulse action features tended to provide the most increment over FFM traits and other BPD features. This may suggest that these are core elements of the disorder that are not fully captured by normative constructs. For instance, quasi-psychotic cognitive symptoms and impulsive actions might reflect dynamic, reactive

maladaptations that are contextualized by current stressors and thus not well-captured by static, diathetic traits. However, it is also notable that these features re-emerged as significant in 10-year predictions, suggesting that BPD has a trait-like quality as well. Overall, these findings are consistent with the hypothesis that borderline traits and disorders are both overlapping and non-redundant sources of information relevant to patient functioning.

Although the use of a single PD diagnosis was an important strength of this study in that it allowed for a specific articulation of how traits may increment the features of a particular disorder, it could also be argued that including other disorders may have limited or even eliminated the effects associated with FFM traits. However, other research (Morey et al., 2007) has shown that FFM traits increment DSM-IV personality disorders considered in combination for predicting concurrent and prospective functioning. Another potential limitation involves the prevalence of BPD in this sample and the possibility that ratings of BPD were range restricted, and that this could have attenuated BPD validity coefficients. Indeed, homogeneity of variance tests did suggest that the variance was significantly larger for those who did not meet criteria for BPD on the affect component score ($S.D. = 2.73$ vs. 0.90 , Levene test = 167.06 , $p < .001$) and the interpersonal component score ($S.D. = 3.50$ vs. 2.83 , Levene test = 4.66 , $p < .05$). That said, overall the standard deviations for DIB-R component scores in the full sample, as well as bivariate correlations with FFM traits and prospective functioning scores, suggest that range restriction does not fully account for study findings with regard to BPD components.

There are also limitations with respect to the measurement of traits. For instance, the FFM may have been at a predictive disadvantage because the BPD features and functioning measures were collected by interviewers, whereas the NEO-FFI is an abbreviated self-report measure. This may explain limited findings with regard to conscientiousness, which are inconsistent with other studies suggesting this trait is related to PD features (Samuel & Widiger, 2008) and functioning (Hopwood et al., 2007). Overall, these limitations make the validity demonstrated by the FFM in this study particularly impressive.

Overall, the current findings do not support conceptualizing traits and disorders as competitors, but rather suggest the need to integrate personality traits and disorders for clinical assessment in the DSM-V. BPD symptoms are overlapping but not completely redundant with FFM traits. Elements of both traits and BPD are important for clinical predictions of patient functioning, and disorders and traits might be differentially important depending on the kind and proximity of functioning being predicted. To the extent that some clinicians may be more comfortable using diagnostic variables than FFM traits for describing and communicating about patients (Rottman et al., 2009; Sprock, 2003, although see also Lowe & Widiger, 2009 and Samuel & Widiger, 2006), these results suggest that, in addition to including ratings of FFM traits in the DSM-V, efforts should be made to train mental health professionals in how to effectively use FFM traits for patient conceptualization and clinical communication.

Acknowledgments

Supported by NIMH grants MH47588 and MH62169.

References

- Costa, P.T., Jr.; McCrae, R.R. Professional manual: Revised NEO Personality Inventory and NEO Five-Factor Inventory. Psychological Assessment Resources; Odessa FL: 1992.

- First MB, Pincus HA, Levine JB, Williams JBW, Ustun B, Peele R. Clinical utility as a criterion for revising psychiatric diagnoses. *American Journal of Psychiatry*. 2004; 161:946–954. [PubMed: 15169680]
- Hopwood CJ, Morey LC, Shea MT, McGlashan TH, Sanislow CA, Grilo CM, Gunderson JG, Zanarini MC, Skodol AE. Personality traits predict current and future functioning comparably for individuals with Major Depressive and Personality Disorders. *Journal of Nervous and Mental Disease*. 2007; 195:266–269. [PubMed: 17468689]
- Lowe JR, Widiger TA. Clinicians' judgments of clinical utility: A comparison of the DSM-IV with dimensional models of general personality functioning. *Journal of Personality Disorders*. 2009; 23:211–229. [PubMed: 19538078]
- Morey LC, Hopwood CJ, Gunderson JG, Skodol AE, Shea MT, Yen S, Stout RL, Zanarini MC, Grilo CM, Sanislow CA, McGlashan TH. Comparison of alternative models for personality disorders. *Psychological Medicine*. 2007; 37:983–994. [PubMed: 17121690]
- Morey LC, Zanarini MC. Borderline Personality: Traits and disorder. *Journal of Abnormal Psychology*. 2000; 109:733–737. [PubMed: 11195998]
- Rottman BM, Ahn WK, Sanislow CA, Kim NS. Can clinicians recognize DSM-IV personality disorders from five factor model descriptions of patient cases? *American Journal of Psychiatry*. 2009; 166:427–433. [PubMed: 19289453]
- Samuel DB, Widiger TA. A meta-analytic review of the relationships between the five-factor model and DSM-IV-TR personality disorders: a facet level analysis. *Clinical Psychology Review*. 2008; 28:1326–1342. [PubMed: 18708274]
- Samuel DB, Widiger TA. Clinicians' judgments of clinical utility: A comparison of the DSM-IV and five-factor models. *Journal of Abnormal Psychology*. 2006; 115:298–308. [PubMed: 16737394]
- Sanislow CA, Grilo CM, Morey LC, Bender DS, Skodol AE, Gunderson JG, Shea MT, Stout RL, Zanarini MC, McGlashan TH. Confirmatory factor analysis of DSM-IV criteria for borderline personality disorder: Findings from the collaborative longitudinal personality disorders study. *American Journal of Psychiatry*. 2002; 159:284–290. [PubMed: 11823272]
- Skodol AE, Bender DS. The future of personality disorders in DSM-V? *American Journal of Psychiatry*. 2009; 166:388–391. [PubMed: 19339361]
- Sprock J. Dimensional versus categorical classification of prototypic and nonprototypic cases of personality disorder. *Journal of Clinical Psychology*. 2003; 59:991–1014. [PubMed: 12945064]
- Trull TJ, Widiger TA, Lynam DR, Costa PT Jr. Borderline personality disorder from the perspective of general personality functioning. *Journal of Abnormal Psychology*. 2003; 112:193–202. [PubMed: 12784828]
- Zanarini MC, Frankenburg FR, Hennen J, Reich DB, Silk KR. The longitudinal course of borderline psychopathology: 6-year prospective follow-up of the phenomenology of borderline personality disorder. *American Journal of Psychiatry*. 2003; 160:274–283. [PubMed: 12562573]
- Zanarini MC, Frankenburg FR, Hennen J, Reich DB, Silk KR. The McLean Study of Adult Development (MSAD): Overview and implications of the first 6 years of prospective follow-up. *Journal of Personality Disorders*. 2005; 19:505–523. [PubMed: 16274279]
- Zanarini MC, Frankenburg FR, Reich DB, Hennen J, Silk KR. Psychosocial functioning of borderline patients and axis II comparison subjects followed prospectively for six years. *Journal of Personality Disorders*. 2005; 19:19–29. [PubMed: 15899718]
- Zanarini MC, Frankenburg FR, Vujanovic AA. Inter-rater and test-retest reliability of the Revised Diagnostic Interview for Borderlines. *Journal of Personality Disorders*. 2002; 16:270–276. [PubMed: 12136682]
- Zanarini MC, Gunderson JG, Frankenburg FR. Cognitive features of borderline personality disorder. *American Journal of Psychiatry*. 1990; 147:57–63. [PubMed: 2293789]
- Zanarini MC, Gunderson JG, Frankenburg FR, Chauncey DL. The Revised Diagnostic Interview for Borderlines: Discriminating BPD from other Axis II disorders. *Journal of Personality Disorders*. 1989; 3:10–18.

Table 1

Baseline correlations between five factor traits and borderline features.

	Affect	Cognition	Impulse Action	Interpersonal
Neuroticism	.50 **	.39 **	.17 **	.45 **
Extraversion	-.23 **	-.19 **	-.04	-.17 **
Openness	.05	.07	-.09	-.02
Agreeableness	-.11 *	-.17 **	-.23 **	-.20 **
Conscientiousness	-.01	.02	-.05	-.10

*
 $p < .05$ **
 $p < .01$

Table 2

Bivariate correlations of BPD features and FFM traits with prospective functioning.

	2 year	4 year	6 year	8 year	10 year
BPD					
Affect	-.22**	-.21**	-.16**	-.18**	-.20**
Cognitive	-.29**	-.26**	-.24**	-.19**	-.25**
Impulse Action	-.26**	-.17**	-.18**	-.17**	-.21**
Interpersonal	-.28**	-.26**	-.19**	-.20**	-.19**
FFM					
Neuroticism	-.29**	-.25**	-.25**	-.22**	-.18**
Extraversion	.33**	.36**	.36**	.34**	.31**
Openness	.19**	.16**	.12**	.09	.10
Agreeableness	.26**	.28**	.22**	.23**	.22**
Conscientiousness	.12*	.13*	.12**	.10	.16**

* $p < .05$

** $p < .01$

Table 3
Validity of FFM traits and Borderline features to predict prospective psychosocial functioning.

Year	Model R ²				Significant Predictors		Beta
	FFM	BPD [FFM]	BPD	FFM [BPD]		FX	
2	.19**	.05**	.13**	.12**	FFM Extraversion	.22**	.17**
FX	.08**	.02*	.03**	.06**	FFM Openness	.13**	.09**
					FFM Agreeableness	.11*	.07
					BPD Cognitive	-.15*	-.06
					BPD Impulse Actions	-.14*	-.13**
4	.19**	.03*	.09**	.13**	FFM Extraversion	.27**	.22**
FX	.09**	.01	.02	.07**	FFM Agreeableness	.17**	.13**
6	.16**	.03*	.07**	.12**	FFM Extraversion	.28**	.22**
FX	.07**	.01	.01	.07**			
8	.15**	.02	.06**	.14**	FFM Extraversion	.28**	.22*
FX	.06**	.01	.01	.06**	FFM Agreeableness	.14*	.10
10	.13**	.05**	.09**	.16**	FFM Extraversion	.25**	.18**
FX	.05**	.02	.03*	.05**	BPD Cognitive	-.16*	-.10
					BPD Impulse Actions	-.13*	-.13*

Note. BPD [FFM] denotes the increment of BPD over FFM traits and FFM [BPD] indicates the increment of FFM traits over BPD. In the rows, |FX| denotes the increment of BPD and FFM traits over baseline psychosocial functioning (FX); in the columns |FX| indicates the Beta weights for personality traits and BPD elements with FX controlled. Baseline psychosocial functioning was a significant ($p < .01$) predictor in every model (2-year Beta = .41, 4 = .36, 6 = .37, 8 = .36, 10 = .33).

* $p < .05$

** $p < .01$