

Convergence between DSM-IV-TR and DSM-5 Diagnostic Models for Personality Disorder: Evaluation of Strategies for Establishing Diagnostic Thresholds

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The Personality and Personality Disorders Work Group for the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* recommended substantial revisions to the personality disorders (PDs) section of DSM-IV-TR, proposing a hybrid categorical-dimensional model that represented PDs as combinations of core personality dysfunctions and various configurations of maladaptive personality traits. Although the DSM-5 Task Force endorsed the proposal, the Board of Trustees of the American Psychiatric Association (APA) did not, placing the Work Group's model in DSM-5 Section III ("Emerging Measures and Models") with other concepts thought to be in need of additional research. This paper documents the impact of using this alternative model in a national sample of 337 patients as described by clinicians familiar with their cases. In particular, the analyses focus on alternative strategies considered by the Work Group for deriving decision rules, or diagnostic thresholds, with which to assign categorical diagnoses. Results demonstrate that diagnostic rules could be derived that yielded appreciable correspondence between DSM-IV-TR and proposed DSM-5 PD diagnoses—correspondence greater than that observed in the transition between DSM-III and DSM-III-R PDs. The approach also represents the most comprehensive attempt to date to provide conceptual and empirical justification for diagnostic thresholds utilized within the DSM PDs. (*Journal of Psychiatric Practice* 2013;19:179–193)

KEY WORDS: personality disorders, DSM-5, psychiatric classification, nosology, diagnostic thresholds

The introduction of a class of specific personality disorders (PDs), grouped on Axis II, in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III)* represented an important milestone in the development of this clinical area.¹ This innovation improved diagnostic reliability, spurred research and facilitated the development of research

methods, and provided a framework with which to identify the impact of personality pathology on other psychiatric disorders and its costs to society. However, critiques of the DSM's approach to PD diagnosis appeared almost immediately after the publication of the DSM-III.^{2,3} Problems with the DSM's use of an exclusively categorical approach have been well-documented. These include extensive co-occurrence of PDs so that most patients who receive a PD diagnosis meet criteria for more than one PD,^{4–6} appreciable heterogeneity among patients receiving the same PD diagnosis (meaning that two patients with a given disorder may share very few specific criteria),⁷ temporal instability of PD diagnoses occurring at rates incompatible with the basic definition of a PD,^{8,9} arbitrary diagnostic thresholds in polythetic criterion sets with little or no empirical basis, resulting in the reification of disorders as present or absent with varying levels of underlying pathology¹⁰ and limited validity and clinical utility,^{11–13} poor coverage of personality pathology so that personality disorder not otherwise specified (PDNOS) has been the most commonly diagnosed PD,¹⁴ and poor convergent validity of PD criterion sets so that patient groups diagnosed by different methods may be only weakly related to one another (i.e., average kappa ~ 0.30).^{15–17} None of these problems was addressed in the ensuing iterations of DSM, including the DSM-IV-TR.¹⁸

The DSM-5 Personality and Personality Disorders (P&PD) Work Group was charged to develop a new approach to the PDs in the DSM that would begin to rectify some of these problems.^{19,20} When the Work Group began its deliberations, a study endorsed by two of the most influential national (Association for

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Research on Personality Disorders) and international (International Society for the Study of Personality Disorders) PD research organizations surveyed experts on PDs and found that 74% thought that the DSM-IV-TR categorical approach to PDs should be replaced, 87% stated that personality pathology was dimensional in nature, and 70% supported a mixed categorical-dimensional approach to PD diagnosis as the most desirable alternative to the DSM-IV-TR approach.²¹

A preliminary categorical-dimensional hybrid had been developed at a DSM-5 planning meeting,²² which preceded the formal establishment of the Work Group and the start of the Work Group discussions. A mixed approach improves on the existing system by striking a balance between introducing new elements called for by the field (e.g., dimensional elements) and preserving continuity (e.g., preservation of those DSM-IV-TR PDs with research traction)—an approach that aimed to be minimally disruptive to clinical practice and research, while still taking into account research developments since the time of DSM-III. In its deliberations, the DSM-5 Task Force reviewed the PD proposal and specifically requested that the Work Group focus their efforts on a mixed or “hybrid” approach combining dimensional elements and DSM-IV-TR PDs. Although the DSM-5 Task Force endorsed the Work Group’s final proposal, the Board of Trustees of the American Psychiatric Association (APA) did not. As a result of this decision, DSM-5 will include the DSM-IV-TR PD criteria in DSM-5 Section II (“Essential Elements: Diagnostic Criteria and Codes”), while also including the model proposed by the Work Group in DSM-5 Section III (“Emerging Measures and Models”). The goal of this paper is to provide research of the type that could eventually lead to the migration of the hybrid model to Section II and, in the meantime, will give clinicians information that can help them evaluate the implications of using this new model for clinical assessment.

The Section III PD proposal consists of dimensional assessments of core impairment in personality functioning (referred to as Criterion A characteristics) and of pathological personality traits (or Criterion B characteristics) that can be combined to yield diagnoses of six specific PDs, as well as a category of Personality Disorder-Trait Specified (PD-TS) for the remaining four DSM-IV-TR PDs and for all other PD presentations. This paper describes analy-

ses examining the implications of different decision rules or thresholds for assigning a patient a PD diagnosis, culminating in the recommendations specified in the DSM-5 Section III alternative model. There are many ways that such information can be combined to create specific diagnostic rules for PDs. For example, there can be alternatives that require different numbers of global PD features (Criterion A) and/or different numbers of facet traits (Criterion B) as the diagnostic thresholds, or there can be requirements for specific configural combinations of features (e.g., require at least 1 Self and 1 Interpersonal impairment or require at least 1 Disinhibition and 1 Antagonism facet), or there can be consideration of different specific traits that might be associated with a particular PD. In considering such alternatives, it is important to recognize that there is no “gold standard” for deciding which decision rule or threshold is optimal. However, the following key principles guided the decision-making process of the Work Group.

1. Continuity with prevalence rates and composition of DSM-IV-TR PD diagnoses. One of the major concerns with the changes proposed for the DSM-5 PDs involved the possibility of a potentially large discrepancy between DSM-IV-TR and DSM-5 definitions of the same disorder.²³ This concern is particularly salient for those disorders, such as borderline, antisocial, and schizotypal PDs, for which substantial empirical literature exists. For the remaining PDs, continuity with DSM-IV-TR may be less important given the relative lack of research on these concepts and the criticisms of the existing DSM-IV-TR definitions. Regardless, it is important to evaluate whether thresholds can be established that provide solid continuity between DSM-IV-TR and proposed DSM-5 definitions. The analytic strategy employed in this paper provides prevalence estimates for PDs under the DSM-IV-TR and the various possible DSM-5 decision rules, as well as the Cohen’s kappa association between the two systems.

2. Reducing comorbidity among PDs. One of the greatest problems with DSM-IV was that the widespread categorical overlap rendered the concept of a specific PD disorder extremely imprecise. In the analyses employed here, the correlations of various decision rules for different PDs, with summed DSM-5 feature counts for each one, are presented. If such analyses identify diagnostic elements that have

large correlations with other PDs than the parent diagnosis, inclusion of such elements will lead to poor discriminant validity and vast comorbidity such as has been observed with the fourth edition of the DSM.

3. Begin to elaborate interactions/combinations/configurations among the trait domains. One of the advantages of a dimensional trait system is that it provides a way of representing PDs as located within a multidimensional space. For problems that primarily manifest along a single dimension, the clinician might more parsimoniously represent the patient in a “trait-specified” fashion. The use of PD diagnoses is best suited to describing particular well-known configurations or constellations within these dimensions. Thus, rather than requiring a simple sum of PD characteristics to establish a diagnosis, as was the case in DSM-IV-TR, the alternative model in DSM-5 would allow specification of particular configurations of features, for example, requiring that antisocial PD involve features of both Antagonism and Disinhibition (and not merely one or the other). Such a strategy specifying configurations of features will serve to reduce heterogeneity relative to a simple sum of PD characteristics by assuring that key, potentially interacting features must be present in some form. The analyses presented in this paper examined variants of a number of possible configural rules.

4. Have thresholds that are related to impairment in a meaningful way. Little research supports the contention that there are any essential discontinuities in the distribution of personality features and, as such, any “boundary” that is established between the presence and absence of a PD may be arbitrary. However, it is possible that the relationships of these continua to impairment may be non-linear, meaning that some combinations of features may have larger implications for functional impairment than others.¹⁰ In the analyses presented here, the correlations of various decision rules for the different PDs with a composite functional impairment score (summed across social, occupational, leisure impairment) are presented; large correlations imply large differences in functioning between those above and below the diagnostic threshold. These correlations, while providing an important step toward a conceptually based establishment of diagnostic

thresholds, must be considered in the context of the clinical sample from which they are drawn. For example, the correlations for disorders of lesser severity (e.g., obsessive-compulsive PD) sometimes become more related to functional impairment as the diagnostic threshold is lowered. The reason for this seemingly counterintuitive result is that lowering the threshold for lower severity disorders (e.g., OCPD) begins to include patients with higher severity disorders (such as borderline PD).

5. Assuring reliability of diagnoses. Analyses of the APA DSM-5 Field Trial data²⁴ suggested that altering diagnostic threshold can influence interrater reliability. Although the study described here did not obtain interrater reliability estimates, the internal consistency of various combinations of features can be calculated. In each instance, it will generally be the case that short feature lists will be less reliable than longer ones and, as such, the analyses presented here explored the implications for internal consistency of identifying DSM-5 PDs using a limited number of trait facets. It should also be noted that point #3 above, which suggests that PDs might best be represented as combinations of theoretically orthogonal dimensions, works against internal consistency estimation of reliability (which assumes that all features should be highly related). Thus, coefficient alpha estimates for these criteria sets should be viewed as descriptive rather than prescriptive.

In sum, this study sought to examine the DSM-5 PD model that was being proposed by the Work Group and to evaluate various strategies for establishing thresholds for diagnostic assignments with reference to diagnoses specified using the DSM-IV-TR system. The study used diagnostic information gathered from mental health clinicians across North America, representing data on 337 patients. The analyses attempted to examine the implications of different decisions made in the development of the DSM-5 model, including evaluating different decision rules or thresholds, as well as evaluating the convergent and discriminant validity of the various elements of the diagnostic system. In light of criticisms of the DSM-5 proposal, it is of particular interest to determine whether the considerable reformulation of the structure of PDs in the DSM-5 proposal allows clinicians to substantially capture valid variance present in the DSM-IV-TR disorders.

METHOD

Subjects

This study examined data from a national sample of 337 mental health clinicians who provided diagnostic information on one of their patients using an online survey located on a secure server. The clinicians were solicited via email from membership lists of organizations including the American Psychiatric Association, Arizona Psychiatric Society, International Society for the Study of Personality Disorders, Society for Personality Assessment, American Board of Professional Psychology, American Board of Forensic Psychology, Southwestern Psychoanalytic Society, and the Association for Behavioral and Cognitive Therapy. Clinicians were asked to provide information concerning one of their patients with whom they had had a minimum of 5 hours of contact during the previous year. Among 444 clinicians who clicked on the survey invitation email and proceeded to the survey website, 337 completed the survey, for a response rate of 75.9%. All clinicians received a \$75 gift certificate for an online merchant following their participation. Participating clinicians included 88 MD/DO psychiatrists, 213 PhD/PsyD psychologists, 10 DSW/MSW social workers, 13 master's level counselors, and 13 clinicians with other degrees. Survey invitations were linked to specific email addresses so that only the invitee could complete the survey, and no invitee could complete it more than once.

The 5 hour contact restriction was imposed to maximize the likelihood that clinicians were sufficiently familiar with the patient to address diverse areas of personality functioning, although it was not necessary that the identified patient present with any PD. Although it is possible that the 5 hour restriction may have yielded an unrepresentative sample of PDs, the prevalence rates of the different PDs obtained in this sample were very similar to rates reported in other broadly inclusive studies that have examined all PDs.^{25,26} For example, Zimmerman and colleagues evaluated 2,150 psychiatric outpatients with semi-structured diagnostic interviews for DSM-IV PDs.²⁶ The correlation between our base rates of the 10 DSM-IV-TR diagnoses (calculated by using the diagnostic criteria) and those reported by Zimmerman et al. was 0.72, with the current study having somewhat higher representation of diagnoses less likely to appear in an outpatient clinic setting,

such as schizotypal and antisocial PDs. Thus, at least with respect to the distribution of diagnoses, the present sample appears broadly representative.

Of the responding clinicians, the sample was nearly evenly divided between men (52%) and women (48%). The clinicians averaged 19 years (standard deviation [SD] = 10.9 years) of clinical experience. The majority of clinicians identified the nature of their contact with the patients they reported on as occurring in an outpatient mental health setting (69%), while the rest of the contacts were approximately equally divided among forensic, inpatient, or general medical settings. With respect to theoretical orientation, the most common involved cognitive-behavioral (32%) or psychodynamic (32%) approaches, with the remainder divided most frequently among humanistic, biological, or other approaches. The patient sample included more women (57%) than men, a finding noted in other studies with comparable samples.²⁶ The patients ranged in age from 15 to 79 years, with an average age of 39 years (SD = 13.9 years). The patients were generally European American (75% white, the remainder primarily either African American or Hispanic). The patients were distributed roughly equally across socioeconomic groups. The distribution of PD diagnoses, as calculated from the criteria according to DSM-IV-TR rules, was as follows: borderline, 40.1%; avoidant, 27.0%; paranoid, 21.1%; schizoid, 14.8%; narcissistic, 14.2%; dependent, 12.5%; antisocial, 11.3%; schizotypal, 9.5%; obsessive-compulsive, 8.9%; histrionic, 8.3%; as well as PDNOS (13.6%) and no PD (16.3%). The sum of these values is greater than 100% due to the considerable overlap usually found among the PD categories.

Materials

Data from clinicians were collected using an online survey questionnaire designed for this project. Section 1 of this instrument asked for demographic data on the clinicians. Section 2 elicited clinical judgment data on patient variables as provided by their respective clinicians, which included ratings of psychosocial functioning, with separate 5-point ratings for occupational, social, and leisure areas of functioning. Section 3 presented all diagnostic information pertinent to both DSM-IV-TR and the proposed DSM-5 PD criteria. For DSM-IV-TR, clinicians were presented with a criterion checklist of 79 features extracted verbatim

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Table 1. Dimensional criterion count correlations between DSM-IV-TR and DSM-5 personality disorders

		<i>DSM-IV-TR personality disorder</i>					
		Antisocial	Obsessive-Compulsive	Narcissistic	Borderline	Avoidant	Schizotypal
<i>DSM-5 personality disorder</i>	Antisocial	0.799	0.025	0.720	0.368	-0.228	0.084
	Obsessive-compulsive		0.574	0.221	0.025	0.376	0.434
	Narcissistic			0.735	0.342	-0.058	0.070
	Borderline				0.803	0.281	0.240
	Avoidant					0.769	0.337
	Schizotypal						0.630

from DSM-IV-TR PDs, arranged in random order to minimize possible halo effects between symptoms.²⁵ Clinicians were also asked to assign global DSM-IV-TR PD diagnoses in addition to specifying the individual criteria. For DSM-5, clinicians were asked to provide judgments for all three parts of the system, including a) level of personality functioning, b) criteria defining six DSM-5 PDs (as with DSM-IV-TR, arranged in random order), and c) trait ratings on 6 broad trait domains and 25 trait facets.

RESULTS

Dimensional Convergence of DSM-IV-TR and DSM-5 Section III Constructs

As noted previously, one of the major criticisms of the DSM-5 PD proposal has been concern that DSM-IV-TR PDs as represented in the DSM-5 system might reflect quite different constructs. To assess whether the constructs themselves converge when considered as dimensions (irrespective of the specific algorithm used for assigning a categorical diagnosis), associations between DSM-IV-TR and DSM-5 “criterion counts” were calculated. For the DSM-IV-TR, this was the number of diagnostic criteria indicated as “present.” For the DSM-5, this was the number of diagnostic indicators proposed for each PD (e.g., all indicators from Criterion A and from Criterion B as proposed for each disorder) indicated as “present.” These correlations are presented in Table 1. As an example, for borderline PD, this value represented the

correlation of the number of the nine DSM-IV-TR BPD diagnostic criteria and the number of the 11 DSM-5 BPD features (4 “Criterion A” core impairment features and 7 “Criterion B” pathological traits) that were present; this correlation was 0.803. These correlations reveal substantial dimensional convergence for antisocial, borderline, avoidant, and narcissistic PDs, with somewhat lower convergence noted for obsessive-compulsive and schizotypal PDs. The off-diagonal numbers reveal associations across DSM-IV-TR diagnoses, and although the DSM-5 to DSM-IV-TR convergence correlations (mean = 0.718) are appreciably larger than the discrimination correlations (mean = 0.216), these values do reflect potential discriminant validity issues between antisocial and narcissistic PDs, as will be discussed later. Given that the magnitude of the convergent associations is comparable to estimates of interrater reliability for DSM-IV PDs as described in the literature (e.g., Weertman and colleagues found a mean interrater reliability dimensional correlation of 0.657 for six DSM-IV PDs²⁷), this degree of convergence suggests that thresholds can be established that will provide solid continuity between DSM-IV-TR and DSM-5 definitions.

Setting Thresholds for Core Impairments in Personality Functioning for PD Diagnosis

As noted above, the diagnostic PD model for DSM-5 represents PDs as combinations of core impairments in personality functioning (the “A criterion”) and specific configurations of personality traits (the “B crite-

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tion”). For each DSM-5 PD, diagnostic criteria were constructed to reflect the four core impairments common to PD—impairments in identity, self-direction, empathy, and intimacy.²⁸ Thus, for each PD, characteristic impairments in the four elements of the global level of impairment were rated by clinicians as present or absent for each patient. Analyses were conducted to evaluate different ways of specifying the indicators of impairment in global personality functioning (i.e., the A criterion).

Three different diagnostic threshold algorithms for the A criterion were considered: 1) that a patient must meet criteria for at least one of these four areas of impairment; 2) that a patient must meet criteria for at least two of these four areas of impairment; or 3) that a patient must meet criteria for impairment in at least one self-related (identity or self-direction) area and in at least one interpersonal (empathy or intimacy) area. The sensitivity and specificity of these different algorithms were then evaluated for each of the six specified DSM-5 PDs, as gauged against the corresponding DSM-IV-TR diagnosis. The results of these analyses are presented in Table 2. In these analyses, sensitivity values are of particular importance relative to specificity, as all patients with DSM-5 PDs are presumed to manifest impairments in these core (Criterion A) areas and specificity will likely result from pathological trait (Criterion B) configurations. As expected, the largest sensitivity values were obtained with the least restrictive “any one area present” threshold, although specificity values were below 50% for 5 of the 6 disorders (all except ASPD) using this decision rule. The “any two areas present” rule tended to yield the best combination of strong sensitivity as well as adequate specificity. In addition, the presumption that the four areas represent a single core dimension of impairment is consistent with the “any two” required rule, in which all areas are presumed to be indicators of the same core difficulties. On the basis of these results, for Criterion A of the DSM-5 PDs, a diagnostic rule stipulating the presence of impairment in at least two of the four areas in which personality functioning is manifest was recommended.

Examining Alternative Diagnostic Trait Algorithms for Personality Disorders

The second section, or Criterion B, in the definition of each PD in the DSM-5 Section III model involves

Table 2. Sensitivity and specificity of three algorithms for the six specified DSM-5 PDs as gauged against the corresponding DSM-IV-TR diagnoses

<i>Diagnosis</i>	<i>Algorithm</i>	<i>Sensitivity</i>	<i>Specificity</i>
Borderline	Any 1	99.2%	28.9%
	Any 2	91.7%	57.7%
	1 self/1 interpersonal	84.2%	67.7%
Avoidant	Any 1	100.0%	28.5%
	Any 2	95.5%	57.3%
	1 self/1 interpersonal	94.3%	60.6%
Obsessive-compulsive	Any 1	100.0%	39.8%
	Any 2	80.0%	80.9%
	1 self/1 interpersonal	63.3%	84.2%
Antisocial	Any 1	89.5%	66.9%
	Any 2	65.8%	84.8%
	1 self/1 interpersonal	60.5%	86.5%
Narcissistic	Any 1	100%	38.5%
	Any 2	89.6%	65.7%
	1 self/1 interpersonal	81.2%	73.4%
Schizotypal	Any 1	100.0%	17.5%
	Any 2	87.1%	42.9%
	1 self/1 interpersonal	80.6%	56.8%

pathological trait facets that differentiate the various PDs. A total of 25 different pathological traits are presented that can be organized into higher order domains, including Negative Affectivity (NA), Disinhibition (DIS), Antagonism (ANT), Detachment (DET), and Psychoticism (PSY). Research on various trait models of personality and their relationship to DSM-IV PDs provided data from which hypotheses were derived for assigning certain pathological traits as indicators of different PDs.^{29,30} However, there remained a need to establish decision rules for “case-ness” that would result in the assignment of a diagnosis to an individual manifesting a certain problematic level of these Criterion B trait characteristics. One could treat the traits assigned to the various PDs in a “monothetic” fashion, in that all features could be required to be present in order to

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assign the diagnosis. This approach results in very poor convergence in the assignment of specific PD diagnoses between DSM-IV-TR and DSM-5; whereas 73.4% of this sample received a specific DSM-IV-TR diagnosis, only 31.7% qualified for a specific DSM-5 PD diagnosis under monothetic rules as originally proposed for the DSM-5 Field Trials ($\kappa = 0.238$). Given the lack of convergence and the likely interrater reliability problems associated with monothetic decision rules, polythetic rules are likely to be preferable, although there are a variety of options for applying such rules. The following sections explore possibilities for each of the proposed DSM-5 PD diagnoses. For all variations of B criterion rules, the “at least 2 of 4” A criterion rules described above were used to compute DSM-IV-TR/DSM-5 correspondence.

Borderline PD. The DSM-5 Section III B criterion for borderline PD lists 7 associated facet traits: 4 from NA (Emotional Lability, Anxiousness, Separation Insecurity, Depressivity), 2 from DIS (Impulsivity, Risk Taking), and 1 from ANT (Hostility, which also has significant cross-loadings on NA). These 7 traits demonstrated good associations with DSM-IV-TR diagnoses across the current clinician-rated data, as well as in data from a study by Hopwood et al. comparing self-report ratings of DSM-5 personality traits and DSM-IV PD diagnoses in 808 subjects.³¹ Thus, the following threshold analyses focused on combinations of these 7 traits.

In these models, potential configural definitions were generally tested by higher order trait domains. For borderline PD, the cross-loadings of Hostility resulted in a number of different configurations that could be tested. Three variants were examined; one in which at least one facet from all three potential borderline trait domains was required (with or without an additional minimum number of facets present); one in which two domains were represented, with Hostility treated as a NA facet; and one in which at least 1 facet from NA and at least 1 facet from either ANT or DIS were required. The results of these rules are presented in Table 3.

The columns in this and subsequent tables (Tables 3–8) provide a variety of information about the effects of various diagnostic decision rules. The first column provides the specific rule; the second column provides the prevalence rate when the rule is applied in this sample; the third column provides the kappa coefficient of agreement between DSM-IV-TR diag-

nosis and DSM-5 diagnoses using the rule in question; the next six columns provide the correlations of diagnostic assignments using the indicated rule with dimensional criterion counts using DSM-5 criteria for all six PDs (as a test of discriminant validity), and the final column provides the correlation of the diagnostic assignments with a functioning composite (summed across social, vocational, and leisure functioning, yielding a three-item scale with coefficient $\alpha = 0.752$), with negative correlations indicating that receiving the diagnosis is associated with poorer functioning. With regard to the rows in Tables 3–8, the first row provides the results from applying DSM-IV-TR diagnostic rules to these patients, and subsequent rows reflect differing DSM-5 diagnostic strategies for diagnosing the specific PD.

The results for the various borderline PD decision rules indicate that convergence with DSM-IV-TR was greatest when requiring 4 of 7 traits. Requiring that at least one of these 4 traits be from NA and at least 1 be from either ANT or DIS demonstrated an increased association with functional impairment, and also potentially reduced diagnostic heterogeneity by restricting combinations of these 7 traits to specific configurations. Thus, this decision rule was recommended as the B criterion threshold for assigning the borderline PD diagnosis.

Avoidant PD. The DSM-5 alternative model for avoidant PD lists four associated facet traits: 3 from DET (Withdrawal, Intimacy Avoidance, Anhedonia) and 1 from NA (Anxiousness) in criterion B. These 4 traits demonstrated good associations with DSM-IV-TR diagnoses across the current clinician-rated data, as well as in self-report data from Hopwood et al.,³¹ and the threshold analyses focused on different combinations of these 4 traits. With respect to potential configural definitions, an examination of requiring at least one trait from each relevant domain (DET and NA) was done. The results of these rules are presented in Table 4. The results indicate that convergence with DSM-IV-TR was greatest when 3 of 4 traits were required. Requiring that at least 1 of these 3 traits be from NA and at least 1 be from DET increased discriminant validity somewhat, particularly with respect to schizotypal PD, and this decision rule was adopted for criterion B for avoidant PD.

Obsessive-Compulsive PD. The initial proposal for obsessive-compulsive PD listed two criterion B asso-

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Table 3. Potential DSM-5 diagnostic decision rules for *borderline* personality disorder

Threshold	Prevalence	DSM-IV-TR							
		kappa	ASPD ^a	AVPD ^b	OCPD ^c	BPD ^d	NPD ^e	STPD ^f	Functioning ^g
DSM-IV-TR	39.8%	n/a	0.265	0.193	0.070	0.669	0.242	0.349	-0.302
DSM-5									
All 7	5.7%	0.152	0.212	0.150	0.212	0.416	0.178	0.270	-0.081
6 or more	16.8%	0.398	0.253	0.274	0.132	0.638	0.216	0.369	-0.170
5 or more	28.7%	0.574	0.277	0.337	0.194	0.768	0.265	0.440	-0.245
4 or more	40.1%	0.644	0.304	0.297	0.136	0.814	0.254	0.445	-0.302
3 or more	53.3%	0.557	0.321	0.285	0.134	0.813	0.303	0.419	-0.342
2 or more	60.5%	0.477	0.285	0.302	0.173	0.784	0.329	0.417	-0.302
1 or more	62.0%	0.452	0.276	0.305	0.199	0.769	0.334	0.435	-0.291
Require 1 from NA, DIS, ANT (Hostility = ANT)									
No min	27.5%	0.479	0.495	0.078	0.182	0.665	0.397	0.382	-0.237
3 or more	27.5%	0.479	0.495	0.078	0.182	0.665	0.397	0.382	-0.237
4 or more	25.4%	0.508	0.454	0.129	0.172	0.682	0.352	0.404	-0.229
5 or more	21.3%	0.457	0.380	0.192	0.179	0.674	0.309	0.380	-0.186
Require 1 from NA, DIS (Hostility = NA)									
No min	38.6%	0.510	0.502	0.073	0.082	0.701	0.373	0.380	-0.242
3 or more	37.7%	0.515	0.497	0.082	0.080	0.710	0.355	0.382	-0.248
4 or more	31.7%	0.580	0.396	0.178	0.090	0.738	0.295	0.414	-0.256
5 or more	24.9%	0.533	0.327	0.243	0.125	0.716	0.256	0.382	-0.197
Require 1 from NA and 1 from DIS or ANT (Hostility = ANT)									
No min	50.0%	0.557	0.361	0.201	0.153	0.781	0.382	0.422	-0.301
3 or more	47.0%	0.576	0.346	0.230	0.142	0.801	0.348	0.420	-0.328
4 or more	38.9%	0.643	0.322	0.285	0.148	0.810	0.278	0.448	-0.320
5 or more	28.7%	0.574	0.277	0.337	0.194	0.768	0.265	0.440	-0.245

^aCorrelation of applied diagnosis with dimensional DSM-5 criterion count for antisocial PD

^bCorrelation with dimensional DSM-5 criterion count for avoidant PD

^cCorrelation with dimensional DSM-5 criterion count for obsessive-compulsive PD

^dCorrelation with dimensional DSM-5 criterion count for borderline PD

^eCorrelation with dimensional DSM-5 criterion count for narcissistic PD

^fCorrelation with dimensional DSM-5 criterion count for schizotypal PD

^gCorrelation with composite psychosocial functioning rating

Explanation: In Tables 3–8, the first column provides the specific rule; the second column provides the prevalence rate when the rule is applied in this sample; the third column provides the kappa coefficient of agreement between DSM-IV-TR and DSM-5 diagnoses using the rule in question; the next six columns provide the correlations of diagnostic assignments using the indicated rule with dimensional criterion counts using DSM-5 criteria for all six PDs (as a test of discriminant validity), and the final column provides the correlation of the diagnostic assignments with a functioning composite (summed across social, vocational, and leisure functioning, yielding a three-item scale with coefficient alpha = 0.752), with negative correlations indicating that receiving the diagnosis is associated with poorer functioning. The first row provides the results from applying DSM-IV-TR diagnostic rules to these patients, and subsequent rows reflect differing DSM-5 diagnostic strategies for diagnosing the specific PD.

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Table 4. Potential DSM-5 diagnostic decision rules for *avoidant* personality disorder

Threshold	Prevalence	DSM-IV-TR							
		<i>kappa</i>	ASPD ^a	AVPD ^b	OCPD ^c	BPD ^d	NPD ^e	STPD ^f	Functioning ^g
DSM-IV-TR	26.3%	n/a	-0.196	0.673	0.146	0.212	-0.069	0.209	-0.096
DSM-5									
4	13.8%	0.472	-0.163	0.624	0.139	0.130	-0.106	0.118	-0.087
3	25.7%	0.596	-0.150	0.795	0.212	0.238	-0.084	0.251	-0.101
2	36.2%	0.580	-0.156	0.850	0.214	0.341	0.005	0.279	-0.155
1	46.4%	0.510	-0.122	0.839	0.224	0.451	0.062	0.310	-0.207
Require 1 from NA and 1 from DET									
No min	32.0%	0.560	-0.160	0.799	0.203	0.339	-0.021	0.196	-0.131
3 or more	23.4%	0.584	-0.164	0.760	0.187	0.242	-0.102	0.208	-0.105

^aCorrelation of applied diagnosis with dimensional DSM-5 criterion count for antisocial PD

^bCorrelation with dimensional DSM-5 criterion count for avoidant PD

^cCorrelation with dimensional DSM-5 criterion count for obsessive-compulsive PD

^dCorrelation with dimensional DSM-5 criterion count for borderline PD

^eCorrelation with dimensional DSM-5 criterion count for narcissistic PD

^fCorrelation with dimensional DSM-5 criterion count for schizotypal PD

^gCorrelation with composite psychosocial functioning rating

ciated facet traits: 1 from NA (Perseveration) and 1 from DIS (inverse: Rigid Perfectionism). These 2 traits demonstrate reasonable associations with DSM-IV-TR diagnoses across the current clinician-rated data as well as in self-report data from Hopwood et al.,³¹ with Rigid Perfectionism (DIS) demonstrating appreciably larger associations than Perseveration (NA). However, the brevity of this trait list resulted in modest internal consistency in this sample (coefficient alpha for all DSM-5 OCPD features = 0.61) and likely would also lead to problematic interrater reliability. In the current study, other facet traits were observed to also be related to DSM-IV-TR diagnoses—particularly traits that were representative of earlier (DSM-III, DSM-III-R) representations of this disorder. These traits included Restricted Affectivity and Intimacy Avoidance (both from DET). These two traits were also explored as additions to the disorder definition, resulting in an examination of combinations of the proposed 2 traits and these 2 additional traits. With respect to potential configural definitions, requiring at least one trait from DIS (i.e., Rigid Perfectionism, given its large associations with DSM-IV-TR relative to any other trait) was examined in conjunction with the two additional traits. The results of these rules are shown in Table 5, which presents data that included 16

patients receiving DSM-IV-TR diagnoses of obsessive-compulsive PD. The results indicate that convergence with DSM-IV-TR was greatest when requiring 1 of the 2 originally proposed traits, although this decision rule would result in a roughly 50% increase in prevalence of OCPD relative to DSM-IV-TR (i.e., from 9% to almost 15% in this sample). A decision rule requiring only Rigid Perfectionism as a single trait definition also yielded good convergence with DSM-IV-TR, but resulted in lower internal consistency (alpha = 0.59). The decision rules involving the additional traits displayed lower convergence values with DSM-IV-TR, although the internal consistency of the overall scale was slightly improved (alpha = 0.63). A decision rule requiring 2 of these 4 traits, with one being from DIS (i.e., Rigid Perfectionism), resulted in a prevalence rate that was more similar to that obtained using DSM-IV-TR rules, and also demonstrated a reasonable kappa coefficient of convergence while providing somewhat better evidence of internal consistency.

Antisocial PD. DSM-5 Section III antisocial PD includes 7 associated facet traits: 4 from ANT (Manipulativeness, Deceitfulness, Callousness, Hostility) and 3 from DIS (Irresponsibility, Impulsivity, Risk-taking). These 7 traits demonstrate good associations

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Table 5. Potential DSM-5 diagnostic decision rules for *obsessive-compulsive* personality disorder

Threshold	Prevalence	DSM-IV-TR							
		kappa	ASPD ^a	AVPD ^b	OCPD ^c	BPD ^d	NPD ^e	STPD ^f	Functioning ^g
DSM-IV-TR	9.0%	n/a	0.021	0.251	0.492	0.084	0.110	0.186	-0.052
DSM-5									
2	4.8%	0.351	0.204	0.192	0.591	0.133	0.222	0.244	-0.007
1	14.7%	0.501	0.143	0.273	0.764	0.182	0.228	0.287	-0.046
Adding two additional traits									
4 or more	1.5%	0.150	0.219	0.205	0.355	0.173	0.196	0.229	0.003
3 or more	5.4%	0.375	0.226	0.205	0.606	0.176	0.210	0.319	-0.005
2 or more	12.9%	0.464	0.139	0.264	0.681	0.110	0.203	0.310	0.075
1 or more	21.6%	0.394	0.103	0.336	0.763	0.161	0.196	0.333	0.032
Require 1 from DIS									
No min	9.0%	0.487	0.145	0.230	0.665	0.119	0.182	0.191	-0.020
2 or more	7.2%	0.436	0.188	0.241	0.653	0.154	0.233	0.265	0.009
3 or more	4.8%	0.397	0.200	0.227	0.591	0.161	0.208	0.299	-0.001

^aCorrelation of applied diagnosis with dimensional DSM-5 criterion count for antisocial PD

^bCorrelation with dimensional DSM-5 criterion count for avoidant PD

^cCorrelation with dimensional DSM-5 criterion count for obsessive-compulsive PD

^dCorrelation with dimensional DSM-5 criterion count for borderline PD

^eCorrelation with dimensional DSM-5 criterion count for narcissistic PD

^fCorrelation with dimensional DSM-5 criterion count for schizotypal PD

^gCorrelation with composite psychosocial functioning rating

with DSM-IV-TR diagnoses across the current clinician-rated data, as well as in self-report data from Hopwood et al.³¹ Thus, the threshold analyses focused on combinations of these 7 traits. With respect to potential configural definitions, requiring at least 1 trait from ANT and 1 from DIS was examined (with or without overall minimum facet requirements). The results of these rules are presented in Table 6. The results indicate that convergence with DSM-IV-TR was greatest when requiring 6 of the 7 proposed traits, with a prevalence rate closely approximating that observed using DSM-IV-TR diagnostic rules. With 6 traits required, this is essentially a configural decision rule requiring that at least 1 trait be from each of the two relevant domains as such a distribution would be mandated with 6 features present.

Narcissistic PD. The DSM-5 alternative model for narcissistic PD lists two associated facet traits, both from ANT (Grandiosity, Attention-seeking). These 2 traits demonstrate good associations with DSM-IV-

TR diagnoses across the current clinician-rated data, as well as in self-report data from Hopwood et al.³¹ However, the brevity of this trait list could result in problematic interrater reliability, although internal consistency was adequate (alpha for all NPD features = 0.76). Additional narcissistic PD trait correlates noted here and in Hopwood et al.³¹ entirely overlapped with proposed antisocial PD traits, and as such were not considered as potential additions to DSM-5 narcissistic PD because this would create marked problems with discriminant validity of the two disorders. To potentially improve discriminant validity, and better represent the possibility of “vulnerable narcissism” described in the theoretical literature, other facet traits from NA (Depressivity, Anxiousness, Hostility) were explored as additions to the disorder definition, resulting in an examination of combinations of the proposed 2 traits and these 3 additional traits. With respect to potential configural definitions, requiring at least 1 trait from the original list of 2 facets was examined in conjunction with

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Table 6. Potential DSM-5 diagnostic decision rules for antisocial personality disorder

Threshold	Prevalence	DSM-IV-TR							
		kappa	ASPD ^a	AVPD ^b	OCPD ^c	BPD ^d	NPD ^e	STPD ^f	Functioning ^g
DSM-IV-TR	11.4%	n/a	0.533	-0.219	0.024	0.170	0.234	0.150	-0.193
DSM-5									
7	6.3%	0.355	0.593	-0.033	0.221	0.196	0.352	0.207	-0.137
6 or more	11.7%	0.516	0.766	-0.095	0.246	0.250	0.434	0.264	-0.171
5 or more	14.4%	0.494	0.827	-0.109	0.255	0.235	0.492	0.306	-0.179
4 or more	16.8%	0.459	0.848	-0.168	0.287	0.172	0.555	0.276	-0.137
3 or more	18.0%	0.431	0.852	-0.184	0.291	0.182	0.573	0.257	-0.155
2 or more	18.9%	0.412	0.844	-0.178	0.300	0.174	0.575	0.266	-0.140
1 or more	20.1%	0.387	0.827	-0.156	0.315	0.169	0.577	0.282	-0.115
Require 1 from ANT and 1 from DIS									
No min	18.3%	0.424	0.842	-0.178	0.276	0.187	0.557	0.241	-0.137
3 or more	17.7%	0.438	0.848	-0.178	0.274	0.189	0.561	0.247	-0.155
4 or more	16.5%	0.466	0.845	-0.161	0.269	0.179	0.542	0.265	-0.137
5 or more	14.4%	0.494	0.827	-0.109	0.255	0.235	0.492	0.306	-0.179
6 or more	11.7%	0.516	0.766	-0.095	0.246	0.250	0.434	0.264	-0.171

^aCorrelation of applied diagnosis with dimensional DSM-5 criterion count for antisocial PD

^bCorrelation with dimensional DSM-5 criterion count for avoidant PD

^cCorrelation with dimensional DSM-5 criterion count for obsessive-compulsive PD

^dCorrelation with dimensional DSM-5 criterion count for borderline PD

^eCorrelation with dimensional DSM-5 criterion count for narcissistic PD

^fCorrelation with dimensional DSM-5 criterion count for schizotypal PD

^gCorrelation with composite psychosocial functioning rating

the 3 additional traits. The results of these rules are presented in Table 7. The results indicate that convergence with DSM-IV-TR was best when requiring both of the originally proposed traits. However, the internal consistency of the overall scale was decreased when adding the additional traits (alpha = 0.67) and, in general, the prevalence rates of the disorder increased markedly when the NA traits were added. Finally, while adding the additional NA traits did seem to improve discriminant validity with respect to antisocial PD slightly, it substantially worsened discriminant validity with respect to borderline and schizotypal PDs. As such, it was recommended that the original rule of requiring both of the ANT traits (with no NA traits required) be retained for assigning the narcissistic PD diagnoses.

Schizotypal PD. DSM-5 Section III schizotypal PD includes 6 associated facet traits: 3 from PSY

(Eccentricity, Cognitive and Perceptual Dysregulation, Unusual Beliefs and Experiences), 2 from DET (Restricted Affectivity, Withdrawal), and 1 from NA (Suspiciousness). For the most part, these 6 traits demonstrated good associations with DSM-IV-TR diagnoses across the current clinician-rated data, as well as in the self-report data from Hopwood et al.³¹ Thus, threshold analyses focused on combinations of these 6 traits. With respect to potential configural definitions, requiring at least one trait from PSY was examined (with or without overall minimum facet requirements). The results of these rules are presented in Table 8. The results indicate that convergence with DSM-IV-TR was greatest when requiring 4 of the 6 proposed traits. The configural decision rules requiring that at least 1 of these 4 traits be from the PSY domain yielded identical results to the unconstrained decision rule, as this would be mandated by the distribution of the proposed traits within domains.

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Table 7. Potential DSM-5 diagnostic decision rules for narcissistic personality disorder

Threshold	Prevalence	DSM-IV-TR							
		<i>kappa</i>	ASPD ^a	AVPD ^b	OCPD ^c	BPD ^d	NPD ^e	STPD ^f	Functioning ^g
DSM-IV-TR	14.4%	n/a	0.601	-0.106	0.314	0.159	0.555	0.221	-0.078
DSM-5									
2	14.7%	0.506	0.539	-0.106	0.291	0.160	0.685	0.214	-0.085
1	30.2%	0.442	0.609	-0.083	0.303	0.248	0.852	0.252	-0.126
Adding 3 additional traits									
5	2.7%	0.063	0.194	0.151	0.180	0.244	0.284	0.179	0.007
4 or more	11.7%	0.195	0.264	0.223	0.239	0.403	0.498	0.252	-0.114
3 or more	25.1%	0.332	0.481	0.136	0.332	0.486	0.712	0.353	-0.245
2 or more	37.1%	0.340	0.534	0.079	0.336	0.429	0.832	0.304	-0.202
1 or more	41.3%	0.317	0.551	0.032	0.338	0.376	0.855	0.301	-0.157
Require 1 of 2 original traits									
No min	26.3%	0.386	0.559	-0.021	0.300	0.331	0.766	0.274	-0.188
2 or more	28.4%	0.438	0.603	-0.046	0.307	0.292	0.835	0.270	-0.156
3 or more	21.6%	0.376	0.498	0.064	0.311	0.393	0.720	0.292	-0.220
4 or more	11.7%	0.195	0.264	0.223	0.239	0.403	0.498	0.252	-0.114

^aCorrelation of applied diagnosis with dimensional DSM-5 criterion count for antisocial PD

^bCorrelation with dimensional DSM-5 criterion count for avoidant PD

^cCorrelation with dimensional DSM-5 criterion count for obsessive-compulsive PD

^dCorrelation with dimensional DSM-5 criterion count for borderline PD

^eCorrelation with dimensional DSM-5 criterion count for narcissistic PD

^fCorrelation with dimensional DSM-5 criterion count for schizotypal PD

^gCorrelation with composite psychosocial functioning rating

DISCUSSION

Although most experts in personality psychopathology agree that it is dimensional in nature,²¹ clinical expediency argues for some preservation of categorical diagnosis for ease of communication and decision-making.³² Thus, the Personality and Personality Disorders Work Group created a hybrid model consisting of dimensional assessments of impairment in personality functioning and of pathological personality traits, which are combined to render categorical diagnoses of six PDs. Thresholds for establishing diagnoses have considerable import for clinicians. Diagnostic thresholds influence perceptions of illness and wellness, lead to decisions about whether and how to treat patients, influence judgments about the efficacy of treatments in specific cases as well as in general (i.e., in determining outcomes of clinical trials), and have an impact on health care

reimbursement and costs and legal arguments regarding responsibility and potential for rehabilitation/recidivism.¹⁰

Prior to the results presented in the current study, evidence supporting diagnostic thresholds for polythetic diagnostic criteria sets for PDs in the DSM has been scant.³³ Before the publication of DSM-III, Spitzer and colleagues developed criteria for borderline and schizotypal PDs.³⁴ For borderline PD (called unstable PD), a threshold of 5 of 8 criteria was selected on the basis of discriminating 234 patients judged by clinicians to have “borderline personality organization” versus 808 “non-borderline” patients with reasonable sensitivity and specificity. Similarly, for schizotypal PD, a threshold of 4 of 8 criteria was selected on the basis of discriminating 222 patients given a clinical diagnosis of “borderline schizophrenia” from controls. This threshold number of criteria (i.e., “5”) for BPD appeared in the DSM-III criteria

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Table 8. Potential DSM-5 diagnostic decision rules for *schizotypal* personality disorder

Threshold	Prevalence	DSM-IV-TR							
		<i>kappa</i>	ASPD ^a	AVPD ^b	OCPD ^c	BPD ^d	NPD ^e	STPD ^f	Functioning ^g
DSM-IV-TR	9.3%	n/a	0.099	0.229	0.225	0.153	0.054	0.494	-0.151
DSM-5									
6	0.0%	0.000	0	0	0	0	0	0	0
5 or more	3.6%	0.338	0.081	0.137	0.142	0.112	0.051	0.420	-0.123
4 or more	8.7%	0.561	0.134	0.200	0.297	0.153	0.118	0.599	-0.129
3 or more	15.6%	0.468	0.190	0.304	0.368	0.281	0.174	0.713	-0.165
2 or more	28.4%	0.336	0.266	0.328	0.412	0.349	0.280	0.775	-0.171
1 or more	47.9%	0.151	0.363	0.313	0.380	0.481	0.389	0.774	-0.252
Require 1 from PSY, DET, NA									
No min	8.4%	0.387	0.254	0.324	0.357	0.327	0.223	0.540	-0.084
Require at least 1 PSY trait									
2 or more	19.2%	0.435	0.271	0.248	0.312	0.327	0.249	0.717	-0.178
3 or more	14.1%	0.509	0.205	0.270	0.337	0.277	0.173	0.693	-0.177
4 or more	8.7%	0.561	0.134	0.200	0.297	0.153	0.118	0.599	-0.129
5 or more	3.6%	0.338	0.081	0.137	0.142	0.112	0.051	0.420	-0.123

^aCorrelation of applied diagnosis with dimensional DSM-5 criterion count for antisocial PD

^bCorrelation with dimensional DSM-5 criterion count for avoidant PD

^cCorrelation with dimensional DSM-5 criterion count for obsessive-compulsive PD

^dCorrelation with dimensional DSM-5 criterion count for borderline PD

^eCorrelation with dimensional DSM-5 criterion count for narcissistic PD

^fCorrelation with dimensional DSM-5 criterion count for schizotypal PD

^gCorrelation with composite psychosocial functioning rating

and persisted in DSM-III-R and DSM-IV, despite the addition of a new ninth criterion for “transient, stress-related paranoid ideation or severe dissociative experiences” for BPD in DSM-IV. For schizotypal PD, a decision rule of 5 of 9 criteria was adopted in DSM-III, with the addition of a ninth criterion for “odd or eccentric behavior or appearance” to the original criteria set developed by Spitzer and colleagues,³⁴ which has persisted through subsequent DSMs. All other PD diagnostic thresholds in previous editions of the manual (and now in DSM-5 Section II) have been determined by expert consensus, without explicit regard to effects on prevalence, discriminant validity, or relationship to external validators.^{33,35}

In the present study, we demonstrated that traditional DSM-IV categories of PD can be rendered in terms of core impairments in personality functioning and pathological personality traits with high fidelity. The convergence of DSM-IV-TR (now DSM-5 Section

II) and DSM-5 Section III constructs for given PDs, each assessed by ratings of all criteria by experienced clinicians, should allay fears that translating PDs into personality functioning and trait terms will be disruptive to clinical practice or research. As a demonstration, using the recommended configural rules for the proposed DSM-5 PDs yielded an average kappa correspondence across disorders of 0.541 with DSM-IV-TR diagnosis; by comparison, using the same survey methodology, Morey found an average kappa correspondence of 0.516 between DSM-III and DSM-III-R PD category diagnoses, a DSM transition that elicited little controversy.²⁵ Furthermore, specific diagnostic decision rules have been developed empirically using a strategy that explicitly balances agreement with DSM-IV, discriminant validity among the six PDs, and relationships to psychosocial functional impairment known to characterize PD psychopathology. The comparison of criteria ratings

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from an existing and a proposed PD diagnostic system in this manner is unique for the development of criteria for the PDs in the history of the DSM.

The DSM-5 Section III PD representations have other salutary effects. The definition of all PDs in terms of core impairments in personality functioning and pathological personality traits identifies personality pathology with high sensitivity and specificity,³⁶ utility for treatment planning and prognosis,²⁸ and links to the broader meta-structure (i.e., internalization/externalization) of psychopathology represented in DSM-5.³⁷ The reformulation of the PDs in these terms improves on the consistency and coherence of the PD definitions, which have up to now been inconsistent amalgams of symptoms, traits, functions, and consequences. DSM-5 Section III also includes the Level of Personality Functioning Scale, an empirically grounded measure of the severity of impairment in personality functioning, which has long been recognized by many in the field as the most important aspect of PD pathology,^{38,39} which is absent from Section II. A focus on personality functioning and pathological traits is likely to increase the stability of PD diagnoses,^{13,40} consistent with traditional concepts of PDs, in contrast to the instability found for DSM-IV PDs in recent prospective longitudinal studies.^{8,9} Finally, a hybrid model combining disorder and trait constructs has been shown to increase prediction of important antecedent, concurrent, and outcome variables over time.^{12,13,41-43} Further studies of the Section III alternative PD model using other methods and samples are obviously needed. As research accumulates on the model, some further revisions may be indicated, but if results are consistent with those observed in the current study, ultimately the PD and broader mental health constituencies may see fit to adopt a hybrid model with a stronger empirical basis and increased validity and clinical utility.

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