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Comparing Criterion- and Trait-based Personality Disorder Diagnoses in *DSM-5*

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Abstract

In the recent *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, the official personality disorder (PD) classification system remains unchanged. However, *DSM-5* also includes an alternative hybrid categorical-dimensional PD system in Section III to spur additional research. One defining feature of the alternative system is the incorporation of a trait model with PD-specific trait configurations, but relatively little work has evaluated how these traits map onto official PD diagnoses or their implications for diagnosis rates. To that end, we compared official PD criteria to Section III PD traits in a sample of current or recent psychiatric patients. We (a) evaluated the extent to which PD traits predicted traditional PD criterion counts, and (b) computed trait-based diagnosis rates and compared them to those reported in several published outpatient and epidemiological samples. Overall, PD traits generally predicted PD criterion counts, but with less than ideal specificity. In addition, we identified differences in diagnosis rates across approaches. These results provide some support for the Section III approach, but also identify important areas in need of refinement and future study before the field could reasonably switch to a hybrid PD classification approach like that in Section III.

Substantial evidence has accumulated showing both the limitations of the *DSM-IV* classification system for personality disorder (PD) as well as the advantages of understanding PD from a trait-dimensional perspective (e.g., Clark, 2007; Livesley, 2007; Trull & Durrett, 2005; Widiger & Samuel, 2005; Widiger & Trull, 2007). Despite these advances, the official PD classification remains unchanged in the revised *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*; American Psychiatric Association [APA], 2013). However, the Personality and PD workgroup proposed an alternative hybrid PD classification system that combines both dimensional and categorical elements, reflecting a compromise between those favoring a fully trait-based system (e.g., Clark, 2007; Widiger & Simonsen, 2005) and those favoring the polythetic categorical system embodied in the official nosology since 1980 (e.g., Gunderson, 2010; Zimmerman, 2012). To spur research into this alternative, *DSM-5* lists the hybrid approach in Section III, but relatively little is known about how Section III PDs compare to their traditional counterparts. Thus, our principal aim was to compare the trait-based elements of the alternative approach to the criterion-based elements of the traditional PD classification system in terms of diagnostic validity and diagnosis rates.

The Section III approach retains six of the ten traditional PDs—antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal PDs. PDs are conceptualized as significant impairments in personality functioning coupled with pathological personality traits that are assessed across seven diagnostic criteria (APA, 2013). Criterion A evaluates personality functioning, comprising self and interpersonal impairments unique to each PD. Criterion B includes 25 personality traits—nested within five broad domains (negative affect, detachment, antagonism, disinhibition, and psychoticism)—that can be present in pre-specified configurations associated with each retained PD or in idiosyncratic configurations (i.e., PD trait-specified [PD-TS]). For example, a diagnosis of borderline PD requires at least four of the seven specified traits—anxiousness, depressivity, emotional lability, hostility, impulsivity, risk taking, and separation insecurity—with either impulsivity, risk taking, or hostility required. Criteria C to G include inclusion and exclusion criteria similar to the official system.

Given the novelty of the Section III approach, relatively little has been published evaluating its utility and functioning vis-à-vis the official criterion-based model. However, two recent papers reported limited support for the particular trait-to-PD mappings suggested in Section III (Few et al, 2013; Hopwood et al. 2012). In both cases, although evidence showed that the Section III traits generally predicted official PD criterion counts, the specified trait-to-PD relations showed limited specificity, with (a) non-specified traits sometimes adding significantly to the prediction of certain PDs, and (b) specified traits often relating to multiple PDs. Although the non-specificity of traits is not surprising given the known patterns of comorbidity among the traditional PDs, these findings nonetheless raise important questions about the adequacy of the Section III trait configurations. Moreover, inconsistencies across the studies suggest that additional work is needed before strong conclusions are possible regarding how best to map PD traits onto traditional PDs.

A related question not adequately addressed in Section III is the clinical threshold required for traits, which has important diagnostic implications. Notably, no specific thresholds are provided in Section III, except that trait elevation could be assessed by comparison to “population norms and/or clinical judgment” (p. 774; APA, 2013); the use of normative samples also has been suggested previously as a means of interpreting trait scores via standardized T-scores (Miller, 2012). Samuel et al. (2013) recently studied the impact of the proposed clinical thresholds on PD diagnosis rates in a large sample of undergraduates. Using norms reported by Krueger et al. (2012), Samuel et al. reported markedly lower diagnosis rates for trait-based diagnoses relative to the traditional criterion-based diagnoses. Although provocative, Samuel et al.'s data were collected in undergraduates; extension to patient samples is needed to study the generalizability of their results to more ecologically valid samples.

Although the use of trait configurations as a dimensional bridge to the traditional criterion-based approach is not a new practice (e.g., Miller, 2012), an issue in need of further study is the extent of classification convergence across models. Morey and Skodol (2013) examined classification convergence through mental health clinicians who rated a prior patient using both the trait- and criterion-based models. Results showed general support for classification convergence, with correlations between *DSM-5* and *DSM-IV* criterion counts yielding a *Mdn*

correlation of .75. However, Morey and Skodol's approach was limited to clinician reports of patient symptomatology. A study reporting Section III diagnosis estimates and classification convergence from the patient perspective would meaningfully extend the literature.

In sum, more work is needed to improve our understanding of inter-model convergence and diagnosis rates across PD classification approaches, with the aim of informing future revisions to PD nosology. As such, the goals of the present study were to study (a) how strongly Section III PD traits predict traditional PD criterion counts, (b) whether any non-specified PD trait incrementally predict PD criterion counts, and (c) Section III diagnosis rates in a large psychiatric sample.

Method

Participants and Procedures

Participants—recruited by distributing flyers at mental health clinics across Western New York—were eligible to participate if they reported psychiatric treatment within the past two years. The final sample included 628 participants, 454 of whom completed the measures needed for this study— M age = 42.0 years ($SD=12.6$), 65% female, 68% Caucasian. This subsample differed from the full sample in terms of race, $\chi^2(4, N=624) = 28.75, p < .01$, and age, $t(626) = 3.68, p < .01$, but not sex, $\chi^2(1, N=627) = 1.56, p = .21$. Those excluded were more likely to be African American and older. Eligible participants attended a four-hour session and completed self-report measures using computers in privacy carrels. For the present study, we analyzed responses to the Personality Inventory for *DSM-5* (PID-5; Krueger et al., 2012) and Structured Clinical Interview for *DSM-IV* Axis II Disorders Personality Questionnaire (SCID-II-PQ; First et al., 1995). Participants were compensated \$50 plus transportation costs. Procedures were approved by the Social and Behavioral Sciences IRB at the University at Buffalo.

Measures

The PID-5 assesses the 25 maladaptive traits proposed in Section III. It includes 220 self-report items rated on a four-point scale ranging from 0 (*very false or often false*) to 3 (*very true or often true*). Higher scale scores are indicative of greater pathology. Internal consistencies in the current study averaged .87, range = .75 to .96, across traits. Recent studies have supported the construct validity of the PID-5 (Anderson et al., 2013; Hopwood et al., 2013; Wright & Simms, 2014).

The SCID-II-PQ is a self-report measure comprised of 121 items rated dichotomously, which typically is administered prior to the SCID-II interview to shorten the interview period, that map onto *DSM-IV* PD criteria. Internal consistencies in the current study averaged .69, range = .50 to .81, across PD criterion counts. Past work has supported the use of the SCID-II-PQ as a standalone measure of PD features (Ekselius et al., 1994; Jacobsberg et al., 1995; Piedmont et al., 2003).

Data Analyses

Analyses were restricted to the six retained Section III PDs. Analyses first were conducted to evaluate the extent to which Section III traits predicted PD criterion counts. SCID-II-PQ criterion counts were correlated with PID-5 traits, followed by multiple regressions with both hierarchical and stepwise components. SCID-II-PQ criterion counts were regressed on separate blocks of specified and non-specified traits. In the first block of each analysis, specified PID-5 traits were included as predictors of a single SCID-II-PQ criterion count. The second block—using a stepwise selection process where criteria for entry and retention in the regression model was set at $p < .01$ —included all remaining non-specified traits. These procedures permitted us to study the predictive power of PID-5 traits, both individually and in the context of other traits vis-à-vis SCID-II-PQ criterion counts. Given the large number of tests conducted, we adopted a moderately conservative significance threshold of $p < .01$ across all analyses.

Second, analyses were conducted to study how the Section III trait model impacts diagnostic rates relative to the official criterion-based model. Traditional criterion-based diagnostic rates were obtained from previously published psychiatric (Alnaes & Torgersen, 1988; Zimmerman et al., 2005) and epidemiological samples (Torgersen, 2005; Grant et al., 2003; Trull et al., 2010), whereas Section III PD diagnoses in our sample were scored using the specific *DSM-5* PD trait configurations. For the latter, T-scores (i.e., standardized scores where $M=50$ and $SD=10$) were computed using US representative norms presented by Krueger et al. (2012). Consistent with the general personality assessment literature, we considered T-score=65 to reflect clinical significance. Chi-square tests then were conducted to examine significant differences in diagnosis rates across studies.

Results

Convergence between Traits and PD Criterion Counts

Table 1 presents correlations between SCID-II-PQ criterion counts and PID-5 traits. Results revealed strong relations between PID-5 traits and SCID-II-PQ criterion counts. Across diagnoses, PD-specified traits generally correlated moderately to strongly with SCID-II-PQ criterion counts, $Mdn r = .43$, range = .13 to .66. Notably, however, 5 of 30 PD-specified traits showed relatively weak correlations with their respective SCID-II-PQ criterion counts, including intimacy avoidance for avoidant PD, risk taking for borderline PD, intimacy avoidance and restricted affectivity for obsessive-compulsive PD, and restricted affectivity for schizotypal PD. In addition, many non-specified traits correlated weakly to moderately with SCID-II-PQ criterion counts, $Mdn r = .26$, range = .01 to .57. Across PDs, 3, 11, 12, 15, 1, and 11 non-specified PID-5 traits correlated at least moderately with SCID-II-PQ criterion counts for antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal PDs, respectively. Thus, most PD-specified traits correlated as expected, but many additional traits also related significantly across PDs, suggesting that the *DSM-5* trait specifications may be incomplete in some cases.

Hierarchical regressions, in which corresponding SCID-II-PQ criterion counts were regressed on blocks of specified and non-specified traits, then were conducted to determine

the strongest trait predictors of each PD in the context of other traits. The average tolerance and variance inflation factors across the regressions were greater than .10 ($M=.55$, $SD=.14$) and lower than 10 ($M=1.97$, $SD=.59$), respectively, indicating that multicollinearity did not exert undue influence on parameter estimates. Regression results (see Table 2) indicated that all PD-specified trait blocks significantly predicted their corresponding SCID-II-PQ criterion counts, $Mdn R^2 = .33$, range = .21 (antisocial) to .54 (borderline). The stepwise addition of non-specified traits showed incremental prediction of all criterion counts except obsessive-compulsive PD, $Mdn R^2 = .03$, range = .00 (obsessive-compulsive) to .12 (narcissistic).

For Block 1, PD-specified traits varied in the extent to which they predicted their respective SCID-II-PQ criterion counts. Across PDs, 15 of the 30 predicted traits were significant predictors of their corresponding criterion counts. For antisocial PD, only callousness predicted the corresponding criterion count. Three of four specified traits for avoidant PD (anhedonia, anxiousness, and withdrawal) predicted the corresponding criterion count. For borderline PD, four of seven specified traits (depressivity, emotional lability, hostility, and impulsivity) predicted the matching criterion count. Both specified traits for narcissistic PD (attention seeking and grandiosity) predicted the corresponding criterion count. For obsessive-compulsive PD, only rigid perfectionism predicted the matching criterion count. Finally, four of six specified schizotypal PD traits (eccentricity, restricted affectivity, unusual beliefs and experiences, and withdrawal) predicted the corresponding criterion count, with restricted affectivity predicting negatively.

Block 2 stepwise selection procedures added non-specified traits to all but one model (obsessive-compulsive PD). Furthermore, the standardized parameter estimates indicated that specified traits for each PD still varied in how they predicted SCID-II-PQ criterion counts. Of the 15 significantly predicting specified traits in Block 1, 12 remained significant after accounting for additional non-specified traits. For antisocial PD, one specified trait (callousness) and three non-specified traits (grandiosity, submissiveness, and unusual beliefs/experiences) predicted the corresponding criterion count, with grandiosity and submissiveness predicting negatively. For avoidant PD, two specified traits (anxiousness and withdrawal) and three non-specified traits (grandiosity, manipulativeness, and separation insecurity) predicted the corresponding criterion count, with grandiosity and manipulativeness predicting negatively. For borderline PD, three specified traits (depressivity, emotional lability, and impulsivity) and two non-specified traits (submissiveness and suspiciousness) predicted the corresponding criterion count, with submissiveness predicting negatively. For narcissistic PD, both specified traits (attention seeking and grandiosity) and two non-specified traits (hostility and suspiciousness) predicted the corresponding criterion count. Finally, for schizotypal PD, three specified traits (eccentricity, unusual beliefs/experiences, and withdrawal) and one non-specified trait (emotional lability) predicted the corresponding criterion count.

Diagnosis Rates

Table 3 presents diagnosis rates for both the Section III trait approach in our patient sample and traditional PDs in published outpatient and epidemiological samples. Results showed a

mixed picture. Compared to the outpatient samples, our trait-based diagnosis rates for avoidant and obsessive-compulsive PDs were lower, diagnosis rates for borderline and narcissistic PDs were comparable, and antisocial and schizotypal PDs yielded mixed results, with trait-based diagnosis rates either higher or comparable to their traditional counterparts. Compared to the epidemiological samples, trait-based diagnosis rates were higher than their traditional counterparts in all cases except antisocial and obsessive-compulsive PDs.

Discussion

We compared the trait- and criterion-based approaches to PD classification in *DSM-5* to study (a) the performance of the PD-specified traits in predicting official criteria, (b) whether additional non-specified traits predicted official criteria, and (c) diagnosis rates of the proposed trait configurations relative to other published outpatient and epidemiological samples. We showed that traits, both PD-specified and non-specified, generally predicted traditional PD criteria. However, the results also revealed problems with specificity, with some PD-specified traits predicting multiple traditional PDs and some non-specified traits incrementally predicting traditional PDs, even after accounting for PD-specified traits. The findings also demonstrated discrepancies across models in diagnosis rates. Taken together, the results suggest that the Section III trait model will require further study and, perhaps, modifications before the Section III system can be considered a parallel replacement for the current PD nosology.

Associations between Traits and Types

Consistent with recent literature (Few et al., 2013; Hopwood et al., 2012; Morey & Skodol, 2013; Samuel et al., 2013), our results suggest that traits relate broadly to official criterion counts. However, PD-specific trait findings were more mixed. Although all PDs were predicted by one or more traits, some PD-specified traits did not behave as expected. In particular, the regressions revealed some results that either (a) failed to conform to the predictions of Section III trait specifications, or (b) did not appear particularly meaningful. In some cases, non-specified traits incrementally predicted a given PD in conceptually meaningful ways. For example, hostility incrementally predicted narcissistic PD after accounting for grandiosity and attention seeking, a finding that is consistent with models of pathological narcissism (e.g., Pincus et al., 2009). In other cases, non-specified traits showed evidence of incremental prediction for less clear reasons. For example, submissiveness correlated positively with borderline PD but showed an opposite pattern in the regression results, a finding that suggests that suppression could be causing some spurious effects (e.g., see Beckstead, 2012). Finally, likely due to overlapping variance across traits, some PD-specified traits that correlated significantly with their corresponding PD failed to show the same pattern in the regressions. For example, all seven PD-specified traits for borderline PD were significant in the correlation analyses, but only four of seven (depressivity, emotional lability, hostility, and impulsivity) were significant predictors in the regressions. Results such as these suggest that more parsimonious subsets of traits may more efficiently represent some PDs.

Nonetheless, these results provide an empirical basis for considering possible revisions to the Section III trait specifications. Of course, replication is needed, especially for results that lack a clear conceptual basis. Furthermore, as the PID-5 represents only one instantiation of Section III traits, other assessment tools (e.g., the Computerized Adaptive Test of Personality Disorder; see Simms et al., 2011), could be used to determine whether the observed effects generalize beyond the PID-5. Taken together, these findings echo the critique that empirically supported conceptualizations of traits that personify PD in Section III are lacking (Zimmerman, 2012). In guiding future work, one suggested data-driven approach to identifying traits for a given PD would involve selecting traits that are above a minimum convergent correlation but that also exhibit discriminant validity relative to other PDs (Hopwood et al., 2012). Such an approach would identify an empirical set of traits to define each PD while also addressing the problem of diagnostic overlap that has plagued the traditional criterion-based approach (e.g., Clark, 2007; Westen & Shedler, 1999).

Diagnosis Rates across Approaches

Our results revealed notable diagnosis rate differences across approaches. Relative to traditional diagnosis rates in published outpatient samples, the trait-based elements of Section III resulted in a mixed picture, with some trait-based diagnoses being more, less, or equivalently diagnosed. Notably, similar to Samuel et al. (2013), our trait-based diagnosis rates likely represent over-estimates to the extent that other inclusion and exclusion criteria were not considered (e.g., evidence of impairment, exclusions due to substance abuse or general medical conditions, etc.). As such, although further study is needed to examine this point, it is quite likely that the Section III diagnoses that account for all impairment, inclusion, and exclusion criteria will be more conservative than comparable traditional PD diagnoses. Such shifts in prevalence rates may have a large impact on the broader mental healthcare system. The relative diagnostic conservatism of the Section III trait-based approach likely will lead to a surge in sub-threshold diagnoses and, consequently, an increase in PD-TS diagnoses.

Of course, the traditional approach is not without a similar dynamic. Coverage inadequacies are a weakness of the official PD nosology (Widiger & Trull, 2007), likely resulting in the excessive PD Not Otherwise Specified (NOS) diagnoses reported to be among the most prevalent in psychiatric samples (e.g., Zimmerman et al., 2005). Both approaches therefore come with a generic, non-specific option for diagnosing PD. However, the PD-TS diagnosis has the advantage of specifying in a standardized way the exact traits that are impairing to a given patient, which could lead to the development of trait-based treatment approaches.

Limitations and Conclusion

This work extends the PD literature in important ways but is not without limitations. First, although we studied a large sample of current or recent psychiatric patients, which is an important extension of previous work in this area, all participants were limited geographically and mainly were Caucasian and African American, which may limit the generalizability of our findings. Second, as noted above, our diagnosis rates are limited to the extent that they considered only the trait-based elements of the Section III approach (i.e., personality functioning [Criterion A] was not considered). As such, similar to Samuel et al.

(2013), our reported PD diagnosis rates should not be considered definitive population base rates. Additional work is needed to fully understand how these competing approaches compare when all features and impairment consequences of the Section III approach are considered. Third, although multiple analytical approaches were used, our data were limited self-report responses. Future studies will benefit from considering other assessment methods (e.g., clinical interviews).

In summary, we extended the relatively new literature on the alternative *DSM-5* Section III PD classification approach by comparing the Section III trait approach to the traditional criterion-based approach in a psychiatric sample. Although we found general support for traits in predicting traditional PD criteria, problems with trait specificity and overlap emerged at the level of individual PDs. We also found differences in diagnosis rates across systems, which carry implications for the broader mental health field. To that end, more research is needed to improve the validity of the Section III trait model, with the end goal of a PD diagnostic system that is empirically supported and compelling to both researchers and clinicians.

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Table 1
Zero-order correlations between SCID-II-PQ Criterion counts and PID-5 traits

	Antisocial	Avoidant	Borderline	Narcissistic	Obsessive-Compulsive	Schizotypal
Anhedonia	.11	.50*	.50	.25	.24	.30
Anxiousness	.16	.49*	.58*	.33	.30	.42
Attention Seeking	.13	-.09	.25	.45*	.13	.19
Callousness	.39*	.19	.37	.41	.15	.27
Deceitfulness	.32*	.10	.33	.40	.11	.21
Depressivity	.14	.50	.57*	.24	.20	.34
Distractibility	.12	.44	.52	.28	.27	.38
Eccentricity	.25	.34	.53	.39	.29	.48*
Emotional Lability	.20	.40	.66*	.35	.25	.45
Grandiosity	.19	.01	.23	.49*	.19	.25
Hostility	.33*	.33	.59*	.52	.26	.38
Impulsivity	.33*	.20	.55*	.41	.17	.36
Intimacy Avoidance	.14	.20*	.20	.12	.14*	.12
Irresponsibility	.30*	.30	.50	.38	.12	.33
Manipulativeness	.31*	-.04	.24	.38	.12	.15
Perceptual Dysregulation	.36	.31	.57	.41	.26	.46*
Perseveration	.18	.42	.51	.35	.35*	.43
Restricted Affectivity	.19	.22	.18	.21	.13*	.18*
Rigid Perfectionism	.20	.30	.35	.34	.50*	.32
Risk Taking	.30*	-.11	.18*	.25	-.03	.08
Separation insecurity	.12	.37	.51*	.38	.23	.36
Submissiveness	-.09	.24	.17	.04	.07	.20
Suspiciousness	.30	.34	.55	.48	.22	.41*
Unusual Beliefs and Experiences	.34	.16	.39	.37	.20	.49*
Withdrawal	.21	.59*	.42	.28	.25	.40*

Note. $N = 454$. All r s above .12 are significant, $ps < .01$. **Boldface** type denotes r s that are .30 or greater.

* denotes the PD-specified traits within each column.

Table 2
SCID-II-PQ Criterion counts regressed on PID-5 specified and non-specified traits

	Antisocial		Avoidant		Borderline		Narcissistic		Obsessive-Compulsive		Schizotypal	
	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2
Total R^2	.21*	.25*	.42*	.46*	.54*	.56*	.30*	.42*	.26*	.26*	.36*	.37*
R^2		.04*		.04*		.02*		.12*		.00		.01*
Standardized Parameter Estimates												
Anhedonia			.16*	.08								
Anxiousness			.20*	.16*	.03	.01						
Attention Seeking							.27*	.24*				
Callousness	.22*	.18*										
Deceitfulness	-.04	.01										
Depressivity					.16*	.18*						
Distractibility												
Eccentricity											.20*	.15*
Emotional Lability					.28*	.30*						.19*
Grandiosity		-.15*		-.11*			.35*	.20*				
Hostility	.06	.06			.19*	.10		.21*				
Impulsivity	.10	.10			.17*	.18*						
Intimacy Avoidance			-.10	-.04					.03	.03		
Irresponsibility	.05	.06										
Manipulativeness	.11	.11		-.11*								
Perceptual Dysregulation											-.03	-.11
Perseveration									.10	.10		
Restricted Affectivity									-.01	-.01	-.14*	-.08
Rigid Perfectionism									.44*	.44*		
Risk Taking	.11	.08			.00	-.01						
Separation insecurity				.17*	.08	.09						
Submissiveness		-.14*				-.11*						
Suspiciousness						.13*		.22*			.10	.06
Unusual Beliefs and Experiences		.17*									.33*	.35*
Withdrawal			.45*	.49*							.25*	.21*

Note. $N = 454$. B1 = Block 1 (specified traits only); B2 = Block 2 (specified traits with added non-specified traits using the stepwise selection process).

* significant at $p < .01$.

Table 3
PD diagnosis rates (%) in the current study and published samples

	Antisocial	Avoidant	Borderline	Narcissistic	Obsessive-Compulsive	Schizotypal
Proposed Trait Configurations	2.20	6.39	13.22	3.08	2.64	5.51
Published Outpatient Samples						
Alnaes & Torgersen, 1988 (N=298)	0.00*	55.40*	14.80	4.70	19.80*	6.40
Zimmerman et al., 2005 (N=859)	3.60	14.70*	9.30	2.30	8.70*	0.60*
Published Epidemiological Samples						
Torgersen [†] , 2005 (N=5081)	1.70	1.35*	1.45*	0.05*	1.95	0.70*
NESARC-Revised ^{††} (N=34653-43093)	3.80	1.20*	2.70*	1.00*	1.90	0.60*

Note. N = 454. NESARC = National Epidemiological Survey on Alcohol and Related Conditions (Grant et al., 2003).

* significantly different from the proposed trait thresholds, $p < .01$.

[†] Diagnosis rates represent median values from eight epidemiological studies.

^{††} Diagnosis rates were based on revised scoring rules, with significant distress or impairment being mandatory (Trull et al., 2010).