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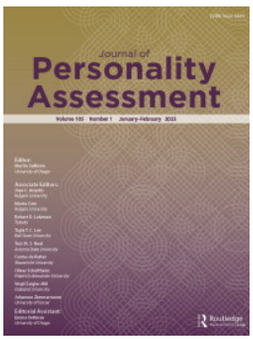

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The Incremental Utility of Criteria A and B of the DSM-5 Alternative Model for Personality Disorders for Predicting DSM-IV/DSM-5 Section II Personality Disorders

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ABSTRACT

The DSM-5 Alternative Model for Personality Disorders (AMPD) includes two main criteria: moderate or greater impairment in personality functioning (Criterion A) and the presence of one or more pathological personality traits (Criterion B). The aim of the study was to investigate the incremental utility of Criteria A and B for predicting DSM-5 Section II personality disorders (PD). The sample (N = 317) consisted of three well-defined groups: non-clinical participants (n = 35), psychiatric patients with PD (n = 193), and without PD (n = 83). All were assessed using the Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders Module I (SCID-5-AMPD-I): Level of Personality Functioning Scale (LPFS), and the Personality Inventory for DSM-5 (PID-5). Logistic regression analyses showed that the SCID-5-AMPD-I could predict the presence of PDs in general, and the three specific PDs that were investigated (i.e., Antisocial, Borderline, and Avoidant PDs). The PID-5 domains enhanced prediction of the specific PDs, but not the presence of PDs in general, when entered in the second step. Our results support the AMPD model: Criterion A predicted the presence of DSM-5 Section II PDs in general, whereas measures of Criterion B incremented prediction of Antisocial, Borderline, and Avoidant PDs.

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Introduction

The DSM-IV categorical system for diagnosing personality disorders (PDs) was adopted unchanged in Section II of the DSM-5 (APA, 2013), despite substantial criticism of its continued use. The hybrid dimensional-categorical model proposed by the DSM-5 Personality and Personality Disorders (P & PD) Work Group, while designed to address the shortcomings of the categorical approach, was deemed too radical by the American Psychiatric Association (APA) to be endorsed as the official model (Waugh et al., 2017). This model was thereafter referred to as the DSM-5 Alternative Model for Personality Disorders (AMPD), and was included in Section III of the DSM-5 (APA, 2013) as an official, alternative, pan-theoretical model for the diagnosis of personality pathology (Waugh et al., 2017; Zachar et al., 2016). In contrast to the DSM-5, the 11th version of the International Classification of Diseases (ICD-11; World Health Organization, 2018) makes a major shift toward a dimensional model for conceptualization of personality pathology in response to the deficits inherent to the categorical system for PDs. As the proposed model for ICD-11 aligns in some respects with the AMPD, studies on the psychometric properties of the AMPD are also of interest for the ICD-11. However, a major difference between the ICD-11 and the AMPD is that ICD-11 does not require the presence of pathological personality traits for a PD diagnosis. The trait domains are solely used to "add detail to the severity of PD" (World Health Organization, 2018).

The first innovation provided by the AMPD is its dimensional foundation, which was considered as the future of the field at the outset of the DSM-5 process. Secondly, combining the dimensional assessment of both personality functioning (Criterion A) and pathological personality traits (Criterion B) was intended to provide a more comprehensive, flexible, and clinically meaningful approach to representing personality psychopathology. Criterion A, or Level

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of Personality Functioning Scale (LPFS; Bender et al., 2011), filled a prior deficit in the DSM-IV PD approach by addressing variations in impairment severity. The LPFS aims at capturing the core elements of personality pathology, i.e., impairment of self- and interpersonal functioning, and is scored on a continuum ranging from no impairment to extreme impairment (APA, 2013). Criterion B consists of 25 pathological personality traits organized within five broader domains, i.e., Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism (APA, 2013). A commonly used self-report inventory for the measurement of Criterion B is the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012), a 220-item self-report instrument that has been examined by a large number of psychometric studies, supporting the hierarchical factor structure of the trait model (for an overview see Al-Dajani et al., 2016; Watters & Bagby, 2018). The ICD-11 Working Group for the Revision of Personality Disorders presented a model that was very similar to the AMPD, also discerning between personality functioning (severity) and personality traits (style). It has been suggested that ICD-11 PDs can be assessed using instruments developed for the AMPD (Bach & First, 2018), but this contention requires empirical support.

Importantly, the AMPD does not regard the LPFS and the trait model as equally important in establishing a PD diagnosis, since the diagnostic threshold for a PD diagnosis is determined by the LPFS and not by the pathological trait model. Hence, the step-wise assessment procedure implies that if a patient does not meet the criterion of moderate or greater impairment on the LPFS (i.e., Level 2, the diagnostic threshold for a PD diagnosis), no further steps are needed. Thus, the LPFS and pathological traits are not equivalent or interchangeable criteria for defining PDs in the AMPD. To our knowledge, no interview-based studies have been used to test the assumption that underlies the AMPD, namely, that the LPFS represents the core features of personality pathology, whereas the trait model describes how different PDs are expressed, i.e., differ from each other (e.g., APA, 2013; Meehan et al., 2019). It is therefore of interest to investigate whether the following assumption underlying the theoretical model is valid, namely that the LPFS can predict PD pathology in general and that pathological traits can be used to differentiate between specific PDs.

In formulating the AMPD, the P & PD Work Group aimed to maintain continuity with existing practice and correspondence with the traditional categorical model for PDs to the extent possible, given the dimensional and conceptual innovations of the new model to address the deficiencies of the earlier approach (Skodol, 2014). In the current study, we intend to achieve a better understanding of the continuity between section II and section III of the DSM-5; i.e., the traditional categorical model for PDs and the AMPD. More specifically, the aim of this study is to investigate the incremental validity of the LPFS and five AMPD pathological trait domains in the prediction of DSM-IV/DSM-5 Section II PDs, when the LPFS is assessed using the SCID-5-AMPD-I (Bender et al., 2018), and the trait model using the PID-5. Our hypothesis is that the SCID-5-AMPD-I LPFS should outperform PID-5 domains, when predicting the presence or absence of a DSM-IV/DSM-5 PD. However, in predicting specific DSM-IV/DSM-5 diagnoses, we expect that the PID-5 domains will have clear incremental value over and above the SCID-5-AMPD-I ratings by predicting the presence of the three most common specific PD diagnoses in our sample that are also specific PDs in the AMPD; i.e., Antisocial, Borderline, and Avoidant PD. We will also investigate if the SCID-5-AMPD-I can predict clinical status (i.e., non-clinical participants, patients without PD, and patients with PD), or whether it is necessary to include the PID-5 to discern among these three groups.

Method

Study design and procedure

The current study is part of the Norwegian Study of the AMPD (NorAMP) which aims to investigate the reliability, validity and clinical utility of the AMPD. The NorAMP is a large cross-sectional multi-site study, for which patients were recruited from six hospitals in Norway between March 2015 and March 2017. In order to cover the whole spectrum of personality pathology, our study included patients who were receiving different types and levels of psychiatric care; i.e., inpatient, day and group treatment clinics, prison, and outpatient clinics. Exclusion criteria were schizophrenia spectrum disorder (except schizotypal PD), sequelae after brain injury, pervasive developmental disorders (i.e., autism spectrum disorders), mental retardation, severe ongoing substance abuse, and lack of understanding of the Norwegian language. An information poster was used to recruit students and employees at the Sorlandet Hospital, and the Universities of Agder and Oslo, forming a non-clinical sample of participants who had not undergone any previous psychiatric treatment. The non-clinical sample was screened prior to inclusion by means of a structured telephone interview to exclude people who were currently experiencing psychiatric symptoms, or who had previously received mental health treatment. The screening tools included the Iowa Personality Disorder Screen (IPDS; Langbehn et al., 1999) and an assessment using the DSM-IV Global Assessment of Functioning Scale (GAF: Axis V). The exclusion criterion for the IPDS was any item met, and for the GAF, a score < 70.

Diagnostic assessment was made by the referring therapist utilizing the fifth edition of the MINI International Neuropsychiatric Interview (MINI; Sheehan et al., 1998); the Structured Interview for DSM-IV Axis II Personality Disorders (SCID-II; First et al., 1997); and the DSM-IV Global Assessment of Functioning Scale (GAF: Axis V). Referring clinicians conducted the SCID-II interview on indication; i.e., only if personality pathology was suspected, which implies that some patients had missing SCID-IIs at the time of referral. In these cases, the first or second author administered the SCID-II; and an independent clinician administered the SCID-5-AMPD-I, in order to provide a blinded evaluation of the AMPD. Although most referring clinicians were experienced, all participated in a training

course on the administration of the SCID-II, and in further consensus training using video-recorded interviews. No additional inter-rater analyses were performed. Research based on similar procedures, which were also implemented by clinical sites that contributed 45% of our patients, reported acceptable diagnostic agreement (Arnevik et al., 2009). All participants in our study were assessed using the SCID-5-AMPD-I (Bender et al., 2018), within a maximum period of five weeks from the moment of their inclusion in the research. Independent raters, who were blind to the results of the diagnostic evaluation, assessed the patients using the SCID-5-AMPD-I. The study design, recruitment procedure, and patient samples are described in more detail elsewhere (Buer Christensen et al., 2018, 2019, 2020).

Ethics

All participants provided signed informed consent after receiving a complete description of the study. The Regional Committee for Medical and Health Research Ethics has approved the project.

Sample

The total sample (N = 317) consisted of 282 participants who underwent psychiatric diagnostic evaluation or treatment at the time of inclusion (i.e., the clinical sample), and a non-clinical sample of 35 participants. The group of non-clinical participants (n = 35) consisted of 25 females (71%) and 10 males, whose ages ranged from 19 to 58 (M = 30; SD = 12). Almost half (46%) of the non-clinical participants were living with a spouse or partner. All non-clinical participants worked or were students more than 50% of full-time hours, with a mean of 10.3 (SD = 3.8) months spent engaged in work or studies during the past year.

The mean age of the patients in the clinical sample (n = 282) was 32.5 (SD = 10.1: range 16-72 years), and comprised 182 females (64.5%). The non-PD group (n = 83), consisting of patients without personality disorders, comprised 44 females (53%); while the PD-group (n = 192), consisting of patients with personality disorders, comprised 133 females (69%). The mean age of the patients in the two samples was 34.2 years for the non-PD group (SD 10.3; range 19-63), and 31.6 years for the PD group (SD 10.0; range 16-72). Nearly half of the patients in the non-PD group were living with a spouse or partner (44.6%), and more than half were working or students (56%). In the PD group, fewer were living with a spouse or partner (41.5%), and only a third were employed or students (34.5%).

The mean number of symptom disorders in the non-PD group was 1.3 (SD 0.77: range 0-4). Most common were major depression (28.9%), PTSD (15.7%), GAD (9.6%), bipolar type I (8.4%), dysthymia (7.2%), panic disorder with agoraphobia (4.8%), and substance use disorder (4.8%). The mean number of symptom disorders in the PD group was 1.9 (SD 1.48: range 0-8), among whom most common were major depression (28.5%), social phobia (26.9%), substance abuse (21.3%), panic disorder with agoraphobia (15%), GAD and PTSD (both 11.9%), and dysthymia (11.4%).

The mean number of DSM-IV SCID-II criteria met was 4.3 (SD 3.6) for the non-PD group, and 14.1 (SD 7.8) for the PD group. For the PD group, the mean number of DSM-IV/DSM-5 PD diagnoses was 1.5 (SD 1.0). The frequency of PD diagnoses in the latter group was Avoidant (AVPD) 42% (n = 81); BPD 36% (n = 70); PD-NOS 23% (n = 45); Antisocial (ASPD) and Paranoid (PPD) (16%, both n = 30); Obsessive–Compulsive PD (11%, n = 21); and Dependent PD (7%, n = 14). Less than 2% had a diagnosis of Schizotypal, Schizoid, Histrionic, or Narcissistic PD. The cumulative percent was larger than 100% due to comorbidity (Buer Christensen et al., 2020). If patients only fulfilled the diagnostic criteria for one PD, the most common were AVPD (n = 47), BPD (n = 32), and ASPD (n = 13). The mean SCID-5-AMPD-I ratings for the three most common PDs were 2.67 for BPD, 2.29 for AVPD, and 2.27 for ASPD (Buer Christensen et al., 2019).

Measures

The SCID-5-AMPD-I is a semi-structured interview covering all 12 subdomains of the LPFS (Bender et al., 2018). The interview uses a combination of general questions at the start of the interview about how one views oneself and others, and screening questions for each subdomain, in order to determine the level of personality functioning at which to start the assessment. The rater then explores increasing levels of impairment in order to establish which level best describes the patient's personality functioning. Since the LPFS was introduced as a unidimensional construct in DSM-5 (Bender et al., 2011), which was supported by a psychometric study of the SCID-5-AMPD-I (Hummelen et al., 2021), we computed a mean SCID-5-AMPD-I score for the statistical analyses, calculated as the mean of all 12 subdomain ratings (0 = little or no impairment; 1 = some impairment; 2 = moderate impairment; 3 = severe impairment; and 4 = extreme impairment). Members of the Department of Personality Psychiatry at Oslo University Hospital translated the SCID-5-AMPD Module into Norwegian. A post-hoc back-translation was performed by a professional translator, and showed excellent correspondence with the original English version (Buer Christensen et al., 2019). The training of the independent assessors in using the SCID-5-AMPD-I included a two-day workshop by Dr. Donna Bender or the second author (BH), using a combination of video interview, written clinical vignettes, and role-play. The training included scoring of global LPFS based on written vignettes and video-recordings of SCID-5-AMPD-I interviews, as well as domains and subdomains, and was repeated until consensus was achieved. Most interviews (95%) were administered by experienced clinicians (four psychiatrists and three clinical psychologists), trained by Dr. Bender. The interrater reliability (IRR) was good for test-retest procedure and excellent for video-based assessment (Buer Christensen et al., 2018). For more in-depth description of referral and assessment procedures, as

Table 1. Means, standard deviations, and mean differences for the mean SCID-5-AMPD-I ratings and the PID-5 trait domain score for the non-clinical participants, patients without PD, and patients with PD.

		NCP (N = 35) Mean (SD)	Non-PD (N = 83) Mean (SD)	PD (N = 193) Mean (SD)	Mean difference[a]
SCID-5-AMPD-I	Mean	.13 (.14)	1.13 (.81)	2.20 (.74)	A < B < C, p< .001
PID-5	Negative-Affectivity	.59 (.37)	1.04 (.45)	1.46 (.43)	A < B < C, p< .001
	Detachment	.30 (.24)	.90 (.53)	1.40 (.53)	A < B < C, p< .001
	Disinhibition	.51 (.23)	.86 (.43)	1.20 (.49)	A < B < C, p< .001
	Antagonism	.40 (.25)	.52 (.41)	.62 (.46)	A = B, B = C, A < C, p<.05
	Psychoticism	.15 (.18)	.50 (.42)	.84 (.57)	A < B < C, p< .001
GAF		88.2 (4.98)	58.3 (9.69)	52.6 (7.73)	A > B > C, p< .001

Note. Abbreviations: NCP = Non-clinical Participants (A); Non-PD = Patients without PD (B); PD = Patients with PD (C).
[a]Significant mean difference: One-Way ANOVA, Bonferroni post-hoc test.

well as therapist training, and the psychometric properties of the SCID-5-AMPD-I, see Buer Christensen et al. (2020; 2018) and Hummelen et al. (2021).

The Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012) is a 220-item self-report questionnaire developed to assess five maladaptive personality domains, and 25 subordinate trait facets. The domains consist of three (Psychoticism) to seven (Negative Affectivity) facets each. The PID-5 has been examined by a large number of psychometric studies supporting the hierarchical factor structure of the trait model (see Al-Dajani et al., 2016; Watters & Bagby, 2018). Items were rated on a four-point Likert scale ranging from 0 (very false) to 3 (very true); mean scores of the domains were reported. Reliability estimates were obtained by calculating Omega, where reliability estimates of 0.8 and higher were considered sufficient (e.g., Lance et al., 2006). The reliability levels for the domains were all adequate except for Disinhibition: 0.772 (95% C.I.: 0.737-0.808). The other were sufficient, ranging from 0.807 for Negative Affectivity (95% C.I.: 0.778-0.836); 0.833 for Antagonism (95% C.I.: 0.806-0.860); 0.834 for Detachment (95% C.I.: 0.807-0.860); and 0.840 for Psychoticism (95% C.I.: 0.811-0.868). The hierarchal five-factor structure of the Norwegian translation of the PID-5 using a non-clinical sample has been reported to be congruent with previous international studies, and comparable to the original US-version (Thimm et al., 2017). We used the 25-facet scoring algorithm by Krueger et al. (2012).

Statistical analysis

One-Way ANOVAs with Bonferroni post-hoc tests were used to investigate if the three sample groups differed in scores on the SCID-5-AMPD-I and the five PID-5 domains. Pearson's correlation coefficients were calculated in order to investigate the discriminant validity of the SCID-5-AMPD-I mean score and the five PID-5 domain scores. It has been suggested that values exceeding .85 or .90 can be considered as lack of evidence in support of discriminant validity (see Henseler et al., 2015). Four binomial logistic hierarchical regression models were estimated using SCID-5-AMPD-I ratings and PID-5 scores as predictors, and one of the following four variables as an outcome, respectively: Any PD, Avoidant PD, Antisocial PD, and Borderline PD. In addition, a set of multinomial regression analyses were estimated, using three categorical outcome variables: non-clinical participants, patients without PD, and patients with PD. The regression models were built using a stepwise procedure, which was executed twice: first, the SCID-5-AMPD-I mean score was entered in the first step, and the PID-5 in the second step; followed by a model in which the PID-5 scores were entered in the first step, and the SCID-5-AMPD-I mean score in the second step. The outcomes of these two analyses were compared to ensure that the order in which the SCID-5-AMPD-I ratings and PID-5 scores were added to the model did not have an impact on the results. Thus, in total ten models were estimated. Odds ratio (OR) and confidence intervals for the OR were calculated for the full models. Change in explained variance was calculated as a difference in pseudo R-square from step 1 to step 2 (i.e., ΔCox & Snell, and ΔNagelkerke). Assumptions for the models were checked; tolerance and VIF estimates indicated no multicollinearity. For all analyses, a significance level of .05 was used. All analyses were run in SPSS version 25.0 (IBM Corp., 2017).

Results

Descriptive statistics

Mean scores on the AMPD measures were higher (i.e., indicated more impairment) for the non-PD group as compared to the non-clinical participants, and for the PD group compared to the non-PD group (see Table 1). For all PID-5 domains, except Antagonism, these differences were significant. Here, the mean scores for the patients with PD differed from those for the non-clinical participants, whereas the mean scores for the patients without PD did not differ from those for the non-clinical participants or the PD group. The mean ratings as measured with the SCID-5-AMPD-I only exceeded the threshold required for a PD (i.e., level 2) in the PD group. In this group, the PID-5 domains Negative Affectivity and Detachment showed the highest (i.e., most descriptive) mean scores. The mean GAF ratings was highest for the non-clinical participants indicating healthier functioning; followed by the non-PD group, and finally the PD group (these differences were significant). Although correlations among the mean SCID-5-AMPD-I ratings and the PID-5 domains scores were medium to large, none of them exceeded .85 (see Table 2).

Predicting the presence of PD

First, the results for the analyses where the mean SCID-5-AMPD-I rating was added in the first step will be described

Table 2. Pearson's correlations between mean SCID-5-AMPD-I ratings, the five trait domain scores, and PD diagnoses based on the SCID-5-AMPD-I, PID-5, and SCID-II respectively.

		SCID-5-AMPD-I	Negative-Affectivity	Detachment	Disinhibition	Antagonism	Psychoticism
PID-5	Negative-Affectivity	.71					
	Detachment	.75	.80				
	Disinhibition	.64	.70	.62			
	Antagonism	.31	.36	.20	.54		
	Psychoticism	.62	.67	.65	.74	.47	
DSM-5	Any PD	.44	.33	.31	.08	.25	.23
	Avoidant PD	.23	.14	.28	-.13	.00	.05
	Antisocial PD	.12	-.03	-.03	.22	.26	.15
	Borderline PD	.42	.34	.23	.21	.31	.28

(see Table 3 for details). The regression coefficients for the mean SCID-5-AMPD-I rating were significant in all four estimated models, and this did not change when the PID-5 scales were added to the models. The associated odds ratio (OR) varied from 2.03 (Avoidant PD as outcome variable) to 7.04 (Any PD as the outcome). Notably, the accompanying CIs differed substantially in range. The range of the interval was largest (and quite substantial) when Any PD was used as an outcome variable, followed by Borderline PD, Antisocial PD and finally Avoidant PD. This indicates that the accuracy with which the OR was estimated differed across the models.

Adding the PID-5 domains had little impact on the pseudo R-square values for the model with Any PD as the outcome (see Table 3). The same held true for the model with Borderline PD as the outcome; but here the Negative Affectivity domain was in fact significant, and associated with a substantial odds ratio (3.98). The accompanying CI was quite large, however, indicating that this effect could in fact either be small or quite substantial. For the models with either Avoidant PD or Antisocial PD as the outcome, the increase in the pseudo R-square value was substantially larger when the PID-5 domains were added (an increase of .11 and .17 in Cox & Snell Pseudo-R^2, and an increase of .18 and .36 in Nagelkerke Pseudo-R^2, respectively). Interestingly, in the Avoidant PD model, this was mainly due to the large effect found for the Detachment subscale. In the Antisocial PD model, two PID-5 domains showed large effects: Negative Affectivity (negative effect) and Disinhibition (positive effect); notably, the latter effect was associated with a very wide CI.

Adding the PID-5 score in the first step and the mean SCID-5-AMPD-I ratings in the second step had no notable impact on the magnitude of the regression coefficients (see Table 4). For the first model ("any PD" as predictor), the odds ratios hardly changed, and the smallest p-value of the five domains was still larger than .09 (for Antagonism). Change of model fit from the first step to the second step was .11 for Cox & Snell Pseudo-R^2 and .15 for Nagelkerke Pseudo-R^2. Thus, by including the mean SCID-5-AMPD-I ratings after having entered the five trait domains, an additional 11% of the variance was explained in predicting any PD.

For the other three models, the odds ratios and p-values did not change notably either. However, for the outcome variables AVPD and ASPD, change of model fit was minimal when entering the mean SCID-5-AMPD-I ratings into the model. For AVPD, Cox & Snell Pseudo-R^2 increased from .22 to .24 (i.e., explained variance increased by 2%), and Nagelkerke Pseudo-R^2 increased from .32 to .35 (3% increase of explained variance). For ASPD, Cox & Snell Pseudo-R^2 increased from .18 to .20 (2% increase of explained variance), and Nagelkerke Pseudo-R^2 from .38 to .42 (4% increase). For BPD, incrementation by the SCID-5-AMPD-I was larger: Cox & Snell Pseudo-R^2 increased from .24 to .31 (7%), and Nagelkerke Pseudo-R2 increased from .37 to .48 (i.e., an increase of 11% of explained variance). In sum, by including the SCID-5-AMPD-I in the model, explained variance increased by 2-4% for predicting AVPD and ASPD, and 7-11% for predicting BPD.

Predicting clinical status

The results of the multinomial logistic regression analyses, i.e., the analyses including three categorical outcome variables (non-clinical participants, patients without PD, and patients with PD), showed that the SCID-5-AMPD-I mean rating was a strong, significant predictor for non-clinical participants vs. patients without PD: ($B = -6.15$, Wald (1) $= 15.44$, $p < 0.01$; OR $= 0.01$ [95% C.I.: .0001-.05]). The mean SCID-5-AMPD-I rating was also a strong predictor of a patient's clinical status: ($B = 1.72$, Wald (1) $= 29.66$, $p < 0.01$; OR $= 5.59$ [95% C.I.: 3.01-10.39]). None of the trait domains was a significant predictor in this model. Changing the order of entry in the regression model, i.e., entering the mean SCID-5-AMPD-I after the five domains, did not change the results; none of the trait domains became significant predictors. When the PID-5 domains were analyzed while the mean SCID-5-AMPD-I rating was omitted from the model, Detachment ($B = -2.1$, Wald (1) $= 6.49$, $p < 0.01$; OR $= 0.21$ [95% C.I.: .02-.61]) predicted the clinical status of non-clinical participants vs. non-PD patients; whereas Negative-Affectivity ($B = 0.63$, Wald (1) $= 6.03$, $p < 0.05$; OR $= 1.94$ [95% C.I.: 1.14-3.29]) and Detachment ($B = 0.71$, Wald (1) $= 5.13$, $p < 0.05$; OR $= 2.03$ [95% C.I.: $1.10 - 3.73$]) predicted the clinical status of non-PD vs. PD patients. The effects associated with the PID-5 domains disappeared, when the SCID-5-AMPD-I mean rating was added to the analyses; i.e., only the SCID-5-AMPD-I LPFS predicted clinical status.

Discussion

Our results support the incremental validity of the LPFS (Criterion A) and the five trait domains (Criterion B) for

Table 3. Binominal logistic regression analyses (N = 294) with the presence or absence of DSM-IV/DSM-5 personality disorder in general, or three specific PDs as the dependent variable, and the mean SCID-5-AMPD-I ratings and five PID-5 trait domain scores as predictors.

								Pseudo-R^2	
Dependent	Predictors		B	Wald (df)	p-value	OR	95% C.I. OR	Cox & Snell	Nagelkerke
Any PD	1) SCID-5-AMPD-I	Mean	1.95	39.38 (1)	<.001	7.04	3.83-12.94	.41	.56
	2) PID-5	Negative-Affectivity	.48	.65 (1)	.421	1.61	.50-5.16	.42	.57
		Detachment	.06	.01 (1)	.905	1.06	.41-2.74		
		Disinhibition	.56	1.01 (1)	.315	1.76	.58-5.29		
		Antagonism	-.78	2.56 (1)	.109	.46	.18-1.19		
		Psychoticism	-.21	.16 (1)	.988	.81	.29-2.25		
	Constant		−3.03	34.66 (1)	<.001	.05		ΔCox & Snell .01	ΔNagelkerke .01
Avoidant PD	1) SCID-5-AMPD-I	Mean	.71	7.68 (1)	.006	2.03	1.23-3.34	.12	.17
	2) PID-5	Negative-Affectivity	-.06	.01 (1)	.916	.95	.33-2.68	.23	.34
		Detachment	2.01	17.61 (1)	<.001	7.47	2.92-19.11		
		Disinhibition	-.72	1.77 (1)	.183	.49	.17-1.41		
		Antagonism	-.94	3.88 (1)	.049	.39	.15-1.00		
		Psychoticism	-.63	2.11 (1)	.146	.53	.23-1.25		
	Constant		−3.18	30.62 (1)	<.001	.04		ΔCox & Snell .11	ΔNagelkerke .17
Antisocial PD	1) SCID-5-AMPD-I	Mean	1.03	7.72 (1)	.005	2.80	1.35-5.80	.04	.09
	2) PID-5	Negative-Affectivity	−3.32	11.98 (1)	<.001	.04	.01-0.24	.22	.45
		Detachment	-.99	1.57 (1)	.210	.37	.08-1.74		
		Disinhibition	3.23	19.48 (1)	<.001	27.75	6.34-121.39		
		Antagonism	1.02	3.28 (1)	.070	2.78	.92-8.43		
		Psychoticism	.18	.08 (1)	.773	1.20	.35-4.08		
	Constant		−3.86	27.69 (1)	<.001	.02		ΔCox & Snell .18	ΔNagelkerke .36
Borderline PD	1) SCID-5-AMPD-I	Mean	1.65	25.91 (1)	<.001	5.19	2.75-9.78	.28	.42
	2) PID-5	Negative-Affectivity	1.38	5.10 (1)	.024	3.98	1.20-13.17	.31	.47
		Detachment	−1.03	3.47 (1)	.062	.36	.12-1.05		
		Disinhibition	.61	1.19 (1)	.275	1.84	.62-5.50		
		Antagonism	.14	.10 (1)	.759	1.15	.47-2.80		
		Psychoticism	.13	.08 (1)	.775	1.14	.47-2.75		
	Constant		−6.25	51.86 (1)	<.001	.02		ΔCox & Snell .03	ΔNagelkerke .05

Note. Pseudo R-square was reported as change in explained variance when PID-5 was added to the model.

Table 4. Binominal logistic regression analyses (N = 294) as in Table 3 but reversing the order in which the predictors were entered.

								Pseudo-R^2	
Dependent	Predictors		B	Wald (df)	p-value	OR	95% C.I. OR	Cox & Snell	Nagelkerke
Any PD	1) PID-5	Negative-Affectivity	.58	.77 (1)	.38	1.78	.49-6.52	.31	.42
		Detachment	.14	.07 (1)	.80	1.15	.39-3.42		
		Disinhibition	.57	1.01 (1)	.31	1.76	.59-5.30		
		Antagonism	-.86	2.82 (1)	.09	.42	.16-1.15		
		Psychoticism	-.25	.23 (1)	.63	.78	.28-2.16		
	2) SCID-5-AMPD-I	Mean	1.92	38.23 (1)	<.001	6.82	3.71-12.52	.42	.57
	Constant		−3.07	36.58 (1)	<.001	.05		ΔCox & Snell .11	ΔNagelkerke .15
Avoidant PD	1) PID-5	Negative-Affectivity	.16	.07 (1)	.79	1.17	.37-3.66	.22	.32
		Detachment	2.05	15.58 (1)	<.001	7.79	2.81-21.61		
		Disinhibition	-.54	.98 (1)	.32	.58	.21-1.69		
		Antagonism	−1.38	7.70 (1)	.006	.25	.10-.67		
		Psychoticism	-.61	1.9 (1)	.17	.55	.23-1.29		
	2) SCID-5-AMPD-I	Mean	.75	8.59 (1)	.003	2.12	1.28-3.49	.24	.35
	Constant		−3.35	24.02 (1)	<.001	.04		ΔCox & Snell .02	ΔNagelkerke .03
Antisocial PD	1) PID-5	Negative-Affectivity	−3.81	13.73 (1)	<.001	.02	.003-.16	.18	.38
		Detachment	-.19	.05 (1)	.82	.83	.17-4.18		
		Disinhibition	3.3	19.51 (1)	<.001	27.1	6.27-117.18		
		Antagonism	1.08	3.36 (1)	.07	2.93	.93-9.23		
		Psychoticism	.04	.01 (1)	.94	1.05	.32-3.46		
	2) SCID-5-AMPD-I	Mean	.97	7.33 (1)	.007	2.65	1.31-5.35	.20	.42
	Constant		−3.99	30.26 (1)	<.001	0.02		ΔCox & Snell .02	ΔNagelkerke .04
Borderline PD	1) PID-5	Negative-Affectivity	1.72	6.48 (1)	.011	5.61	1.49-21.13	.24	.37
		Detachment	−1.53	5.7 (1)	0.17	2.18	.06-.76		
		Disinhibition	.47	.67 (1)	.41	1.59	.52-4.91		
		Antagonism	.40	.73 (1)	.39	1.50	.60-3.77		
		Psychoticism	.12	.07 (1)	.79	1.13	.46-2.77		
	2) SCID-5-AMPD-I	Mean	1.61	23.99 (1)	<.001	5.00	2.63-9.52	.31	.48
	Constant			(1)				ΔCox & Snell .07	ΔNagelkerke .11

Note. Pseudo R-square was reported as change in explained variance when SCID-5-AMPD-I was added to the model.

predicting DSM-IV/5 personality disorders, when the LPFS was assessed using the SCID-5-AMPD-I and the trait model using the PID-5. Moreover, we found that both the LPFS and the trait model were important for predicting the presence of the three specific personality disorders under study that are also specific PDs in the AMPD (i.e., Antisocial, Borderline, or Avoidant). More specifically, the mean SCID-5-AMPD-I rating was a strong and dominant

predictor of the presence of DSM-IV/DSM-5 personality disorder in general, whereas using a combination of the SCID-5-AMPD-I and PID-5 resulted in an improved prediction of Antisocial, Borderline, and Avoidant PD. Three out of five PID-5 domains showed predictive value, namely; Disinhibition for ASPD, Detachment for AVPD, and Negative Affectivity for BPD. The analyses also showed that the SCID-5-AMPD-I could predict clinical status (i.e., discerning between non-clinical and clinical participants) better than the PID-5.

To our knowledge, only one interview-based study on the AMPD trait model has been published. A recent study by Weekers and colleagues (2021) investigated the prevalence and stability of specific PD diagnoses present in both DSM-5 Section II and III. Using only structured clinical interviews developed to assess Section II PDs and the Section III AMPD model, Weekers et al. reported adequate stability in prevalence rates between Section II and III. Thus, there is reason to believe that the changes from Section II to the AMPD is less radical than initially feared, as there seem to be an adequate continuity between the two models (Weekers et al., 2021; Zimmermann et al., 2019).

However, for the LPFS, the situation is quite different: interview studies were published before self-report questionnaire studies started to appear (Bender et al., 2018; Hutsebaut et al., 2017; Thylstrup et al., 2016); which may be partly due to the fact that LPFS is based on a long clinical tradition where interview-based studies are still considered the norm. The PID-5, on the other hand, fits within the tradition of academic research on trait models, where self-report inventories are well-established and widely used. Importantly, the AMPD does not regard the LPFS and the trait model as equally important in establishing a PD diagnosis, since the diagnostic threshold for a PD diagnosis is determined by the LPFS and not by the traits (Skodol et al., 2015). Hence, the stepwise assessment procedure implies that if a patient does not meet the criterion of moderate or greater impairment on the LPFS (i.e., Level 2, the diagnostic threshold for a PD diagnosis), further steps are not needed, as step one (Criterion A) indicates those who do and do not have a PD; and step two (Criterion B) assesses pathological traits, i.e., specifies stylistic elements of personality pathology. Of note, the PD model in ICD-11 does not require the assessment of personality trait domains; a PD diagnosis is solely based on assessment of a broad concept of personality functioning. This represents a clinically important shift in diagnostic assessment from the traditional emphasis on different forms of PDs to the assumption that PD is a "single entity that can be expressed in an infinite variety of ways" (Livesley, 2021, p. 19). Our study supports this approach since the results indicated that it is not necessary to use the trait domains to identify general PD. However, the definition of personality functioning in ICD-11 is much broader than in the AMPD, including not only self- and interpersonal functioning, but also cognitive, emotional, and behavioral manifestations, as well as social and occupational functioning.

Since there is a degree of overlap in content between Criteria A and B, a number of researchers have raised the question whether Criterion A might in fact be redundant, if Criterion B is thoroughly assessed. Two substantial reviews of the current research literature on the AMPD have addressed this question (Widiger et al., 2019; Zimmermann et al., 2019). In brief, studies on the latent factor structure of measures of Criteria A and B have reported moderate to substantial overlap. Furthermore, the two reviews (Widiger et al., 2019; Zimmermann et al., 2019) highlighted that some studies on incremental validity reported that measures of the LPFS predict little additional variance in DSM-IV PD symptoms compared to personality trait measures, whereas other studies demonstrated that measures of Criterion A predict variance over and above measures of Criterion B, albeit to a modest degree. A serious limitation of many of the studies included in these reviews is that Criterion A was typically measured using self-report proxy-measures rather than interview-based instruments tailored to assess the LPFS. This is not in line with the procedures used in clinical practice, where diagnosis is typically based on clinical interviews. Moreover, an important aspect of the AMPD, which seems to be overlooked in most studies, is that the LPFS and the trait model are neither equivalent nor interchangeable criteria for defining PDs in the AMPD. An assumption that underlies the AMPD is that the LPFS measures the core features (i.e., disturbances in self- and interpersonal functioning) of personality pathology, whereas the trait model describes how different PDs are expressed; i.e., differ from each other (APA, 2013; Meehan et al., 2019). Our results clearly show that the Criterion A, as measured by the SCID-5-AMPD-I, was not made redundant by Criterion B, as measured by the PID-5, in predicting the presence of a PD according to DSM-IV/DSM-5 Section II. On the contrary, the SCID-5-AMPD-I mean rating was a strong predictor of the presence of a PD, as well as specific types of PD.

The results for the PID-5 for predicting specific PDs were more in line with previous research, as the PID-5 domain of Detachment was the strongest predictor of avoidant PD, where BPD was predicted by the domain of Negative Affectivity (Anderson et al., 2014; Mulay et al., 2019). The unexpected lack of association between Antagonism and Antisocial PD warrants further discussion, as aspects of Antagonism and Disinhibition have been defined as key characteristics of ASPD in the AMPD model (APA, 2013). Previous research has also indicated that Antagonism is a strong predictor of ASPD (Anderson et al., 2014). However, in our study, Disinhibition was the strongest predictor of ASPD, followed by the SCID-5-AMPD-I, and Emotional Stability (i.e., the positive pole of the Negative Affectivity domain). There was a large effect for Disinhibition (positive effect) in predicting the presence of ASPD, coupled with a wide CI where the upper limit of the CI was as large as 121; this warrants further research in order to obtain a better estimate of this effect on ASPD. As our sample includes ASPD patients who were treated at prison-based substance abuse clinics, impulsive behavior rather than Antagonism may be a common key

characteristic (Clark, 2007). Interestingly, Bastiaansen et al. (2016) reported that the personality domain of Emotional Dysregulation was a significant predictor of all DSM-IV PDs except Antisocial PD. However, in our analyses, high Negative Affectivity was a predictor of BPD, and low Negative Affectivity was a predictor of ASPD. On the other hand, Negative Affectivity was not a predictor of AVPD or PD in general.

Limitations and strengths

Several limitations of the study should be noted. First, we did not perform an inter-rater reliability check of the SCID-II diagnostic assessment administered by the referring clinicians. That being said, all participating clinicians participated in consensus training using the SCID-II, while nearly half of the patients were recruited at sites where previous studies have shown that a training procedure similar to the one employed in the current study yielded acceptable diagnostic reliability for the SCID-II (e.g., kappa: AVPD, 0.75; BPD, 0.66) (Arnevik et al., 2009).

In addition, the interrater reliability for the SCID-5-AMPD module I was good for the test-retest procedure and excellent for video-based assessment (Buer Christensen et al., 2018). Second, the combination of interviewer-rated clinical data (Criterion A) and self-report data (Criterion B) in the analysis may have resulted in conclusions that are in disfavor of the trait model. Since observer-based variables tend to correlate more with each other (e.g., the SCID-II versus the SCID-5-AMPD-I) than with self-report variables (e.g., the PID-5), the predictive capacity of the trait model might have been compromised by using the PID-5 instead of a structured clinical interview such as the second module of the SCID-5-AMPD-I (Skodol et al., 2018). However, as previous studies addressing the same topic only used self-report measures, a potential method-effect on the results is not unique for this study.

Moreover, three of the six specific PDs retained in the AMPD (i.e., Narcissistic, Obsessive–Compulsive, and Schizotypal PD) were not included in the binomial logistic regression analyses due to low frequency in the sample. In addition, the sample of non-clinical participants was relatively small, therefore the results of the multinomial logistic regression analyses should be interpreted with care. An Important strength of the study is the inclusion of a large clinical sample of patients that exhibit various degrees of personality functioning, and who were recruited from all levels of care and various departments, enhancing the generalizability of the findings. Another strength is the use of the SCID-5-AMPD-I, which is a structured diagnostic interview that closely matches the content of the AMPD LPFS. This interview has been shown to have good inter-rater reliability in a subsample of the current sample (Buer Christensen et al., 2018), as well as in a clinical sample of psychotherapy outpatients (Somma et al., 2020).

Conclusions

The current study is the first study to investigate the AMPD model using both the SCID-5-AMPD-I interview and the PID-5 self-report inventory on a well-defined sample of psychiatric patients and non-clinical participants. In conclusion, our results indicate that the LPFS, as assessed using the SCID-5-AMPD-I interview, is a strong predictor of personality pathology in general. However, the combination of the SCID-5-AMPD-I and PID-5 domains predict three specific DSM-IV/DSM-5 PDs that are also specific PDs in the AMPD (ASPD, BPD, and AVPD). Our results support the AMPD model, in which the LPFS is defined as a measure of core personality pathology, and maladaptive personality domains describe the expression or characteristics of specific personality disorders (Meehan et al., 2019). We argue that it is imperative to continue using interviewer-rated clinical data for further scrutiny of the AMPD model, and not to rely solely on survey or self-report data.

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Authors' contributions

All authors listed contributed to the study design, approved the final version of the manuscript, and concurred with its submission. TEN, BH and MCSP were responsible for the statistical analyses. TEN wrote the drafts of the manuscript under the supervision of BH and MCSP, with input from TBC, IE, SGS, GP, DSB, and AES.

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Data availability statement

The data that support the findings of this study are available from the second author, BH, upon reasonable request, after approval by the Data Protection Manager at the Oslo University Hospital.

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