Psychometric Properties for the Arabic Version of Personality Inventory for DSM-5 (PID-5) in Non-clinical Individuals

BY

Dr. Hala Abd Ellatif Elsayed

Associate Professor, Suez Canal University, Department of Mental Hygiene, Faculty of Education.

Abstract:

An alternative dimensional model to test and diagnose personality disorders is used in the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5; American Psychiatric Association [APA], 2013). This model includes assessment of impaired personality functioning (Criterion A) and Adaptive Personality Traits (Criterion B). The DSM-5 Personality and personality disorders workgroup developed the personality inventory for DSM-5 (PID-5) to assess the pathological personality traits within this new model as a new dimensional tool consisting of 220 sentences overarch into 25 facets that distinguish five higher order domains of clinically important personality disorders and was developed to operationalize the pathological personality disorders. The current study focused on the psychometric properties of PID-5 in non-clinical sample.In a cross-sectional study, the Arabic translation of the PID-5 was administered to 537 university students at Suez Canal University (83.05% female and 16.95% male, mean age = 19.8 years, SD = 3.9). After data collection, the reliability of the inventory was investigated using internal consistency, test-retest methods. The facet structure was examined using structural equation modeling (SEM). In addition, convergent validity methods were used to evaluate the validity of the scale. The results showed adequate internal consistency coefficients for domains and facets. In addition, the test-retest coefficients (up to 0.70) suggested scale stability.The convergent validity of the inventory with the NEO-FFI scale was appropriate. The results of the study supported the psychometric properties of the Arabic version of PID-5 in non-clinical populations.

Key words*:*Personality Inventory, psychometric properties, DSM-5, non-clinical individuals.

الخصائص السيكومترية للنسخة العربية من قائمة الشخصية PID-5 وفقا للدليل التشخيصي الإحصائي الخامس للاضطرابات النفسية DSM-5 لدي الأفراد غير السريريين

الملخص:

تم استخدام النموذج القائم على الأبعاد كنموذج بديل لاختبارات تشخيص اضطرابات الشخصية في الدليل التشخيصي والإحصائي للاضطرابات العقلية – الإصدار الخامس (DSM-5)؛ الجمعية الأمريكية للطب النفسي (APA، ٢٠١٣). ويتضمن هذا النموذج تقييم أداء الشخصية المرضية (المعيار أ) وسمات الشخصية التكيفية (المعيار ب). وقد تم بناء قائمة الشخصية من قبل فريق عمل من المختصين التابع للدليل التشخيصي والاحصائي الخامس وذلك من أجل تقييم سمات الشخصية المرضية وفقا لنموذج الابعاد كأداة أبعاد جديدة تتكون من ٢٢٠ فقرة متضمنة في ٢٥ جانبًا يميز خمسة أبعاد لاضطرابات الشخصية. وركزت الدراسة الحالية على الخصائص السيكومترية لـ PID-5 في العينة غير السريرية، وفي دراسة مستعرضة، تمت الترجمة العربية لـ PID-5 وتم تطبيقه على ٥٣٧ طالبًا جامعيًا في جامعة قناة السويس. بعد جمع البيانات، تم التحقق من ثبات قائمة الشخصية باستخدام طرق الاتساق الداخلي وطريقة إعادة الاختبار. وتم التحقق من الصدق البنائي لـ PID-5 باستخدام التحليل العاملي التوكيدي. بالإضافة إلى ذلك، تم استخدام طرق الصدق التقاربي لتقييم صدق قائمة الشخصية PID-5. أظهرت النتائج معاملات اتساق داخلية مرتفعة للأبعاد والأوجه. بالإضافة إلى ذلك، تشير معاملات إعادة الاختبار والاختبار (حتى ٠.٧٠) إلى ثبات القائمة، وكان الصدق التقاربي للقائمة مع مقياس NEO-FFI مناسبا. دعمت نتائج الدراسة الخصائص السيكومترية للنسخة العربية من PID-5 في المجموعات غير السريرية.

الكلمات المفتاحية: الخصائص السيكومترية – النسخة العربية لقائمة الشخصية PID-5– الدليل التشخيصي والإحصائي للاضطرابات النفسية DSM-5- الأفراد غير السريريين

INTRODUCTION

Personality disorders are linked to a variety of mental, social, and physical issues. As a result, "personality assessment is a vital aspect of competent clinical assessment," (Tyrer, 2015). In the assessment of personality disorders, the Diagnostic and Statistical Manual of Mental Disorders (DSM) has been the main reference. Personality disorders are currently operationalized using the models described in DSM-5 Sections II and III (APA, 2013). It was long thought that the categorical approach to personality disorders, which had prevailed until the American Psychiatric Association's DSM-IV-TR (American Psychiatric Association, 1994), was not the most appropriate because although it offered the benefit of clarity and ease of communication among experts, it also had significant drawbacks. These drawbacks included high levels of diagnostic comorbidity heterogeneity across PD diagnoses, arbitrary diagnostic thresholds, overuse of unspecified personality disorder, inadequate coverage of personality psychopathology, temporal instability of diagnoses, lack of agreement in the conceptualization of disorders and limited validity and clinical utility (Hopwood, Kotov, Krueger et al., 2018; Krueger, Hopwood, Wright & Markon, 2014; Tyrer, Reed & Crawford, 2015). This prompted some authors (Costa, & Widiger, 2009). to examine if personality disorders could be conceptualized using theories of normal personality features (such as the Five Factor Model) and to propose an assessment of the instruments used in the process (NEO-PI-R; Costa & McCrae, 1992).

As a result of this multiple models emerged in the dimensions of pathologic personality traits and one of the main theoretical models that explained the domains of pathological personality traits was proposed by the DSM-5 Work Group on Personality and Personality Disorders. With this purpose, they focused on the delimitation and measurement of maladaptive traits in five domains: introversion, antagonism, impulsivity vs. constraint, negative affect and psychoticism. To develop this model, the Group proposed the objective of identifying and operationalizing the domains and facets of pathological personality and developed a measurement for these, emphasizing the characteristics of personality disorders (Krueger , Derringer, Markon, Watson, & Skodol, 2012). Based on performance and the presence of pathological personality features. the DSM-5 Work Group on Personality and Personality Disorders concentrated on defining and measuring maladaptive qualities

in five domains: introversion, antagonistic behavior, impulsivity vs. restriction, negative affect, and psychoticism (Krueger et al., 2012). They renamed the domains introversion for detachment and impulsivity for disinhibition as a result. Thus, the Group developed a measurement for personality disorders, called Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012), that introduced a new hybrid model using a dimensional approach in the assessment of six personality disorders employing self-reports on 25 maladaptive personality traits (APA, 2013). This model will be referred to as the DSM-5 trait model.

According to this alternative system, a diagnosis of antisocial (APD), avoidant (AVPD), borderline (BPD), narcissistic (NPD), obsessive-compulsive (OCPD), and schizotypal (SPD) personality disorder is conferred when seven general diagnostic criteria are met (Criterion A-G, American Psychiatric Association, 2013). The first two Criterion A, the assessment of severe impairment in personality function (self and interpersonal), and Criterion B, the presence of pathological personality traits, seem to be the criteria that may receive the most comprehensive consideration during the diagnostic phase, with the remaining criteria (i.e., C-G) serving as a support system. Individuals must have functional disorder in the domains of self (identity or self-direction) and interpersonal (empathy or intimacy) functioning, according to Criterion A. Criterion B, on the other hand, notes that an entity must exhibit maladaptive personality traits based on five-dimensional personality domains and the three to seven aspects that go with them. To measure these personality traits, the Personality and Personality Disorders workgroup members and advisors gen- erated a list of 37 facets that based on literature were considered clinically significant. The exploratory factor analysis made it clear that the 37 facets can be subsumed into a more favorable structure comprising 25 facets, that gather in five domains: Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Definitions of the domains as stated in DSM-5 (American Psychiatric Association and DSM-5 Task Force, 2013) are as follows:

Negative Affectivity considers the tendency to frequently experience high levels of several negative emotions such as anxiety, depression, worry, guilt or shame, and anger. It also includes the behavioural and interpersonal manifestations of these emotions, such as

self-harm and dependency. The trait facets that appertain to Negative Affectivity are primarily emotional lability, anxiousness and separation insecurity. Other facets that belong to Negative Affectivity are submissiveness, hostility, perseveration, depressivity, suspiciousness, and restricted affectivity.

Detachment considers the tendency to avoid socioemotional experiences, e.g. with- drawal from interpersonal interactions and restricted affective experiences and expres- sions, i.e. showing few emotions and having a restricted capacity for feeling pleasure. Trait facets that appertain to Detachment are primarily withdrawal, intimacy avoidance and anhedonia. Secondarily, the facets depressivity, restricted affectivity, and suspicious- ness also belong to Detachment.

Antagonism is characterized by behaviours that make the individual get into conflict with others. This includes an overstated sense of self-importance and expectation of special treatment, as well as failure to understand others feelings and needs, and the tendency to use others for self-enhancement. Trait facets that appertain to Antagonism are primarily manipulativeness, deceitfulness, and grandiosity, and secondarily; attention seeking, callousness, and hostility.

Disinhibition considers the tendency to look for instant gratification, which causes impulsive behaviour without consideration of outcomes of previous experiences or future consequences. The primary facets that appertain to Disinhibition are irresponsibility, impulsivity, and distractibility. Secondary facets are risk taking, and lack of rigid perfec- tionism.

Psychoticism considers a wide range of eccentric, odd, or unusual behaviours and thoughts, e.g. the individual perceives things that others do not and has peculiar be- liefs. Trait facets that appertain to Psychoticism are unusual beliefs and experiences, eccentricity, and cognitive and perceptual dysregulation.

To measure these domains and facets, the Personality Inventory for DSM-5 (PID-5) was developed. The Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012) is a self-rated inventory consisting of 220 items which can be scored by the respondents on a 4- point Likert-type scale to what extent the items are true for them and that characterizes 25 trait facets organized into the five domains of personality variation. In Section III of the fifth edition of the Diagnostic and Statistical Manual of

Mental Disorders, these traits were developed to be used in combination with other diagnostic criteria to identify personality disorders (PDs) (DSM-5; American Psychiatric Association, 2013).

The present study sought to validate the psychometric properties of an Arabic version of the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012) across Egyptian University Students. Each domain of the PID-5 consisting of five facets as follows: (i) negative affect versus emotional stability, involving Emotional lability, Anxiousness, Separation insecurity, Submissiveness, and Hostility, (ii) detach- ment versus extraversion, involving Perseveration, Withdrawal, Intimacy avoidance, Anhedonia, and Depressivity, (iii) antagonism versus agreeableness, involving Restricted affectivity, Suspiciousness, Manipulativeness, Deceitfulness, and Grandiosity, (iv) disinhibition versus conscientiousness, involving Attention seeking, Callousness, Irresponsibility, Impulsivity, and Distractibility, and (v) psychoticism versus lucidity, involving Risk taking, Rigid perfectionism, Unusual beliefs and experiences, Eccentricity, and Cognitive and perceptual dysregulation.

An extensively body of studies have examined the reliability and validity of the PID-5 and have consistently shown it to be a reliable tool with internal consistency coefficients (Al-Dajani, Gralnick & Bagby, 2016). The PID-5 has recently been translated into a number of different languages for example, Flemish (De Fruyt, De Clercq, De Bolle, Wille, Markon & Krueger, 2013), Italian (Fossati, Krueger, Markon, Borroni & Maffei, 2013), Dutch (De Clercq, De Fruyt, De Bolle, Van Hiel, Markon & Krueger, 2014), German (Zimmermann, Altenstein, Krieger et al., 2014), French (Roskam, Galdiolo, Hansenne et al., 2015), Danish (Bach, Maples-Keller, Bo & Simonsen, 2016) and Arabic (Al-Attiyah, Megreya, Alrashidi, Dominguez-Lara & Al-Sheerawi, 2017). All this research has revealed that the PID-5 is a reliable measure and that its structure replicates across samples and countries, even non-western countries, converging conceptually with other personality and psychopathology measures. In addition, these translations have demonstrated strong empirical and conceptual convergence with personality models similar to the original instrument. For example, an increasingly large number of studies have examined the convergent and discriminant validity of the PID-5 by examining its association with the Five Factor Model (FFI;

Costa & McCrae, 1992) of normal personality traits (Neuroticism, Extraversion, Openness to Experiences, Agreeableness, and Conscientiousness. The results consistently showed that all of the PID-5 domains associated positively with Neuroticism and negatively with Extraversion, Agreeableness, and Conscientiousness (Few, Miller, Rothbaum, et al., 2013; Griffin & Samuel, 2014; Quilty, Ayearst, Chmielewski, Pollock, & Bagby, 2013; Zimmermann et al., 2014). However, examining the correlations between the PID-5 and Openness has demonstrated less clear and debatable results (Al-Dajani et al., 2016).

It is implicitly believed that the constructs of interest are of equal value in both cultures when translating an inventory designed to measure latent constructs, such as the PID-5. The meaning of the structures can likewise be altered through translation (Al-Dajani et al., 2016). As a result, it's critical to make sure the inventory is accurate before using it in clinical practice in a nation other than its origin. The translation and adaptation techniques ensure that the instrument is semantically, idiomatically, experimentally, culturally, and conceptually equivalent to the original. Furthermore, measurement invariance (MI) tests of the PID-5 should be carried out to see if factor structure differs amongst populations made up of people from various cultures (Han, Colarell, & Weed, 2019, Vandenberg, & Lance, 2000).As the goal of this study was to translate and adapt the PID-5 items into Arabic in order to ensure the technical and clinical quality of the instrument in Egypt.Therefore, this study aimed to examine the psychometric features (inter-correlations, reliability, and convergent validity) of an Arabic version of the PID-5, and to describe the process of cross-cultural adaptation of the PID-5 to the Egyptian context, given that the PID-5 has been widely investigated in the international literature and stands out as a reference in the assessment of nonadaptive personality traits.

.

METHOD
Participants

The participants were a total of 537 volunteers of undergraduate students from the Faculty of Education, Suez Canal University, recruited by the author during a course they were attending. The sample consisted of 83.05% female and 16.95% male, M age = 19.8 years, SD = 3.9. The inclusion criteria were Egyptian native Arabic speakers aged 18 years old

and above and had never experienced any psychiatric or neurological disorders as they self- reported.

Procedures

The collecting data sessions were held collectively and were conducted at the Faculty of Education, after the obtained approval from the Ethics Committee of the Faculty of Education, Suez Canal University. Individuals were informed that participation in the studies was voluntary, that they could give up participation at any time they wished, that no identifying information would be asked and that the data would be used exclusively in a scientific study. All respondents signed a written informed consent form requesting their participation in the study. The PID-5 was translated from English into Arabic to be used in the current study. Translation was done using both the committee translation method followed by the back-translation method (Hambleton, 2005). An expert in the field of personality research and proficient in the English language, translated the original English items into Arabic. The Arabic translation of the PID-5 was independently evaluated by three senior personality researchers and a native English-speaking lecturer, all well acquainted with the test development procedures. The final wording was obtained after consensus among the three researchers, the native English-speaker and the author of the translation. All comments were addressed on the Arabic version. Finally, the author of this study reworded some items to make them easier to read by the Egyptian undergraduate university students. All those revisions were compared with the original questionnaire to compile the final Arabic version.

MEASURES

The Personality Inventory for DSM-5 (Krueger et al., 2012). The PID-5 is a self-report measure which operationalizes the DSM-5 model of pathological personality traits. It is composed of 220 items, rated on a four-point Likert scale ranging from 0 (very false or often false) to 3 (very true or often true) that characterize 25 empirically derived lower level facets grouped into five major domains of maladaptive personality variation. The PID-5 is to be used with adults (18 years or above) and most of its items require 8 years of prior schooling in order to complete. Most individuals finish the task in 40 minutes or less.

The NEO-Five Factor Inventory (NEO-FFI, Costa & McCrae (1992), is a shortened version of the NEO-PI-R and was designed to provide a concise measure of the five basic personality factors

(Neuroticism, Extraversion, Openness to Experiences, Agreeableness, and Conscientiousness). The NEO-Five Factor Inventory (NEO-FFI) composed by 60 items (12 items from each of the NEO-PI-R dimension) and uses a five-point Likert response format, ranging from 0 (strongly disagree) to 4 (strongly agree). Arabic version by Alansari (1997) was used in this study.

Analysis strategy

Statistical data analysis was performed with the IBM SPSS Statistics 25. Given that the dataset did not follow a normal distribution, test-retest and validity analyses were conducted by calculating the cross-measure Pearson correlation coefficient and to obtain factor scores for the facets, confirmatory factor analysis (CFA) was used.

RESULTS

Cronbach's alpha coefficients (a) for the 25 facets and five domains were determined to assess the scales' internal consistency. For the majority of the PID-5 facets (a ≥ 0.80 for 19 out of 25), the university students' self-reported PID-5 traits showed strong internal consistency (see Table 1). The average Cronbach's alpha for the facets was 0.82, with Grandiosity scoring the lowest at 0.70 and Eccentricity scoring the highest at 0.93. The facets' alphas for the current study were similar to those obtained in the PID-5 construction project , which ranged from 0.72 (Grandiosity) to 0.96 (Eccentricity), with a mean of 0.86 (Krueger et al., 2012) and to those found in other cross-cultural validations, such as the French version of the PID-5, where the Cronbach's alpha for the facets ranged from 0.68 (Suspiciousness and Irresponsibility) to 0.95 (Eccentricity), with a mean of 0.82 (Roskan et al., 2015), and the Dutch version of the PID-5, where the Cronbach's alpha for the facets in a sample of (De Clercq et al., 2014).

The 25 facets and five domains were found to be reliable in these results. Furthermore, the PID-5 scales appear to be accurate indicators of the traits they aim to evaluate, as shown by the related alphas obtained in the independent research discussed above.

Cohen's d was used to compare descriptive statistics for the 25 facets and five domains of the Arabic version of the PID-5 to the original data (Krueger et al., 2012). Small to medium effect sizes would reveal greater similarities between the original study and the Egyptian' response. Apart from Disinhibition, which had a large effect size, the rest

of the variants had small (0.2) to medium (0.2–0.5) effect sizes. Because of these minor differences, the Arabic version of the PID-5 appears to generate scores in the same range as the original PID-5.

Table 1.
Internal consistencies (a), means (M) and standard deviations (SD) Cohen's d between the two studies for the 25 facets and five domains. for the 25 facets and the 5 domains

	Egyptian data	(N = 537)		Krueger et al.,2012	(N = 264)		
	α	M	SD	α	M	SD	d
Anhedonia	0.83	1.34	0.54	0.88	0.89	0.64	0.06
Anxiousness	0.89	1.61	0.59	0.91	1.02	0.73	0.53
Attention seeking	0.86	1.45	0.53	0.89	0.81	0.65	0.09
Callousness	0.84	0.87	0.50	0.91	0.40	0.50	0.03
Cognitive and perceptual dysregulation	0.87	1.43	0.46	0.86	0.44	0.48	0.02
Deceitfulness	0.85	0.41	0.48	0.85	0.52	0.54	0.21
Depressivity	0.89	1.18	0.52	0.95	0.53	0.62	0.15
Distractibility	0.84	1.09	0.47	0.91	0.82	0.69	0.42
Eccentricity	0.90	0.60	0.57	0.96	0.82	0.76	0.39
Emotional lability	0.76	1.18	0.51	0.89	0.94	0.74	0.34
Grandiosity	0.72	0.48	0.48	0.72	0.82	0.58	0.40
Hostility	0.82	1.04	0.47	0.89	0.91	0.67	0.25
Impulsivity	0.86	0.83	0.51	0.77	0.77	0.57	0.19
Intimacy avoidance	0.81	0.41	0.46	0.84	0.61	0.65	0.37
Irresponsibility	0.80	0.43	0.44	0.81	0.39	0.49	0.05
Manipulativeness	0.76	0.65	0.60	0.81	0.80	0.67	0.22
Perseveration	0.83	0.86	0.45	0.88	0.82	0.62	0.09
Restricted affectivity	0.85	0.81	0.51	0.73	0.97	0.56	0.24
Rigid perfectionism	0.82	1.04	0.45	0.90	1.05	0.68	0.03
Risk taking	0.87	1.16	0.47	0.85	1.05	0.51	0.20
Separation insecurity	0.80	0.89	0.53	0.85	0.80	0.68	0.18
Submissivene	0.70	0.80	0.59	0.78	1.17	0.66	0.37

ss Suspiciousnes s	0.74	0.87	0.42	0.73	0.95	0.58	0.17
Unusual beliefs and experiences	0.79	0.31	0.49	0.83	0.64	0.63	0.42
Withdrawal	0.84	0.67	0.54	0.93	1.01	0.72	0.34
Negative affectivity	0.83	1.16	0.52	0.93	1.07	0.44	0.16
Detachment	0.82	0.64	0.46	0.96	0.78	0.54	0.23
Antagonism	0.81	0.52	0.51	0.95	0.61	0.46	0.27
Disinhibition	0.82	0.78	0.47	0.84	1.06	0.30	0.75
Psychoticism	0.89	0.46	0.53	0.96	0.64	0.57	0.32

Small effect $d \leq .20$, medium effect size $.20 < d \leq .50$, large $.50 < d \leq 1.0$, and very large $d > 1.0$

Table 2 shows the temporal stability coefficients for the facets and domains of the Arabic version of the PID-5. The mean Coefficient reliability at the facet stage was 0.81. The stability coefficients of the facets vary between 0.70 and 0.90 (p < 0.01). Eccentricity has the highest stability coefficient and Suspiciousness has the lowest stability coefficient. The stability coefficients of the domains vary between 0.81 and 0.89 (p < 0.01). Psychoticism has the highest stability coefficient and Antagonism has the lowest stability coefficient.

Table 2.
Stability coefficients of the Arabic version of the PID-5 facets and domains in the Egyptian sample

PID-5 Scales		Coeff.	PID-5 Scales	Coeff.
	Anhedonia	0.86**	Perceptual Dysregulation	0.85**
	Anxiousness	0.79**	Perseveration	0.90**
Seeking	Attention	0.92**	Restricted Affectivity	0.83**
	Callousness	0.84**	Rigid Perfectionism	0.81**
	Deceitfulness	0.90**	Risk Taking	0.92**
	Depressivity	0.78**	Separation Insecurity	0.86**
	Distractibility	0.87**	Submissiveness	0.80**
	Eccentricity	0.93**	Suspiciousness	0.85**
Lability	Emotional	0.75**	Unusual Beliefs & Experiences	0.83**
	Grandiosity	0.89**	Withdrawal	0.86**
	Hostility	0.83**	Negative Affect	0.87**
	Impulsivity	0.86**	Detachment	0.82**
Avoidance	Intimacy	0.87**	Antagonism	0.80**
Irresponsibility		0.70**	Disinhibition	0.83**
ness	Manipulative	0.82**	Psychoticism	0.89**

Notes: N = 100.   Interval between the 1st and the 2nd application = four weeks.
**Significant correlations p < 0.01.
r Pearson correlation coefficient

The confirmatory factor analysis (CFA) was performed using polychoric correlations to determine the construct validity of the PID-5. Factor scores were estimated using the Empirical Bayes Modal approach. The sample size was large by SEM-terms. The first-order confirmatory

factor analyses (CFAs) using the 25 facets of the original PID-5 (Krueger et al.,2012) was carried out.

Results are shown in Table 3. Most of the facet CFA's have a good fit. The robust versions of Comparative Fit Index CFI $\geq$.95, and Root mean square error of approximation RMSEA$\leq$.05 were applied to assess the goodness-of fit of the models. Seven out of the 24 models have a RMSEA above .08, indicating a moderate or bad model fit; emotional lability, hostility, anhedonia, restricted affectivity, manipulativeness, eccentricity, and unusual beliefs & experiences. Using the less restrictive cutoff criterion of .10, only three models have a bad fit; emotional lability , hostility and eccentricity. All models have CFI's $\geq$ .95. All but fsix facets have chi-square tests that reject a good model fit, but since the chi-square test is sensitive to sample size, this is given less importance. Overall, the CFA models on which the facet scores are based describes the data generally well.

Table3.Confirmatory factor   facets
analysis fit indices for the PID-5

	SB-χ^2	df	CFI	SRMR	RMSEA
Emotional Lability	212.43**	14	.96	.05	.11
Anxiousness	141.56**	27	.97	.06	.07
Separation Insecurity	78.17	14	.96	.05	.06
Submissiveness	128.4**	9	.95	.03	.03
Hostility	187.63**	77	.98	.04	.14
Perseveration	164.14**	27	.96	.01	.04
Withdrawal	185.47**	35	.98	.04	.05
Intimacy Avoidance	129.34**	5	.96	.03	.04
Anhedonia	54.80	35	.95	.03	.09
Depressivity	251.40**	77	.98	.06	.07
Restricted Affectivity	88.60	14	.99	.04	.09
Suspiciousness	120.06**	14	.96	.05	.07
Manipulativeness	187.87**	9	.95	.09	.08
Deceitfulness	96.05**	35	.97	.05	.05
Grandiosity	67.86	35	.98	.03	.04
Attention Seeking	56.36**	20	.96	.02	.05
Callousness	301.01**	77	.99	.04	.02

The header row is not visible; reproducing visible cells.

Irresponsibility		14	.98	.02	.04
	47.11				
Impulsivity		77	.97	.05	.03
	106.82				
Distractibility		27	.96	.03	.04
	66.35				
Risk Taking	240.15**	65	.99	.04	.06
Rigid Perfectionism	158.72**	35	.96	.05	.05
Unusual Beliefs & Experiences	263.64**	20	.95	.06	.09
Eccentricity	105.26**	65	.95	.04	.15
Cognitive & Perceptual Dysregulation	94.40**	54	.99	.05	.03

Note: **$p < .01$.

Regarding the concurrent validity of the Arabic version of the PID-5, its scales were correlated with other trait constructs of personality, namely the five NEO-FFI factors. Table 4 displays the correlations between the PID-5 domains and the NEO-FFI factors.

Table 4.

Correlations r of the Arabic version of the PID-5 with the NEO–FFI

	N	E	O	A	C
Anhedonia	0.54**	−0.57**	−0.17	−0.48**	−0.33**
Anxiousness	0.67**	−0.33**	−0.25	−0.36**	−0.22*
Attention seeking	0.24**	0.04	0.32*	−0.31*	−0.26*
Callousness	0.25**	−0.21*	−0.03	−0.53**	−0.39**
Cognitive and perceptual dysregulation	0.46**	−0.20	0.18	−0.40**	−0.41**
Deceitfulness	0.13	−0.08	0.13	−0.41**	−0.29**
Depressivity	0.52**	−0.41**	−0.11	−0.32**	−0.45**
Distractibility	0.42**	−0.11	−0.01	−0.35**	−0.52**
Eccentricity	0.63**	−0.28*	0.21	−0.43**	−0.42**
Emotional lability	0.31**	−0.12	−0.04	−0.09	−0.09
Grandiosity	0.82**	0.18	0.17	−0.31**	−0.03
Hostility	0.30	−0.40**	−0.34*	−0.45**	−0.34**
Impulsivity	0.63**	−0.06	−0.12	−0.25**	−0.29**
Intimacy avoidance	0.51**	−0.21**	0.17	−0.29**	−0.31**
Irresponsibility	0.43**	−0.09	0.09	−0.34**	−0.47**
Manipulativeness	0.20*	−0.05	0.16	−0.36**	−0.19*
Perseveration	0.34**	−0.41**	−0.18	−0.38**	−0.30**
Restricted affectivity	0.36**	−0.47**	−0.06	−0.40**	−0.31*
Rigid	0.68**	−0.37*	−0.02	−0.29**	0.14

	N	E	O	A	C
perfectionism					
Risk taking	–0.02	0.41**	0.36**	–0.04	–0.19*
Separation insecurity	0.62**	–0.28*	–0.07	–0.29**	–0.27*
Submissiveness	0.24*	–0.14	–0.28**	–0.08	–0.06
Suspiciousness	0.56**	–0.20	–0.13	–0.64**	–0.04
Unusual beliefs and experiences	0.61**	–0.08	0.41**	–0.38**	–0.12
Withdrawal	0.62**	–0.51**	–0.01	–0.56**	–0.37**
Negative affectivity	0.72**	–0.32**	–0.16	–0.44**	–0.18*
Detachment	0.47**	–0.41**	–0.17	–0.47**	–0.51**
Antagonism	0.12	0.04	0.06	–0.53**	–0.18*
Disinhibition	0.62**	–0.07	0.08	–0.40**	–0.52**
Psychoticism	0.78**	–0.21	0.20	–0.46**	–0.41**

Notes: N = 100.

NEO-FFI domains: N: Neuroticism; E: Extraversion; O: Openness to Experience; A: Agreeableness; C:Conscientiousness.

**Significant correlations $p < 0.01$.

*Significant correlations $p < 0.05$.

The convergent validity of the Arabic PID-5 in the Egyptian sample was investigated by correlating the five domains of the PID-5 with the five factors of NEO-FFI (Table 4). The determined reciprocity pattern supports the theoretical expectations between the PID-5 and the NEO-FFI domains and confirms the relationship between normative and pathological personality. As might be expected, the PID-5 Negative Affectivity domain and the NEO-FFI Neuroticism factor had a moderate positive relationship (rs = 0.72, p 0.01), while the PID-5 Detachment, Antagonism, and Disinhibition domains had negative relationships with the NEO-FFI Extraversion (rs = –0.41, p 0.01), Agreeableness (rs = –0.53, p 0.01), and Conscientious (rs = –0.52, p 0.01).

DISCUSSION

The results of the study with the Arabic version of the PID-5 show that the PID-5 is reliable and that it converges meaningfully with other personality dimensions that are conceptually related.The present study examined the internal consistency, test-retest reliability, and convergent validity of the Arabic version of the PID-5 in samples of Egyptian university students, in response to the APA's recommendation to undertake more research on the validity of the DSM-5 trait system.There

is a growing body of research suggesting that the PID-5 questionnaire's psychometric characteristics are satisfactory.The development of the Arabic version of the PID-5 questionnaire as well as the assessment of its psychometric properties in non-clinical samples, were also in line with previous research. However, this study is the first to examine the psychometric properties of the PID-5 in an Egyptian community sample and addressed the cross-cultural replicability of its reliability and validity in a non-Western culture.

The Arabic version of the PID-5 has been demonstrated to be reliable and to converge meaningfully with other conceptually related personality constructs. With regard to reliability, internal consistency indices for the facets and domains were good and similar to those obtained in the previous studies (De Fruyt et al., 2013; Fossati et al., 2013; Krueger et al., 2012; Roskam et al., 2015; Zimmermann et al., 2014). These results provide evidence supporting that the PID-5 scales are reliable measures of the traits they intend to measure. Consistent with previous findings, Eccentricity was the facet with the highest alpha values, and the lowest alpha value was observed for the facet of suspiciousness.

According to previous studies (Al–Dajani et al., 2016; Wright, Calabrese, Rudick, Yam et al., 2015; Kamalzadeh, Nayeri, Soraya, Shariat, & Alavi., 2016) findings, in current study, the retest coefficients at four weeks suggested that all PID-5 domain and facet scales were stable over time. Also, in test-retest reliability, like internal consistency, eccentricity showed the highest retest coefficient, and suspiciousness had the lowest retest coefficient. In addition, this study supported the first order (the 25 facets) factorial structures of PID-5, these findings confirmed facet structure like the one displayed by (Al-Attiyah et al.,2017, Kajonius, 2017, & Krueger et al.,2012) The model based on the facet structure stated in the DSM-5 (American Psychiatric Association and DSM-5 Task Force, 2013) showed to be a good fit to the sample from the Arabic version of the PID-5 on a sample of Egyptian university students.

PID-5 domains correlated as expected. Consistent with other studies (Bach et al. 2018; Few et al., 2013; Krueger et al., 2014 ; Zimmermann et al., 2014), this study showed that all of the PID-5 domains correlated positively with Neuroticism and negatively with

Extraversion, Agreeableness, and Conscientiousness meaning that the five domains of the Arabic PID-5 displayed meaningful associations with the five domains of the Arabic NEO-FFI. Therefore, a positive association between the Negative Affectivity domain and the Neuroticism NEO-FFI factor was observed, as well as negative associations for the Detachment domain and the Extraversion NEO-FFI factor; the Antagonism domain and the Agreeableness NEO-FFI factor and the Disinhibition domain and the Conscientiousness NEO-FFI factor. The current results sustain the conceptual convergence between the PID-5 scales and the NEO-FFI domains and the theoretical expectation of a continuity between normative personality and pathological personality.

This study provides data on the PID-5 facets in a non-clinical sample in Egypt. Thus, it contributes to confirm the adequacy of the questionnaire across several different countries.

CONCLUSION AND LIMITATIONS

In sum, the current results proved prelusive evidence on the psychometric features (reliability and validity) of the Arabic version of the PID-5. However, it had a number of limitations that should be considered when interpreting its results. First, because of the high level of schooling of the samples, which may have influenced participants' responses to the test and who may not be representative of community-dwelling adults with a broader distribution for maladaptive personality traits, the findings were limited in their generalizability.Second, future study should examine the discriminant validity of the Arabic version of the PID-5 within both clinical and non-clinical samples. Third, utilizing the FFM of personality, this study looked at the convergent validity of the Arabic version of the PID-5 (Costa & McCrae, 1992). Its confluence with other personality models should be investigated in future research. Finally, Future studies should report on the factor structure of the Arabic version of PID-5 in order to analyse facet and domain unidimensionality, to replicate the five factor structure and the PID-5 hierarchical structure. In light of the findings, future research in non-Western countries should aim to establish normative values for the general population in order to better identify the presence of maladaptive traits, as well as investigate how facet traits can help distinguish between what is normal and abnormal in a culture or language.

REFERENCES

Alansari, B. M. (1997). The psychometric Properties of NEO Five – factor Inventory (NEO-FFI-S) based on

 the Kuwaiti Society. Psychological Quarterly, 7, 277-310.

American Psychiatric Association. (1994). Diagnostic and Stadistical Manual of Mental Disorders IV-TR (4th

 ed.). Washington, DC: American Psychiatric Publishing.

American Psychiatric Association (APA) (2013). Diagnostic and statistical manual of mental disorders (5th

 ed.). Arlington, VA: American Psychiatric Publishing.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (5th

 ed.). Washington, DC: American Psychiatric Association.

Al-Attiyah, A., Megreya, A. M., Alrashidi, M., Dominguez-Lara, S. A. & Al-Sheerawi, A. (2017). The

 psychometric properties of an Arabic version of the Personality Inventory for DSM-5 (PID-5) across three

 Arabic-speaking Middle Eastern countries. International Journal of Culture and Mental Health, 10, 197–

 205.

Al–Dajani, N., Gralnick, T. M. & Bagby, M. (2016). A psychometric review of the Personality Inventory for

 DSM-5 (PID-5): Current status and future directions. Journal of Personality Assessment, 98, 62–81.

Bach, B., Maples Keller, J. L., Bo, S. & Simonsen, E. (2016). The alternative DSM-5 personality disorder traits

 criterion: A comparative examination of three self-report forms in a Danish population. Personality Disorders: Theory, Research & Treatment, 7, 124–135.

Costa, P. T. & McCrae, R. R. (1992). The Revised NEO-PI/NEO-FFI Professional Manual. Odessa, FL:

 Psychological Assessment Resources.

Costa, P. T., & Widiger, T. A. (2009). Personality disorders and the five-factor model of personality.

 Washington: American Psychological Association. http://dx.doi.org/10.1037/10140-000

De Clercq, B., De Fruyt, F., De Bolle, M., Van Hiel, A., Markon, K. E. & Krueger, R. F. (2014). The hierarchical structure and construct validity of the PID-5 trait measure in adolescence. Journal of Personality, 82, 158–169.

De Fruyt, F., De Clercq, B., De Bolle, M., Wille, B., Markon, K., & Krueger, R. F. (2013). General and maladaptive traits in a five-factor

framework for DSM-5 in a university student sample. Assessment, 20(3), 295–307. https://doi.org/10.1177/1073191113475808

Few, L. R., Miller, J. D., Rothbaum, A. O., Meller, S., Maples, J., Terry, D. P., Collins, B., & MacKillop, J.

(2013). Examination of the Section III DSM-5 diagnostic system for personality disorders in an outpatient clinical sample. *Journal of abnormal psychology*, *122*(4), 1057–1069. https://doi.org/10.1037/a0034878

Fossati, A., Krueger, R. F., Markon, K. E., Borroni, S. & Maffei, C. (2013). Reliability and validity of the   personality inventory for DSM-5 (PID-5): Predicting DSM-IV personality disorders and psychopathy in community-dwelling Italian adults. Assessment, 20, 689–708.

Griffin, S. A., & Samuel, D. B. (2014). A closer look at the lower-order structure of the personality inventory   for DSM-5: Comparison with the five-factor model. Personality Disorders: Theory, Research, and Treatment, 5(4), 406–412. https://doi.org/10.1037/per0000074.

Han, K., Colarelli, S. M., & Weed, N. C. (2019). Methodological and statistical advances in the consideration of

cultural diversity in assessment: A critical review of group classification and measurement invariance

testing. *Psychological   assessment*, *31*(12),   1481–1496. https://doi.org/10.1037/pas0000731

Hambleton, R. K. (2005). Issues, designs and technical guidelines for adapting tests into multiple languages and cultures. In R. K. Hambleton, P. F. Merenda, & C. D. Spielberger (Eds.), Adapting psychological and

educational tests for cross-cultural assessment (pp. 3–38). Mahwah, NJ: Lawrence Erlbaum.

Hopwood, C. J., Kotov, R., Krueger, R. F., Watson, D., Widiger, T. A., Althoff, R. R., Ansell, E. B., Bach, B.,

Michael Bagby, R., Blais, M. A., Bornovalova, M. A., Chmielewski, M., Cicero, D. C., Conway, C., De

Clercq, B., De Fruyt, F., Docherty, A. R., Eaton, N. R., Edens, J. F., Forbes, M. K., … Zimmermann, J.

(2018). The time has come for dimensional personality disorder diagnosis. *Personality and mental*

health, *12*(1), 82–86. https://doi.org/10.1002/pmh.1408

Kajonius, P. J. (2017). The short personality inventory for dsm-5 and its conjoined struc- ture with the common

five-factor model. International Journal of Testing, 17(4):372– 384.

Kamalzadeh L, Nayeri V, Soraya S, Shariat SV, Alavi K. (2016). Determining test- retest reliability and internal

consistency of the persian version of personality inventory for diagnostic and statistical manual of mental

disorders-(PID-5) among medical students and patients with psychi- atric disorders. J Isfahan Med Sch. 34(393):901–7.

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D. & Skodol, A. E. (2012). Initial construction of a

maladaptive personality trait model and inventory for DSM-5. Psychological Medicine, 42, 1879–1890.

Krueger, R. F., Hopwood, C. J., Wright, A. G. C. & Markon, K. E. (2014). DSM-5 and the path toward

empirically based and clinically useful conceptualization of personality and psychopathology. Clinical Psychology: Science & Practice, 21, 245–261.

Quilty, L. C., Ayearst, L., Chmielewski, M., Pollock, B. G., & Bagby, R. M. (2013). The psychometric

properties of the personality inventory for DSM-5 in an APA DSM-5 field trial sample. Assessment, 20,

362–369.

Roskam, I., Galdiolo, S., Hansenne, M., Massoudi, K., Rossier, J., Gicquel, L. & Rolland, J.-P. (2015). The

psychometric properties of the French version of the Personality Inventory for DSM-5. PLOS ONE, 10, 1–

13. https://doi.org/10.1371/journal.pone.0133413.

Tyrer P. (2015). Personality dysfunction is the cause of recurrent non-cognitive mental disorder: a testable

hypothesis. *Personality and mental health*, *9*(1), 1–7. https://doi.org/10.1002/pmh.1255

Tyrer, P., Reed, G. M., & Crawford, M. J. (2015). Classification, assessment, prevalence, and effect of

personality disorder. *The Lancet (British Edition)*, *385*(9969), 717–726. https://doi.org/10.1016/S0140-6736(14)61995-4

Vandenberg, R. J., & Lance, C. E. (2000). A Review and Synthesis of the Measurement Invariance Literature:

Suggestions, Practices, and Recommendations for Organizational Research. Organizational Research Methods, 3(1), 4–70.

Wright, A. G., Calabrese, W. R., Rudick, M. M., Yam, W. H., Zelazny, K., Williams, T. F., Rotterman, J. H., &

Simms, L. J. (2015). Stability of the DSM-5 Section III pathological personality traits and their longitudinal associations with psychosocial functioning in personality disordered individuals. Journal of abnormal psychology, 124(1), 199–207. https://doi.org/10.1037/abn0000018

Zimmermann, J., Altenstein, D., Krieger, T., Holtforth, M. G., Pretsch, J., Alexopoulos, J., Spitzer, C., Benecke,   C., Krueger, R. F., Markon, K. E., & Leising, D. (2014). The structure and correlates of self-reported

DSM-5 maladaptive personality traits: findings from two German-speaking samples. Journal of   personality disorders, 28(4), 518–540. https://doi.org/10.1521/pedi_2014_28_130