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Reliability and factorial validity of long and brief versions of the inventory of personality organization in a Latvian sample

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ABSTRACT

The aim of this study was to examine the construct validity and reliability of long and brief versions (57 and 16 items) of the inventory of personality organization (IPO) in a Latvian non-clinical sample. The actuality of this study is dictated by the number of persons suffering from personality disorders, and the excessive need for reliable constructs for the assessment of personality in the normality-abnormality range. The total number of participants of the study was 1118, recruited in several sub-samples, which were employed for the investigation of the factor structure, psychometric properties, test-retest, and convergent validity of the IPO-57 and IPO-16 scales. The 3-factor structure, obtained by confirmatory factor analysis, was replicated in the Latvian-speaking sample for long and brief IPO versions. Both constructs achieved adequate model fit psychometric indices and sufficient internal consistency, and the test-retest reliability was also approved. The convergent validity of IPO with aggressivity, negative affectivity, and non-adaptive personality measures was established. In the current study, we adapted a very fundamental psychodynamic/psychoanalytic construct in the Latvian language and replicated the previously empirically established IPO three-dimensional model, whereas the novelty in IPO construct convergent validity research was the establishment of convergent validity with non-adaptive personality traits measured by the Personality Inventory for DSM-5 Brief Form (PID-5-BF). Both versions of IPO are recommended for further use in the research in Latvian language samples, for clinical purposes to assess the level of psychic functioning, and for treatment planning and evaluation purposes.

Key words: Personality organization; personality structure; personality disorders; non-adaptive personality traits; psychometric properties.

Introduction

Origin and core premise of the personality organization construct

Kernberg (1984) and his team created the theoretical model of personality organization (PO) construct (Kernberg, 1984) in the 1990s within the framework of contemporary psychoanalytic object relations theory. However, the longer history of the PO model goes back not only to

the mid-1960s, when the term *borderline personality organization* was used by Kernberg (1965), but even back at the end of the 19th century, when the term *pathogenic organization* was mentioned to describe the set of multiple consequences of experienced trauma (Freud, 1893/1962). The most influential, direct forerunners of the concepts of defensive splitting and other primitive emotional states were Klein (1935) and Fairbairn (1946). According to Kernberg (2012), Erikson's theories, especially - ego identity and ego diffusion concepts (Erikson, 1956), were also significant for the PO construct.

The core premise of the PO construct states that emotional ill-being, identity disturbances, and problematic behavioural derivatives, typical of personality disorders, are caused by an underlying psychic structure or organization, which is of *nature and nurture*¹ etymology (Kernberg, 1984; Kernberg & Caligor, 2005; Lenzenweger *et al.*, 2001). From a developmental perspective, *the internalized emotional relations between self and significant others become the fundamental building blocks of the human mind*, stored in affective memory, represented by the internalized models of behaviour, and capacity of cognitive framing or the modulation and the contextualization of affects in perceived relations between the self and others (Kernberg, 2015; Yeomans *et al.*, 2015). PO measures the patterns of affective, cognitive, and behavioural responses to environmental stimulation (Kernberg, 2015) through *dimensions of psychic functioning* (Kernberg, 1984; Lenzenweger *et al.*, 2001; Yeomans *et al.*, 2015), recently also called *aspects* (Yeomans *et al.*, 2015) or *key domains of personality functioning* (Clarkin *et al.*, 2017), namely: primitive defences (PD), identity diffusion (ID), and reality testing (RT) (described further in text). Accordingly, the actual degree of disturbance (or optimal condition) in these three dimensions form the particular order (Doering & Horz, 2012) or PO, which fits somewhere in the continuum from normal to abnormal personality characteristics. PO construct is primarily aimed to assess the middle layer of the normality-abnormality continuum, which is characteristic first, for personality disorders, second, for other enduring psychopathologies (Lenzenweger *et al.*, 2001). Thus, PO assesses enduring (chronic) characterological organization of personality (Kernberg, 1984), also known by the analogous term - psychological structure, defined as a stable and enduring pattern of mental functions (Yeomans *et al.*, 2015).

The clinical utility of the PO construct is not limited

to practitioners of various forms of psychoanalytic/psychodynamic treatment, it can be used as a supplementary assessment tool for psychiatric purposes (Doering & Hoerz, 2012). However, for the professionals of the psychoanalytic/psychodynamic approach, the PO construct is a daily working tool - essential not only for the diagnosis and formulation of psychotherapeutic goals and treatment strategies - but, above all, PO dimensions are embodied as a *clinical thinking mode*, permanently present in clinical work. The PO construct is one of the most central constructs in contemporary psychoanalytic approaches (Koelen *et al.*, 2012). The aim of the current study was to examine the construct validity, internal consistency, and test-retest reliability of the inventory of personality organization (IPO; Lenzenweger *et al.*, 2001) in a 57-item version (hereafter IPO-57) and its brief form IPO-16 (Zimmerman *et al.*, 2013) in a Latvian non-clinical sample.

IPO tool and its dimensions

The construct of PO from a theory, initially based on clinical observations, was first embodied in the form of a semi-structured interview - structured interview of personality organization (STIPO; Stern *et al.*, 2010). The reliability and validity of STIPO and its revised version STIPO-R (Clarkin *et al.*, 2017) were established in English-speaking samples (Clarkin *et al.*, 2017; Stern *et al.*, 2010). Parallely to the development of the semi-structured interview, which is a very informative, though demanding clinical assessment tool in terms of time and professional resources, a self-report measure - the IPO (Lenzenweger *et al.*, 2001) was validated (even before the structured interview), which made the PO concept available to a broader circle of clinicians and researchers.

Although, the IPO dimensions PD, ID and RT share the common affect-related basis, any dimension reveals a particular aspect of psychic functioning. PD indicates an individual's capacity/incapacity to experience complex and well-modulated affects without the loss of impulse control (Yeomans *et al.*, 2015, p. 7). The PD dimension contains statements on the main primitive psychic mechanisms applied unconsciously and consciously to deal with the affects raised by intrapsychic or extra psychic stimuli. PD determines the subjective experience of individuals who suffer from poor/insufficient ability to regulate or *to understand and absorb the affect* (Yeomans *et al.*, 2015, p. 7), also called deficiencies of cognitive framing, mentioned before (Kernberg, 2015). According to the most recent neuro-psychoanalytical assumptions, repression plays an actuating role (Smith & Solms, 2018) before other, secondary order PD (listed further) are activated due to the prevalence of peak affects, which cannot be regulated in a satisfactory way and thus *bypass thinking by means of premature automatization* (Smith & Solms, 2018). The main PD are splitting, projective identification, idealization/devaluation, primitive denial, omnipo-

¹ The co-influence of both neurobiological factors and emotional experience are responsible for the development of personality (Kernberg, 1984, Lenzenweger *et al.*, 2001, Kernberg & Caligor, 2005), what is in line with the premise of the threshold liability model - a cornerstone for a dimensional approach, which states that the combination of genetic factors and exposure to emotionally stressful experiences predispose the development of personality disorders (Jang & Vernon, 2018). The empirical evidence verifies the continuity between childhood psychopathology and the onset of personality disorders in adulthood (Zarrella *et al.*, 2017).

tence, omnipotent control, and acting out (Yeomans *et al.*, 2015; Kernberg, 1984). These defence mechanisms are responsible for the excessive mood swings and impulsivity, but the latter - launches the impulsive outbursts of verbal and/or physical aggression and risky behaviour.

Second IPO dimension - ID reveals a person's eventual tendency to a feeble, fragmented self-concept or persistent negative identity, an insufficiently integrated concept of others, boundary confusion, and inconsistent goals (Kernberg & Caligor, 2005). ID dimension reveals difficulties to modulate affects regarding the perception of self and other persons. A central aspect of coherent identity is the capacity to see oneself (and another person) in the range of healthy ambivalence, specifically - psychic ability of integrating positive and negative affects and aspects of self (and others) in the perception of self (and others) under the influence of defensive splitting, which brings diffused identity symptomatology: the contradictory and unstable self-regard, or seemingly very convincing and stable, but unrealistic image of oneself (or other) (Kernberg *et al.*, 2015; Yeomans *et al.*, 2015). The healthy end of ID dimension refers to the coherent concept of self as well as behaviour that reflects self-coherence (Yeomans *et al.*, 2015).

RT dimension assesses the capacity to differentiate self from non-self or intrapsychic stimuli from outer reality, as well as the psychic ability for empathy in ordinary social reality contexts. Difficulties of RT are connected with excessive affective arousal - permanence of peak affects or painfulness of affects (in the past and/or in the present), what influences realistic perception and learning about reality - capacity to differentiate animate and inanimate reality, the perception of the present environment and the identification of social reality (Kernberg, 2015). Very severe disturbances of RT function are typical for the psychotic organization of thoughts and behaviour or psychotic states (Kernberg, 1984; Yeomans *et al.*, 2015).

Existing research on IPO-57 construct validity provides evidence for several possible factor structures (Baretto *et al.*, 2017; Berghuis *et al.*, 2009; Ellison & Levy, 2012; Lenzenweger *et al.*, 2001; Preti *et al.*, 2015). According to Lenzenweger and colleagues (2001), IPO-57 2- and 3-factor structures, yielded in the original study, provide the best fit for Kernberg's theoretical construct, where the aspects of PD and ID collude and are considered as generic borderline phenomena, whereas RT impairments form an additional, separate factor. Several short IPOs have been validated: Japanese (Igarashi *et al.*, 2009), German (Zimmerman *et al.*, 2013), French-Canadian (Verreault *et al.*, 2013), and others.

This research was motivated by clinical and scientific requests for a Latvian language version of IPO. Accumulated data from epidemiological studies reveal that the prevalence of at least one personality disorder ranges from 5% and 15% (median=11.5%) of research samples (Morgan & Zimmerman, 2018, p. 69). Therefore, we intended to investigate the theoretically described PO dimensions

and previously empirically established factor structure of IPO-57 and IPO-16 by means of the hypothetical-deductive testing of existing models using confirmatory factor analysis (CFA; Haig, 2005), since factor analysis plays a crucial role in the development of comprehensive models for the definition of personality traits (Livesley, 2018). In regard to the original PO model, which claims that PO's underlying structure forms three factors (PD, ID, and RT), we decided to examine the construct validity of IPO-57 (Lenzenweger *et al.*, 2001) and IPO-16 (Zimmermann *et al.*, 2013) in the Latvian population by highlighting two research questions: i) whether the adapted IPO-57 and IPO-16 Latvian versions will confirm the 3-factor structure and achieve sufficient model fit psychometrics; and ii) what the test-retest reliability, internal reliability, and convergent validity of IPO-57 and IPO-16 are.

Positive and negative affects and aggression measures were included to perform convergent validity (in the current and also in previous IPO research) because all IPO dimensions are directly related to the psychic ability to deal with affective experiences. Specifically, affective disbalance, negative affectivity as a particular psychopathological symptom, impulsivity, and uncontrollable expression of aggression as a problem of impulse control are broadly acknowledged psychopathological symptoms for character pathologies (Jorgensen, 2018; Livesley, 2018). PD dimension reveals the tendency to use primitive defensive mechanisms, ID dimension explores the affective perception of self and others, whereas RT examines the capacity to deal with external reality and to differentiate inner processes: affects, thoughts, fantasies from real-world phenomena. There is ongoing, intensive research on the relationship of non-adaptive personality traits construct, as a proposed measure of the third section of *Diagnostic and Statistical manual of mental disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013a) with other measures of personality traits, for example, see the study of Stover and colleagues (2019). The authors of this research considered as highly important the examination of the association of PO construct with non-adaptive personality traits, which is a novelty in the IPO research field, because: i) the dimensions/factors of both constructs measure the personality in the normality-abnormality continuum; ii) the PO construct was one of the dimensional constructs that, among others, influenced the development of the alternative classification model for personality disorders (Livesley, 2018) of the DSM-5 (APA, 2013a).

Materials and methods

Participants

The total number of participants whose data were enrolled in the data analysis for this study was 1118. In the total number of this study 7 subjects or 6% of participants

were not included, the data of 4 participants were not included due to the high percentage of missing values, whereas the data of 3 respondents were considered as outliers (see in *Data analysis*). All 1118 or 100% of participants were native Latvian speakers, which was the baseline condition for participation in the research (other sociodemographic characteristics, see Table 1). The population of Latvia comprise approximately 1.5 million adult persons (above 18 years), and 0.95 million or 62% of them, are Latvian speaking persons (Central Statistical Bureau Republic of Latvia, 2021).

We utilized several sets of research samples (see Table 1) at two stages of data gathering: i) the data for the IPO-57 sample (n=925) and three subsamples (n=269, n=622, n=60) were gathered in 2020; and ii) the data for the IPO-16 sample (n=193) were collected in the late spring of 2021. The sizes of samples for CFA were planned according to the following approach accepted in psychometrics: at least 10 respondents per item for CFA and at least N=200-300 sample size. For the IPO-57 sample, 925 voluntary participants were recruited - 70% (652) in four universities and 30% (276) in three other environments - the governmental and municipality institutions, the public services sector, and the hobby-groups; 96% (888) filled in pen and paper questionnaires, whereas 4% (37) preferred to fill in the electronic questionnaire. Students from one university were offered participation in the IPO test-retest procedure (n=60). The IPO-16 sample consisted of 62% (120) of respondents from two universities and one design college and 38% (73) from two other environments - the governmental and municipality institutions and the public services sector; 16% (31) of IPO-16 sample filled in the pen and paper version of IPO-16 and PID-5-BF surveys, whereas 84% (162) of respondents filled in the electronic survey using Google Forms.

Measures

The *demographic data survey* included questions about: i) age, where respondents were asked to reveal their age in an exact number of years; ii) gender, where three categories (male, female, and other) were offered; iii) their education level, where six categories (primary, secondary, secondary-professional, college, bachelor, and master's or higher) were offered; and iv) nationality, where two categories (Latvian and other) were offered (see in *Participants* and Table 1).

Personality organization was measured with the 57 items version of the *Inventory of Personality Organization* (IPO-57, Lenzenweger *et al.*, 2001). IPO-57 is a self-assessment questionnaire that measures three factors: PD (16 items), ID (21 items), and RT (20 items). Every statement is evaluated with a 5-point Likert scale ranging between 1 (never true) and 5 (always true). IPO-57 was adapted for the Latvian population in this research (for the reliability coefficients of Cronbach's alpha and McDonald's omega, see Table 2).

The second measure of personality organization applied in the current study was the 16 items version of the IPO-16 (Zimmermann *et al.*, 2013). IPO-16 is a short version of IPO-57, validated and standardized for the German language. The PD subscale consists of 5 items, the ID subscale of 6, and the RT scale of 5 (for the reliability coefficients of Cronbach's alpha and McDonald's omega, see Table 2).

Positive and negative affects were measured with the Latvian language version of the *positive and negative affect scale* (PANAS; Watson *et al.*, 1988; Upmane, 2010), similarly to the original scale, which consists of positive affect (PA; 10 items) and negative affect (NA; 10 items) subscales, evaluated with 5-point Likert scales from 1

Table 1. Sociodemographic and descriptive statistics characteristics of participants.

Sociodemographic and descriptive statistics characteristics	IPO-57 sample (n=925)	PANAS and BPAQ sample (n=269)		Samples PID-5-BF sample (n=622)		Test-retest sample for IPO-57 (n=60)		IPO-16 sample (n=193)	
Age	18-68	18-47		18-68		18-44		18-68	
M (SD)	26.54 (9.55)	23.17 (4.18)		28.05 (10.80)		23.10 (5.54)		23.17 (8.55)	
Gender									
Females	71.6%	171	64.6%	468	75.4%	49	81.7%	106	54.9%
Males	28.0%	98	36.4%	150	24.1%	11	18.3%	83	43.0%
Did not indicate	0.4%	-	-	2	0.3%	-	-	-	-
Other	-	-	-	1	0.2%	-	-	4	2.1%
Education									
Primary	2.2%	4	1.5%	15	2.4%	-	-	20	10.4%
Secondary	31.9%	158	58.7%	122	19.6%	38	63.3%	93	48.2%
Professional	8.7%	38	14.1%	41	6.6%	11	18.3%	33	17.1%
College	18.8%	16	5.9%	153	24.6%	4	6.7%	5	2.6%
Bachelor	27.7%	45	16.7%	207	33.3%	5	6.3%	24	12.4%
Master's and higher	10.5%	8	3.0%	81	13.0%	2	3.3%	18	9.3%
Did not indicate	0.3%	-	-	3	0.5%	-	-	-	-

(very slightly or not at all) to 5 (extremely). The Latvian-language version of PANAS was used as a measure for IPO-57 convergent validity; thus, the researchers repeated the convergent validity measuring pattern from the original IPO research (Lenzenweger *et al.*, 2001; for the reliability coefficients of Cronbach's alpha and McDonald's omega, see Table 2).

Aggression was assessed with the *Buss-Perry aggression questionnaire* (BPAQ) consists of four subscales: physical aggression (8 items), verbal aggression (5 items), anger (5 items), and hatred (7 items), evaluated with 5-point Likert scales from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me) (Buss & Perry, 1992; Gaitniece-Putane, 2008). The verbal aggression variable was excluded from the research because this subscale did not achieve an acceptable internal consistency level (for the reliability coefficients of Cronbach's alpha and McDonald's omega, see Table 2).

For the examination of non-adaptive personality traits, the Latvian-language version of the *personality inventory for DSM-5-Brief Form* (PID-5-BF; APA, 2013b; de

Starceva-Apele & Rascevska, 2022) is a self-assessment measure of 25 items across 5 factors (5 items in each). Every item is evaluated with 4-point Likert scales from 0 (very false or often false) to 3 (very true or often true). Higher scores in subscales indicate non-adaptive personality traits (for the reliability coefficients of Cronbach's alpha and McDonald's omega, see Table 2).

Procedure

First, our study was accepted by the Ethical Committee of the Department of Psychology, Faculty of Education, Psychology and Art, University of Latvia (Protocol No. 134/15.03.2016). Then, we obtained the authorizations for the adaptation of IPO-57 and the use of PID-5-BF from their authors/intellectual rights holders (J. F. Clarkin for IPO-57; APA for DSM-5-BF). Additionally, we contacted one of the authors of the IPO-16 German-language version (J. Zimmermann) and received permission to conduct the adaptation survey with the use of the 16-item model construct. According to the standards of

Table 2. Descriptive statistics, normality test and reliability of research variables.

Variables, samples	M (SD)	Me	K-S P	Cronbach's α /Mc Donald's ω	Test-retest reliability
IPO-57 (n=925)					
Primitive defences	33.22 (9.82)	33.00	0.001	0.89/0.89	0.80
Identity diffusion	45.58 (14.17)	45.00	0.001	0.92/0.92	0.81
Reality testing	34.80 (10.70)	32.00	0.001	0.90/0.90	0.87
Total	113.60 (31.05)	112.00	0.001	0.96/0.96	0.86
IPO-16 (n=193)					
Primitive defences	12.00 (3.15)	12.00	0.001	0.71/0.73	0.84
Identity diffusion	15.51 (4.16)	16.00	0.025	0.73/0.74	0.75
Reality testing	11.05 (3.60)	11.00	0.001	0.75/0.75	0.73
Total	38.61 (8.94)	38.00	0.076	0.85/0.85	0.95
PID-5-BF (n=622)					
Negative affect	4.20 (3.07)	4.00	0.001	0.78/0.81	
Detachment	3.27 (2.13)	3.00	0.001	0.55/0.55	
Antagonism	3.45 (2.45)	3.00	0.001	0.67/0.67	
Disinhibition	3.86 (2.89)	4.00	0.001	0.78/0.79	
Psychoticism	2.62 (2.19)	2.00	0.001	0.66/0.67	
Total	17.39 (9.60)	15.00	0.001	0.88/0.88	
PID-5-BF (n=193)					
Negative affect	6.80 (3.42)	7.00	0.001	0.74/0.76	
Detachment	4.98 (2.98)	5.00	0.001	0.68/0.69	
Antagonism	4.55 (3.30)	4.00	0.001	0.77/0.78	
Disinhibition	6.06 (2.96)	6.00	0.001	0.73/0.72	
Psychoticism	5.75 (3.08)	6.00	0.001	0.71/0.72	
Total	28.19(11.73)	27.00	0.058	0.88/0.88	
BPAQ (n=269)					
Physical aggression	18.69 (4.16)	18.00	0.001	0.60/0.61	
Anger	11.94 (3.20)	12.00	0.001	0.62/0.61	
Hatred	15.86 (3.37)	16.00	0.001	0.53/0.54	
Total	67.59 (12.13)	66.00	0.001	0.78/0.80	
PANAS (n=269)					
Positive affects	33.02 (5.98)	33.00	0.055	0.80/0.80	
Negative affects	24.87 (6.86)	38.00	0.039	0.80/0.80	
Total	58.07 (11.37)	56.00	0.001	0.84/0.84	

the *Guidelines for Translating and Adapting Tests* (2nd ed.; International Test Commission, 2017), IPO-57's original English-language version was translated into Latvian by two independent translators who were not previously familiar with IPO-57 - one was an English philologist, the other was recruited via a translation agency. The authors of this research compared the two translated versions with the original, discussed the cultural and linguistic nuances, and agreed on the most clearly understandable formulations. We undertook a pilot round with IPO-57 with a group of 10 respondents, received their feedback, and made some final corrections to the sentence constructions of some of the unclear statements. We asked another independent translator to provide the back-translation to English, which was sent to Prof. J. F. Clarkin for approval. Since IPO-16 is a brief version of IPO-57, it did not require additional translation procedures.

We contacted the responsible bodies of each setting, and the parties agreed on ethical obligations: voluntary participation, confidentiality, anonymity and the use of data only for research purposes. The ethical duties of the researchers (confidentiality, anonymity, use of data, *etc.*) were explained to each group of students and every single participant from any other environment.

Data analysis

SPSS 25.0 software (IBM Corp., 2017) was used for data processing and statistical data analysis. Additionally we employed R software (R Core Team, 2020). Due to the non-normal data distribution (see *Results*), we applied only non-parametric methods in this study: Spearman correlations and Chi-squared tests. The Mahalanobis distance was used for outlier analysis (on the basis of the IPO-57, 3-factor model), and three outliers were accordingly removed from the IPO-57 sample. No outliers were discovered in the IPO-16 sample.

To determine whether the underlying structure of our data matched the hypothesized models well, we applied diagonally weighted least squares (DWLS) estimations as the most popular CFA method for non-normal distributed data, based on the polychoric correlation matrix (Savalei & Rhemtulla, 2013). For the comparative fit index (CFI) and Tucker-Lewis index (TLI), the mandatory cut-off value is required to be above 0.90 (Hu & Bentler, 1999). For absolute model fit indices - the root mean square error

of approximation (RMSEA) and the standardized root mean square residual (SRMR) - we relied on recommended cut-off values under 0.08 (Hu & Bentler, 1999). To increase model fit, we used the Modification Indices function, which is defined as χ^2 value with 1 degree of freedom; values larger than 10.83 indicate that the parameter would have a P-value <0.001.

All scales were assessed by two reliability indices for more precise internal consistency assessments. For the calculation of the internal consistency of McDonald's omega coefficient, we used R software. For the test-retest reliability estimation, we considered correlation scores of $r=0.70$ and higher as acceptable (European Federation of Psychologists' Associations, EFPA, 2013). For the calculation of convergent validity, Spearman's two-tailed correlations were used. According to the test review model (TRM; EFPA, 2013), when instruments are less similar, lower values than $r=0.60$ are considered adequate, whereas for instruments measuring similar constructs, the required correlation values are above $r=0.60$.

Results

Factorial validity

The data distribution in the samples (see Table 2) only partly reached the criteria of normal distribution, according to the Kolmogorov-Smirnov test with Lilliefors criteria. This dictated the use of CFA for not-normally distributed data (see *Data analysis*). In the current research, we ran CFA for the 3-factor model of the full and brief versions of the Latvian language IPO (see Table 3 for all conducted CFA).

The original, unchanged IPO 3-factor solution of IPO-57 (Lenzenweger *et al.*, 2001) in the Latvian sample was very close to an adequate model fit level; only the cut-off value of the TLI index was insufficient. We analysed modification indices and discovered that in the IPO-57 sample, the modification indices for the path of the 1st item of the RT subscale (38th item of IPO-57) was above the recommended cut-off point (10.83). When we placed this item in the PD subscale (the content of the PD scale allowed us to do that), the slightly modified IPO-57 3-factor model reached an adequate level in all model fit indexes ($TLI=0.907$). However, in the following statistical data analysis for the current research, we used the original

Table 3. Fit indices of retrieved IPO-57 and IPO-16 3-factor confirmatory models.

Model	Items	Factors	χ^2	df	CFI	TLI	RMSEA	SRMR
IPO-57	57	3	6968.428	1536	0.900	0.896	0.062 (0.060-0.063)	0.074
IPO-57*	57	3	6412.240	1536	0.910	0.907	0.059 (0.057-0.060)	0.070
IPO-16°	16	3	340.735	101	0.974	0.969	0.051 (0.045-0.047)	0.043
IPO-16#	16	3	230.814	101	0.920	0.905	0.082 (0.068-0.096)	0.078

*Item RT1 added to Primitive Defenses factor; °retrieved from main sample (n=925); #retrieved from independent sample (n=193).

IPO-57 version. The goodness of fit indices in the original IPO-57 research for the 3-factor solution were $TLI > 0.90$ (Lenzenweger *et al.*, 2001).

When we conducted CFA on an IPO-16 3-factor model with IPO-57 sample data (by extracting 16 items from 57), the obtained cut-off values of the model fit indices were exceptional $CFI = 0.974$, $TLI = 0.969$ (see Table 3 for other indices). Lastly, we tested the IPO-16 model fit on the data of the independent IPO-16 sample, and model fit indices

reached the adequate range of model fit cut-off values (see Table 3). The descriptive statistics of IPO-57 and IPO-16 items show that the majority of mean values of IPO-57 items are in the range of 1.54 to 2.39, while the mean values of IPO-16 items are from 1.94 to 3.16 (see Table 4). Corrected item-total correlations show results above 0.30 for the IPO-57 scale and above 0.28 for the IPO-16 scale, whereas standardized factor loadings are above 0.52 for IPO-57 and above 0.54 for IPO-16 (see Table 4).

Table 4. Standardized factor loadings, descriptive statistics and corrected item-total correlations of IPO-57 and IPO-16 3-factor solution.

IPO-57 item	Factor loadings			M (SD)	Corrected item-total correlation	IPO-16 item	Factor loadings			M(SD)	Corrected item-total correlation
	PD	ID	RT				PD	ID	RT		
1	0.64			1.93 (0.82)	0.52						
2	0.72			2.42 (1.01)	0.60						
3	0.56			2.20 (0.94)	0.47						
4	0.66			2.20 (1.07)	0.52	1	0.37		2.70 (0.83)	0.28	
5	0.53			1.71 (0.83)	0.43						
6	0.63			1.95 (0.93)	0.54	2	0.58		2.33 (0.98)	0.45	
7	0.66			1.90 (0.92)	0.55						
8	0.73			2.42 (1.06)	0.62						
9	0.71			2.01 (0.84)	0.60	3	0.63		2.08 (0.90)	0.39	
10	0.54			2.05 (1.09)	0.46						
11	0.63			2.09 (1.04)	0.54						
12	0.69			1.97 (0.95)	0.59	4	0.77		2.31 (0.91)	0.55	
13	0.63			1.86 (0.95)	0.53						
14	0.71			2.25 (1.01)	0.62	5	0.80		2.60 (0.95)	0.64	
15	0.68			2.04 (0.94)	0.58						
16	0.74			2.27 (1.13)	0.64						
17		0.61		1.97 (0.96)	0.53						
18		0.60		2.55 (1.26)	0.50						
19		0.60		1.94 (0.93)	0.51	6		0.60	2.39 (0.94)	0.43	
20		0.64		2.12 (1.02)	0.55						
21		0.70		2.33 (1.13)	0.60						
22		0.58		1.78 (0.91)	0.47						
23		0.74		2.08 (1.09)	0.62						
24		0.74		1.96 (0.91)	0.62						
25		0.62		1.92 (0.95)	0.52	7		0.54	2.08 (0.91)	0.39	
26		0.64		2.10 (0.56)	0.56						
27		0.62		2.21 (1.02)	0.53						
28		0.69		2.38 (1.14)	0.58	8		0.69	2.74 (1.11)	0.52	
29		0.72		2.50 (1.23)	0.62	9		0.71	3.16 (1.26)	0.54	
30		0.74		2.39 (1.09)	0.63						
31		0.57		2.20 (1.15)	0.49	10		0.56	2.57 (1.21)	0.43	

To be continued on next page

Reliability and convergent validity

Cronbach's alpha and McDonald's omega coefficients yielded psychometrically adequate, good and excellent results for the internal consistency of IPO-57 and IPO-16 scales (see Table 2). All acquired correlations of IPO-57 summary scale with PD, ID and RT subscales reached $r=0.91$, $r=0.92$ and $r=0.84$ respectively, whereas correlations on the subscale level showed the following values: $r=0.81$ for PD and ID, $r=0.64$ for PD and RT, and $r=0.62$ for ID and RT, all r values being significant at the level of $P<0.001$. The IPO-16 summary scale correlation with PD, ID and RT subscales reached $r=0.81$, $r=0.84$, and $r=0.79$, whereas IPO-16 subscale correlations were $r=0.55$ for PD and ID, $r=0.52$ for PD and RT, and $r=0.47$ for ID and RT, all at the significance level of $P<0.001$.

The results of the test-retest reliability examination re-

veal an adequate strength of correlations between the first and second measures for IPO-57 and IPO-16 (see Table 2). The first and second measures were organized within an interval of four weeks. The IPO-16 subscales achieved a good range of test-retest reliability (*e.g.*, $0.70 \leq r < 0.80$), while the total IPO-57 and IPO-16 scores reached an excellent range (*e.g.*, $r \geq 0.80$). The convergent validity of IPO-57 and IPO-16 constructs was examined by correlating it with aggression, positive and negative affect measures, and non-adaptive personality trait measures (see Table 5). In the current study, PD, ID and RT subscales and the IPO-57 total scale significantly correlated with physical aggression, hatred, and anger in a range from $r=0.33$ to $r=0.46$. Also, the association of PD, ID and RT with negative affects were supported by our research; correlation coefficients were between $r=0.38$ and $r=0.47$, and thus an adequate range of cut-off values for

Table 4. Continued from previous page.

IPO-57 item	Factor loadings			M (SD)	Corrected item-total correlation	IPO-16 item	Factor loadings			M(SD)	Corrected item-total correlation
	PD	ID	RT				PD	ID	RT		
32		0.71		2.39 (1.12)	0.61						
33		0.68		2.10 (1.12)	0.58						
34		0.75		2.19 (1.08)	0.59						
35		0.73		2.21 (1.11)	0.58						
36		0.69		2.27 (0.99)	0.58	11		0.53	2.61 (0.88)	0.42	
37		0.69		2.08 (0.94)	0.60						
38			0.59	2.55 (1.15)	0.49						
39			0.58	1.66 (0.82)	0.44	12		0.80	1.94 (0.96)	0.61	
40			0.74	2.05 (1.01)	0.61						
41			0.58	1.54 (0.78)	0.43						
42			0.68	1.74 (0.85)	0.53	13		0.60	2.06 (0.96)	0.43	
43			0.68	1.97 (1.03)	0.55						
44			0.67	1.59 (0.89)	0.45						
45			0.63	1.45 (0.81)	0.39						
46			0.72	1.64 (0.79)	0.57						
47			0.63	1.64 (0.86)	0.48						
48			0.66	1.66 (0.82)	0.50	14		0.72	2.20 (1.04)	0.52	
49			0.69	1.81 (0.93)	0.53						
50			0.59	1.63 (0.87)	0.43						
51			0.60	1.57 (0.81)	0.42	15		0.46	2.63 (1.07)	0.34	
52			0.61	1.71 (0.91)	0.45						
53			0.61	1.55 (0.88)	0.42						
54			0.52	1.56 (0.87)	0.37						
55			0.73	1.60 (0.85)	0.53	16		0.71	2.22 (1.01)	0.54	
56			0.68	1.90 (0.93)	0.53						
57			0.63	2.10 (1.04)	0.51						

the convergent validity for related constructs is reached. The expected negative association of IPO-57 factors with positive affects was proved only for the ID subscale; neither of the other two subscales (PD, RT) nor the total scale proved this association.

All IPO-57 variables showed statistically significant correlations with all non-adaptive personality trait domains (see Table 5). The majority of IPO-16 scales also significantly correlated with PID-5-BF suggested subscales: PD, RT, and the IPO-16 total scale correlated with all non-adaptive personality traits, but the ID subscale did not show a significant correlation with the antagonism trait, although it correlated significantly with other subscales. The recommended cut-off value of above 0.60 (EFFPA, 2013), confirming the convergent validity of instruments measuring similar constructs (IPO-57, IPO-16 and PID-5-BF), was achieved by several subscales and the total scales of both IPO versions.

Discussion

In the current study, we explored the 3-factor structure and psychometric properties of IPO-57 and IPO-16 in a Latvian non-clinical population. The 3-factor structure, established in the original research into IPO-57 (Lenzenweger *et al.*, 2001) and IPO-16 (Zimmermann *et al.*, 2013), fitted the data of the Latvian-speaking population of the current study, and both acquired models showed an adequate level of goodness of fit indices. The findings on the factorial validity of IPO-57 in the Latvian sample support the 3-factor model established in the IPO original study (Lenzenweger *et al.*, 2001), even more, the majority of items were not migrating among other subscales, except the 1st item of the RT subscale (38th item of IPO-57) which was prone to migrate to PD factor. The 3-factor

structure of IPO-57 was acquired also in the Italian (Preti *et al.*, 2015) and Portuguese (Barreto, 2017) samples and the values of the goodness of fit indices of both studies were close to the corresponding indices of IPO-57 Latvian language version, however Barreto and colleagues (2017) report on the mitigation of items among IPO-57 subscales. The results of our study are inconsistent with other established IPO factor structures in different cultural and social environments where CFA of the original IPO-57 3-factor solution did not reach an adequate model fit level (Igarashi *et al.*, 2009; Ellison & Levy, 2012; Barreto *et al.*, 2017). The model fit indices $CFI=0.913$, $TLI=0.963$, and $RMSEA=0.067$ of the 3-factorial IPO-16 German-language version (Zimmerman *et al.*, 2013) were in a similar range to the corresponding indices of the Latvian language IPO-16, as well as the IPO-16 items did not migrate across the scales of IPO-16 German and Latvian language models.

Factor loadings, which is the criterion of the one-dimensionality of the models, were in a higher range for the IPO-57 model and in a lower range for the IPO-16 model in the Latvian language samples of the current study. According to the theoretical IPO model, the underlying psychic structures (PD, ID and RT), which reveal the actual level of psychic organization, are mutually highly related factors, which is empirically substantiated in both previous research and this study, but simultaneously PD, ID and RT are separate, distinguishable personality dimensions/traits. Inter-subscale correlations of Latvian language IPO-57 are similar to the results of the original IPO-57 research, where PD and ID correlations are above 0.80, whereas for PD and RT and ID and RT in the area of 0.60 (Lenzenweger *et al.*, 2001), which fully support the theoretical assumptions of the PO construct, that PD and ID scales contain the items on mental phenomena, which partly overlap and are prone to collude in one fac-

Table 5. Spearman correlation coefficients of IPO-57 and IPO-16 with affects and non-adaptive personality traits for convergent validity.

Convergent validity measures	IPO-57				IPO-16			
	Primitive defences	Identity diffusion	Reality testing	Total defences	Primitive defences	Identity diffusion	Reality testing	Total
PID-5-BF								
Dissociation	0.66**	0.65**	0.53**	0.69**	0.51**	0.31**	0.41**	0.49**
Detachment	0.46**	0.42**	0.40**	0.48**	0.26**	0.15*	0.33**	0.30**
Psychotism	0.39**	0.42**	0.58**	0.51**	0.39**	0.32**	0.59**	0.52**
Negative affects	0.64**	0.69**	0.53**	0.70**	0.49**	0.61**	0.40**	0.62**
Antagonism	0.51**	0.49**	0.42**	0.53**	0.35**	0.13	0.25**	0.53**
PID-5-BF total	0.73**	0.73**	0.66**	0.79**	0.54**	0.42**	0.53**	0.60**
BPAQ								
Physical aggression	0.42**	0.41**	0.35**	0.46**	-	-	-	-
Anger	0.35**	0.39**	0.33**	0.42**	-	-	-	-
Hatred	0.38**	0.37**	0.39**	0.45**	-	-	-	-
BPAQ total	0.40**	0.40**	0.36**	0.45**	-	-	-	-
PANAS								
Positive affects	-0.06	-0.15*	-0.01	-0.09	-	-	-	-
Negative affects	0.42**	0.39**	0.38**	0.47**	-	-	-	-

tor. Previous research on IPO-16 (Zimmermann *et al.*, 2013) reveals a slightly higher range of correlation coefficients between the total scale and subscales, namely 0.87 till 0.94, in comparison to correlation coefficients obtained in actual study, which ranged from 0.79 till 0.81. PD, ID and RT subscales of the Latvian language IPO-16 correlate at the level of 0.50, which is lower than the correlation between IPO-57 subscales, thus the IPO-16 tool distinguishes better the separate dimensions of PO. According to Sellbom and Tellegen (2019, p. 4), in psychological assessments of personality, researchers should not be too *fixated on model fit indices* as models are hardly ever entirely unidimensional; thus, theoretical expectations should be tempered. To sum up all the results of the current study on the factor structure of IPO-57 and IPO-16, we can conclude that the factorial validity of the Latvian-language IPO long and brief versions was established, and Kernberg's theoretical model of PO, which is based on three personality dimensions/aspects (PD, ID and RT), was supported by our data. The internal consistency levels of Latvian language version of IPO-57, achieved in the current study, were in a good or excellent range, whereas those of IPO-16 reached an acceptable level on subscales and the good level on the total scale. The findings of the current study are consistent with the previous research, where Cronbach's alpha coefficient of IPO-57 subscales was in a range from 0.81 to 0.88 (Lenzenweger *et al.*, 2001), and Chronbach's alpha coefficient for the IPO-16 German-language total scale reached 0.85 (Zimmermann *et al.*, 2013). Accordingly, the results of our study show, that the items of both Latvian-language IPO constructs are internally congruent on the level of subscales and total scales.

Both Latvian language IPO versions were proved as reliable measures in terms of consistency of results at a time interval of four weeks. The IPO-16 and IPO-57 subscales achieved a good and excellent range of correlations between two measures, according to the criteria of TRM (EFPA, 2013). Our results go in line with previous findings of the test-retest reliability of IPO measures, where subscale and total scale correlation coefficients between first time and second times measures ranged from 0.72 to 0.78 for IPO-57 tool (Lenzenweger *et al.*, 2001), and - from 0.79 to 0.86 for IPO-16 subscales (Zimmermann *et al.*, 2013). To summarize, the 3-factor structure of the Latvian-language versions of IPO-57 and IPO-16 was validated, and internal consistency and test-retest reliability psychometrics were successfully approved. Thus, we conclude that the expectations (derived on the basis of Kernberg's PO model and previous research) were met by the data of the Latvian sample of the current study.

The convergent validity of both IPO constructs was investigated through association with aggressivity, affectivity, and non-adaptive personality traits. We anticipated and were proven correct that IPO-57 scales were associated with PO dimensions and all subtypes of aggression

and negative affects. These findings are in line with the original IPO research, where irritability and assault correlated with all IPO subscales in a range from 0.25 to 0.32 (Lenzenweger *et al.*, 2001), nevertheless our study revealed an even higher correlation of the PO construct with aggression, which was above the level of 0.40, thus convergent validity for related (but not similar) constructs was reached and corresponded to the range of the suggested values of TRM (EFPA, 2013).

We also expected the negative association of PD, ID and RT with positive affects, but this was the only one that was not proved to the expected degree - only ID showed a negative association with positive affects. These findings contradict the findings of the original IPO research, where a negative association of positive affects with RT and PD were found (Lenzenweger *et al.*, 2001). However, these results indirectly support the findings of Sollberger and colleagues (2011) that ID distinguishes individuals with mild borderline personality disorder from individuals with severe borderline disorder - it was found that the group with high ID scores had statistically significantly higher rates of negative affect, stress symptoms, general psychiatric symptoms, anxiety, and depression. Nevertheless, due to the affective instability of the personality disorders patients, who suffer from a sense of incoherence of their personalities and therefore feel, behave, and see themselves differently at different times (Lenzenweger *et al.*, 2001), the presence/absence of positive affects has to be estimated cautiously by taking into consideration the hypomanic or even manic tendencies that may take place.

The IPO-57, IPO-16 and PID-5-BF constructs are designed for the assessment of dimensions or traits characteristic of personality disturbances. Statistically significant correlations between non-adaptive personality traits and IPO-57 and IPO-16 dimensions were expected, and the acquired correlation coefficients revealed a strong mutual associations between all scales of both constructs, except for ID (IPO-16) with antagonism. If we follow test development and adaptations guidelines (EFPA, 2013) that suggest high levels of correlations (above $r=0.6$, see more in *Materials and methods* and *Results*) for convergent validity measures, which assess similar phenomena, then from the current research, we can derive conclusions about the strongest associations between the PO construct and PID-5-BF (on the level of subscales) of two pairs of associations: PD and dissociation and PD and negative affects, and ID and dissociation and ID and negative affects. Thus, the convergent validity of the PO construct with aggression, positive and negative affects, and non-adaptive personality traits was established, which is in line with the theoretical premises of the PO construct and object relations theory.

Kernberg assumes that unprocessed experiences of peak-affective states motivate individuals' general irritability and hypersensitivity to frustration and pain: *Positive and negative affective memories are built up*

separately in early internalization of these experiences and, later on, are actively split or dissociated from each other [...]. This development evolves into two major, mutually split domains of early psychic experience, an idealized and a persecutory or paranoid one (Kernberg, 2012, p. 9). In addition, Jorgensen (2018, p. 113) states that individuals with strong affects and impulses are unable to experience themselves as authors of their own behaviour, and their sense of agency and autonomy is impaired, which is associated with identity diffusion and painful experiences of incoherence and inauthenticity. Thus, we assume that the two pairs of associations illustrate very central areas of disturbance, which is in line with possible endophenotypes of personality disorders - affective instability, impulsivity, and cognitive disorganization (Siever, 2005).

Limitations and future directions

There are several limitations to the current study. Although, according to the rule of thumb, the sample sizes were sufficient and the acquired IPO models achieved an adequate model fit, we assume that bigger sample sizes would provide additional evidence about IPO-57 and IPO-16 models. We also admit that our research sample did not have optimal gender and age distribution. The reliability coefficients acquired for the PID-5-BF Detachment subscale and BPAQ Hatred subscale did not reach an ideally convincing level, therefore the association of these two variables with IPO factors should be interpreted cautiously. Unfortunately, we could not include verbal aggression since it did not reach an adequate internal validity level in our research subsample. The clinical validity of IPOs and gender-specific aspects of IPO-57 and IPO-16 are the main tasks for future research on the PO construct in the Latvian population, as this would allow us to prepare the instrumental basis for further use in clinical and non-clinical populations and in psychotherapy research.

Clinical implications

We consider the PO construct - the full and brief versions studied in the current research - as a dimensional map of the psychic continuum for mental health professionals dealing with personality pathology. We reason that the use of a psychometrically sound construct of IPO-57 or IPO-16, used in the form of a pen and paper, electronic questionnaire, or assessment interview is clinically beneficial in many ways, we will name three of them. First, it enriches practitioners' ability to identify very difficult, sometimes seemingly overlapping clinical phenomena of disordered personality, for this reason - IPO dimensions (PD, ID, RT) help to group the symptoms and understand the peculiarity of the disturbance of every patient. Accordingly, IPO-57 and IPO-16 can be used as a main or an additional assessment tool for disturbances of personality and other psychopathologies.

Second, thorough assessment of PD, ID and RT helps to formulate a psychotherapeutic treatment plan and form a prognosis of treatment response. In the mental health institutions where the team of professionals decide which counselling and/or psychotherapy approach would be more beneficial for the particular client, assessment information gathered through an IPO would serve additional predictive accuracy. Whereas, specifically for the practitioners of psychodynamic/psychoanalytic treatment(s) assessment data would be considered by taking the decision between interpretive or supportive psychotherapy (depending on the severity of disturbances in every PO dimension/aspect), predicting the eventual amount of transference-interpretations (non-low-medium-high) (Sollberger *et al.*, 2011), and observing or assessing the patient's clinical progress. Additionally, in regard to the view of Doering and Herz (2012) about the benefits of the application of the IPO tool parallelly to other psychiatric assessment tools, we consider that IPOs could be highly informative for treatment planning purposes if combined with other psychodynamic/psychoanalytic grounded instruments, for example, the assessment of anaclitic-introjective personality configurations for a more precise understanding of patients disturbances, emotional needs and progress of treatment, examined by Werbart and colleagues (2017).

Third, since the IPO items are thoroughly formulated and contain the evidence of several decades of clinical observations and empirical research from multiple studies in different cultural environments, the IPO item formulations are of great clinical help, in distinguishing a patient's resistances in the course of psychotherapeutic treatment. As an illustration, the 3rd item on the PD subscale of IPO-57 reads as follows: *I feel it has been a long time since anyone really taught or told me anything I did not already know.* There are patients who use this type of statement regularly during their treatment since omnipotence, boredom, devaluation, and a tendency to simplify are common defensive patterns for the patients with the sustainable character pathology. So, when a patient makes this type of utterance, it might be helpful for the clinician to recall the IPO-57 construct in which this *position* was specified as a commonly used manifestation of premature psychic defences. Thus, if the PO construct is used for thorough assessment of the peculiarities of the character pathology, it can prepare the professional for the transference-countertransference difficulties - this understanding can be creatively used for a better understanding of the patient-therapist inter-subjective relationship, especially - perception of therapists interpretations, and the difficulties of the co-creational process in the course of treatment, see also Knight (2021).

The authors of the current research share the view that the disorder-centred approach should evolve to a person-centred approach (Luyten & Fonagy, 2021) in the conceptualization (and treatment) of personality disturbances.

We think, the alternative personality disorders model, offered by the DSM-5 classification (APA, 2013a), besides the categorical model, is an important turning point towards the development of an accurate assessment of personality in the normality-abnormality continuum and strengthening the client-centred values in both - defining and treatment of personality disorders. Ultimately, beside the aim to establish the factorial validity and reliability of IPO-57 and IPO-16 in the Latvian population, this study was our response to the invitation (APA, 2013a, p. 809) to continue the research on the dimensional assessments of personality traits and personality disturbances.

Conclusions

The current study proved the factorial validity and internal consistency of the PO construct in the sample of another cultural environment, which serves additional evidence that RT, ID and RT are scientifically grounded personality traits assessing normal and abnormal personality functioning among different cultures. The clinical utility of the construct of PO is in its capacity to reveal the tendency towards adverse or/and malignant character-structures, which was verified by proving the evidence of the convergent validity of Latvian language long and brief versions of the IPO with negative affects, aggression, and non-adaptive personality trait measures. From now on, two PO construct measurement versions in Latvian language - IPO-57 and IPO-16 are available for clinicians for case conceptualization and clinical decision making (especially for personality disorders), as well for further research purposes.

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