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THE LOCATION OF PERSONALITY DISORDERS
IN THE CIRCUMPLEX OF PERSONALITY METATRAITS

The aim of the paper was to characterize personality disorders in terms of the dimensions of the Circumplex of Personality Metatraits (CPM) developed by Strus, Cieciuch, and Rowiński. It was expected that personality disorders characterized by the profiles of traits from the five-factor model of personality (FFM) would be located in the sector delimited by poles Gamma- and Delta- and including pole Alfa-. The author analyzed data collected in a sample of 2,284 subjects tested by means of the NEO-FFI and three other instruments: the Personality Beliefs Questionnaire, the Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II), and the TALEIA-400A questionnaire (**T**est for **A**xia**L** **E**valuation and **I**nterview for Clinical, Personnel, and Guidance **A**pplications) for the assessment of personality disorders as well as compared them with the data from the meta-analysis by Saulsman and Page (2004) concerning the relations between personality disorders and FFM traits. The obtained correlations confirmed the research expectations. In Discussion, the author points out the heuristic value of the CPM for differentiating the norm from pathologies, which includes the differential diagnosis of personality disorders.

Keywords: five-factor model of personality; Circumplex of Personality Metatraits; personality disorders; Personality Beliefs Questionnaire (PBQ); SCID-II; TALEIA-400A.

INTRODUCTION

Despite the theoretical significance of the five-factor model of personality (FFM; McCrae & Costa, 2005), composed of five basic traits: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism, its emergence did not put an end to debates on personality structure. Based on the intercorrelation of FFM traits, two higher-order traits were initially distinguished: the *Alpha*, dimension, comprising neuroticism (with a negative loading in factor analysis), conscientiousness, and agreeableness, and the *Beta* dimension, encompassing openness and extraversion (Digman, 1997), referred to, respectively, as Stability and Plasticity (DeYoung, Peterson, & Higgins, 2002). In further studies, scholars also identified the General Factor of Personality (GFP; Musek, 2007; Rushton, Bons, & Hur, 2008; Rushton & Irwing, 2009) – a bipolar dimension comprising all FFM traits: from low neuroticism, extraversion, openness, agreeableness, and conscientiousness, to neuroticism, introversion, low openness, low agreeableness, and low conscientiousness. Debate on higher-order dimensions is in progress and concerns not only measurement issues (Ashton, Lee, Goldberg, & de Vries, 2009; Revelle & Wilt, 2013; Zawadzki & Strelau, 2014) but also theoretical ones (see DeYoung, 2014). One of the most interesting models of higher-order factors was recently proposed by Strus, Cieciuch, and Rowiński (2014) as the Circumplex of Personality Metatraits (CPM). The authors assume that higher-order factors (called metatraits) are the real dimensions of personality, whose poles also enable the identification of basic types – or configurations – of FFM traits. Thus, in this conceptualization, they drew on the results of typological analyses of FFM traits (Asendorpf, Borkenau, Ostendorf, & Van Aken 2001; Zawadzki & Strelau, 2003). The main dimensions are orthogonal metatraits *Alpha* and *Beta* and two further dimensions located in their background, independent of each other: *Gamma* (the metatrait corresponding to GFP) and *Delta* (not previously identified in analyses of the structure of FFM traits). Thus, the Circumplex comprises four bipolar dimensions, with metatrait *Alpha* as the "stability–disinhibition" dimension, whose poles – in terms of FFM traits – represent low neuroticism, agreeableness, and conscientiousness (Alpha+) vs. neuroticism, low agreeableness, and low conscientiousness (Alpha-). The *Beta* dimension is "plasticity–passiveness"; pole Beta+ is a combination of extraversion and openness, while Beta- combines introversion and low openness. The *Gamma* dimension comprises configurations of FFM traits from Gamma+ (schematically coded as O+, C+, E+, A+, N-) to Gamma- (O-, C-, E-, A-, N+) and represents "integration–disharmony." Metatrait *Delta* is a dimension reflect-

ing "self-restraint–sensation seeking;" its poles are: Delta+ (O-, C+, E-, A+, N-) vs. Delta- (O+, C-, E+, A-, N+). This model not only integrates the trait-based and typological approaches, but also makes it possible to distinguish the poles corresponding to disordered and nondisordered personality: the sector between poles Delta- and Gamma- seems to characterize mental disorders accurately (Strus et al., 2014; see Figure 1). It is the verification of these predictions regarding the CPM – i.e., the location of disorders characterized by FFM traits in the model of personality metatraits – that the present study is devoted to. In a different study (Zawadzki, 2016), such an analysis was performed for the relations of two metatraits – *Gamma* and *Delta* – with personality disorders. The present study is an extension of those analyses, with a slightly different methodology.

One of the research directions inspired by FFM concerned an attempt at the integration of research on personality and mental disorders (Widiger & Trull, 2007). These studies were based on the hypothesis advanced by Widiger and Trull (1992), postulating that symptoms of disorders are related to one or several FFM traits and that personality disorders may be treated as a configuration marked by extreme intensity of all FFM traits. According to this hypothesis, personality disorders – as encompassing all FFM traits – may qualify for analysis in the context of CPM metatraits. The problem is particularly valid in the time of the ongoing debate on the diagnosis of personality disorders, reflected in the "unfinished" process of change in the way of diagnosing personality disorders in DSM-5 (APA, 2013; Oldham, Skodol, & Bender, 2014), initiated due to the limitations of the categorial approach to personality disorders in the previous DSM and ICD systems. In both classifications, a personality disorder is defined as ". . . [an] enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture . . ., is inflexible and pervasive across a broad range of personal and social situations, . . . leads to clinically significant distress or impairment in social, occupational, or other important areas of functioning, [and] . . . is stable and of long duration, and its onset can be traced back at least to adolescence or early adulthood" (APA, 2000, 2013; WHO, 1992). After this general criterion has been met, based on characteristic traits, one of ten types of personality disorders is determined, which are additionally grouped into three clusters in DSM:

– Cluster A, comprising disorders characterized by bizarreness and eccentricity (schizoid, schizotypal, and paranoid personality disorders),

– Cluster B, comprising disorders characterized by drama, emotionality, and disregard of consequences (histrionic, narcissistic, antisocial, and borderline personality disorders),

– Cluster C, comprising disorders characterized by tension, anxiety, and horror (avoidant, dependent, and obsessive-compulsive personality disorders).

According to Oldham and colleagues (2014), it is the distinguishing of clusters that constitutes a substitute of a dimensional approach in DSM, though an attempt at revolutionizing the system is the proposal described in Section III of DSM-5 as an "Alternative DSM-5 Model for Personality Disorders" (APA, 2013, pp. 761–781). According to this model, the diagnosis of a disorder would require detecting a moderate impairment in personality functioning in at least two out of four areas: identity and self-direction (I/self areas) as well as empathy and intimacy (interpersonal areas) – and detecting the presence of pathological personality traits. Disturbances in **I/self** and **interpersonal** functioning constitute the core of personality psychopathology, and in this diagnostic model they are assessed on a continuum. Pathological traits are grouped into five broad categories reflecting the variability in the levels of particular traits. These are: negative emotionality (vs. emotional stability), isolation (vs. extraversion), antagonism (vs. agreeableness), disinhibition (vs. conscientiousness), and psychoticism (vs. clarity of thought and judgment). The further division of domains comprises 25 specific aspects of personality traits identified on the basis of clinical observations. The assessment of the level of functioning and the identification of pathological personality traits allows for distinguishing specific personality disorders, whose number the authors of this proposal limited to 6 (antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal personality disorders). The "alternative model" takes into account the research on personality structure to some extent only; based on clinical observations, it is a point of departure for further studies.

The existing studies on the possibility of diagnosing disorders based on FFM traits have not yielded unambiguous findings (Zawadzki, 2009). In particular, scholars have questioned the possibility of differentiating specific disorders based on configurations of FFM traits – analyses revealed a high similarity of trait profiles, which could be classified into two clusters, showing resemblance to two basic personality types: with excessive and low self-control (Zawadzki & Strelau, 2003), corresponding to internalizing and externalizing disorders, respectively (Zawadzki, 2009). The aim of the present study was to test these findings – to locate personality disorders characterized by FFM traits in the model of CPM metatraits. The main research hypothesis was that personality disorders characterized by profiles of FFM traits are located in CPM sectors between poles Delta- and Gamma- (including pole Alpha- located between them). As regards specific disorders, antisocial, narcissistic, and histrionic personality should be

located close to pole Delta-, as corresponding to externalizing disorders (cf. DeYoung, Peterson, Séguin, & Tremblay, 2008). Internalizing disorders (avoidant, dependent, and schizoid personality) should be located close to pole Gamma-, while the remaining disorders (intermediate ones, combining the characteristics of internalizing and externalizing disorders, namely: borderline, schizotypal, and paranoid personality) should be located close to pole Alpha-. With regard to obsessive-compulsive disorder, I formulated a research question – because in the previous it was found analyses to be located close to pole Delta+, in the Delta+ and Gamma- sector, which is outside the area defined in CPM as personality pathology. The presented analysis therefore involved distinguishing quantitative dimensions corresponding to CPM metatraits and analyzing their associations with personality disorders. I took into account the data collected in the present study by means of three instruments measuring personality disorders, which – through aggregation – yielded generalized data. Due to the possible specificity of the tested groups, the instruments for diagnosing personality disorders, and the instrument measuring FFM traits, I also included data from the meta-analysis by Saulsman and Page (2004), pertaining to the relationship between personality disorders and FFM traits. These data served the purpose of validating the results obtained in the presented study. Apart from the analysis of the location of personality disorders in the CPM system of metatraits – additionally and only for the data from the present study – I also applied regression analysis in order to determine the accuracy of characterization of a given disorder based on FFM traits and CPM metatraits.

METHOD

Samples

In the analysis, I used the results collected in a group of 2,284 subjects tested with the NEO-FFI inventory assessing FFM traits and with questionnaires assessing personality disorders. The first group consisted of 1,752 persons, mainly participants in traffic accidents, investigated by means of the PBQ (see Zawadzki, 2016). The second group consisted of 305 participants in traffic accidents who had volunteered to undergo a therapy for posttraumatic disorders (only data from the measurement before therapy were qualified for analysis) and was investigated with the SCID-II personality questionnaire, while the third group consisted of 227 nonhospitalized individuals recruited for the study on a random

basis in several voivodeships, for whom data were obtained by means of TALEIA-400A (see Zawadzki, Rozmysłowska, Nowocin, Popiel, & Pragłowska, 2012). All the procedures performed were approved by the Ethical Committee. All groups completed packages of questionnaires; the SCID-II was completed separately, directly before the psychiatric assessment qualifying for therapy. The demographic characteristics of the samples are presented in Table 1.

Table 1
Demographic Characteristics of the Groups

Sample	*N*	Gender	Age: range (*M*, *SD*)
PBQ	1752	854 F / 898 M	18-82 (35.98, 13.37)
SCID-II	305	218 F / 87 M	18-82 (37.12, 12.75)
TALEIA-400A	227	143 F / 84 M	20-80 (38.34, 14.94)

Measures

FFM traits were assessed by means of the NEO-FFI (Zawadzki, Strelau, Szczepaniak, & Śliwińska, 1998). Personality disorders were measured with three inventories: PBQ, TALEIA-400A, and SCID-II. The PBQ is a Polish adaptation of the *Personality Beliefs Questionnaire* (Beck et al., 2001; Zawadzki, Popiel, Pragłowska, & Newman, 2017; cf. Zawadzki et al., 2012). The instrument was developed for the assessment of personality disorders on the basis of the respondent's specific beliefs about themselves and the nature of the surrounding world, in accordance with the cognitive specificity hypothesis, postulating the existence of core beliefs characteristic for a given disorder (cognitive schemas; Beck et al., 2001). These schemas determine the reception of and response to reality (specific emotions and behaviors), and therefore they may be treated as pivotal indices of a particular personality disorder. The Polish version of the PBQ enables the diagnosis of 11 disorders: the 10 disorders distinguished in the DSM-IV classification plus passive-aggressive personality disorder. The number of items in the scales ranges from 10 to 12; there is a 5-point response scale reflecting the degree to which the respondent agrees with a given statement (from *I believe it totally* to *I don't believe it at all*). In the presented analyses, I have omitted the scores on the scale measuring passive-aggressive personality disorder because it is not included in the DSM-IV-TR and DSM-5. The second instrument administered was the SCID-II (Structured Clinical Interview for DSM-IV Axis II Disorders; First, Gibbon, Spitzer, Williams, & Benjamin, 2010).

Because data from the questionnaire are used in the interview, I used only the results obtained by means of the former diagnostic method. The questionnaire serves as a screening tool for 12 personality disorders (its scales consist of 7 to 17 items), including passive-aggressive and depressive personality disorders (not included in further analyses). The TALEIA-400A (acronym of the full name: **T**est for **A**xia**L E**valuation and **I**nterview for Clinical, Personnel, and Guidance **A**pplications; Version A, with 400 items) is an instrument for diagnosing mental disorder syndromes and personality disorders in accordance with DSM-IV and ICD-10 (Boncori, 2007). It consists of 3 control scales, 8 scales measuring disorder syndromes, and 10 scales measuring personality disorders. The Polish adaptation of TALEIA-400A was developed by Anna Puchtińska and Lucia Boncori in the form of a translation, using only the scores on scales measuring personality disorders (this instrument was applied in the study with the consent of the author and publisher of the original version).

RESULTS

The issues concerning theprocedure of analysis will be discussed together with the presentation of the obtained research results. This procedure was described in detail in an earlier paper (Zawadzki, 2016) and will be only outlined here.

CPM metatraits distinguished
on the basis of FFM traits

I began the analysis by distinguishing two basic dimensions of metatraits – *Gamma* and *Delta* – based on the configurations of FFM traits for four types. In order to obtain types with the expected profiles of FFM traits, I performed *k*-means cluster analysis in the whole sample; for this analysis, based on the theoretically assumed profiles of traits coded as -1/+1 *SD,* I classified the standardized scores on all FFM scales. In terms of content, Type 1 corresponded to pole Gamma+, Type 2 to Gamma-, Type 3 to Delta, and Type 4 to Delta-. The types of the *Gamma* dimension amounted to about 31% of the tested sample each, and *Delta* types amounted to about 19% each. In the next step, I distinguished dimensions differentiating the four types that were assumed to correspond to *Gamma* and *Delta* metatraits. They were obtained as a result of discriminant analysis for standardized scores on FFM scales, separately for the pairs of opposing types (i.e., separately for the two types corresponding to the poles

of the *Gamma* dimension and for the two types corresponding to *Delta* dimension poles) and the recording of discriminatory results. Classifications by discriminant analysis and by cluster analysis were almost fully consistent: only the scores of four subjects were classified differently into Gamma types (the consistency was full for Delta types). On this basis, I assumed that the dimensions generated were a precise reflection of the differences between opposing personality types (subjects representing the remaining types had near-zero mean discriminant scores for a given dimension). The other two dimensions – *Alpha* and *Beta* – were estimated as follows: (a) *Alpha* – based on the sum of discriminant scores for dimensions *Gamma* and *Delta*, and (b) *Beta* – based on the difference between them. The application of an analogous procedure – namely, distinguishing both metatraits as dimensions differentiating opposite types – did not yield a satisfactory solution, since with the assumed zero level of standardized scores on scales E and O for Alpha types as well as A, C, and N for Beta types, a majority of subjects were classified in the cluster analysis as representing these types. The expected profiles of FFM types for both metatraits were ensured by the sum of and difference between dimensions *Gamma* and *Delta*. The summing of *Gamma* (pole "+": O+, C+, E+, A+, N-; pole "-": O-, C-, E-, A-, N+) and *Delta* dimensions (pole "+": O-, C+, E-, A+, N-; pole "-": O+, C-, E+, A-, N+) leads to the elimination of opposing components; as a result, pole Alpha+ is characterized by components C+, A+, and N-, and pole Alpha- – by components C-, A-, and N+. In the case of difference, identical components of both dimensions of *Gamma* and *Delta* are eliminated; as a result, Beta+ is a combination of extraversion and openness, while Beta- is a combination of introversion and low openness. For the results thus obtained, I determined β weights in linear regression (see Table 2). The characteristics of these weights suggests that the *Gamma* dimension is associated with conscientiousness, agreeableness, openness, extraversion, and low neuroticism, the *Delta* dimension – with conscientiousness, agreeableness, low openness, low neuroticism, and introversion, the *Alfa* dimension – essentially, with conscientiousness, agreeableness, and low neuroticism, and *Beta* – with openness and extraversion. These results are fully consistent with the results of analyses of higher-order factors of FFM traits (factors *Alpha* and *Beta* a well as the *GFP*) as well as with the predictions regarding the CPM-based characteristics by FFM traits. These dimensions have a differential character, which means it is possible to characterize both poles of each metatrait.

Table 2
β Weights for the Prediction of Personality Metatraits Based on the Five-Factor Model of Personality

Metatrait / FFM scale	Gamma	Delta	Alpha	Beta
O	.37	-.58	-.13	.67
C	.31	.37	.48	-.03
E	.38	-.63	-.16	.70
A	.23	.42	.46	-.13
N	-.31	-.43	-.52	.07

For these results, I also obtained data suggesting a distribution of discriminant results similar to normal distribution – for the *Gamma* dimension: skewness -0.02, kurtosis 0.34 (the value of the Kolmogorov–Smirnov test $z = .015$, $p = .20$); for *Delta*: skewness -0.18, kurtosis 0.18 (the value of K–S test $z = .021$, $p = .02$); for *Alpha*: skewness -0.07, kurtosis 0.07 (the value of K–S test $z = .016$, $p = .20$); for *Beta*: skewness 0.11, kurtosis -0.07 (the value of K–S test $z = .019$, $p = .05$). The *Gamma* and *Delta* dimensions as well as the *Alpha* and *Beta* dimensions were also practically orthogonal (correlations: -.01 and .05, respectively). The correlations of *Gamma* with *Alpha* and *Beta* were .72 and .73, and for *Delta* they were equal to .69 and -.69, which is fully consistent with the assumptions of the CPM. In all further analyses, I therefore used the discriminant scores thus obtained as indicators of CPM metatraits.
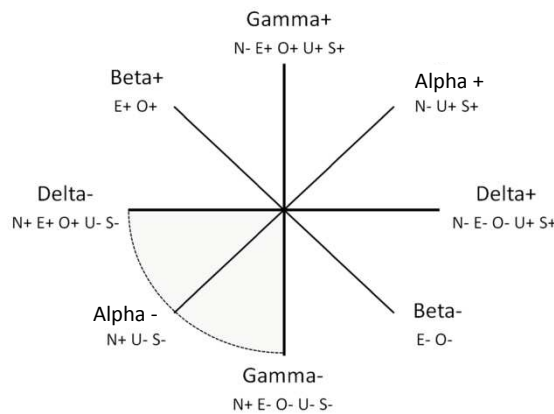

Figure 1. The Circumplex of Personality Metatraits with indicated levels of the five-factor model traits.

The figure was made available for publication by the authors – the modified form is based on: Strus, Cieciuch, and Rowiński, 2014. Reproduced from Zawadzki (2016, p. 205) with the consent of the publisher: "Scholar" Scientific Publishers (Wydawnictwo Naukowe Scholar). Please note that in this figure, reproduced from a Polish-language source, the five factors are coded as letters corresponding to their Polish names: OSEUN instead of the English OCEAN.

Personality disorders characterized by FFM traits

In the whole tested sample, I determined the correlations of FFM scales with scales of inventories measuring personality disorders. In order to assess the validity of the results, I performed a validation analysis of the obtained pattern of associations. For this purpose, I used data from the meta-analysis by Saulsman and Page (2004) concerning the relations between FFM traits and personality disorders. Data for both analyses in the form of correlations of FFM traits with personality disorders are presented in Figure 2, with the data obtained in the present study aggregated for the instruments used (after transformation into Fisher's *z* units and conversion into correlation coefficients).
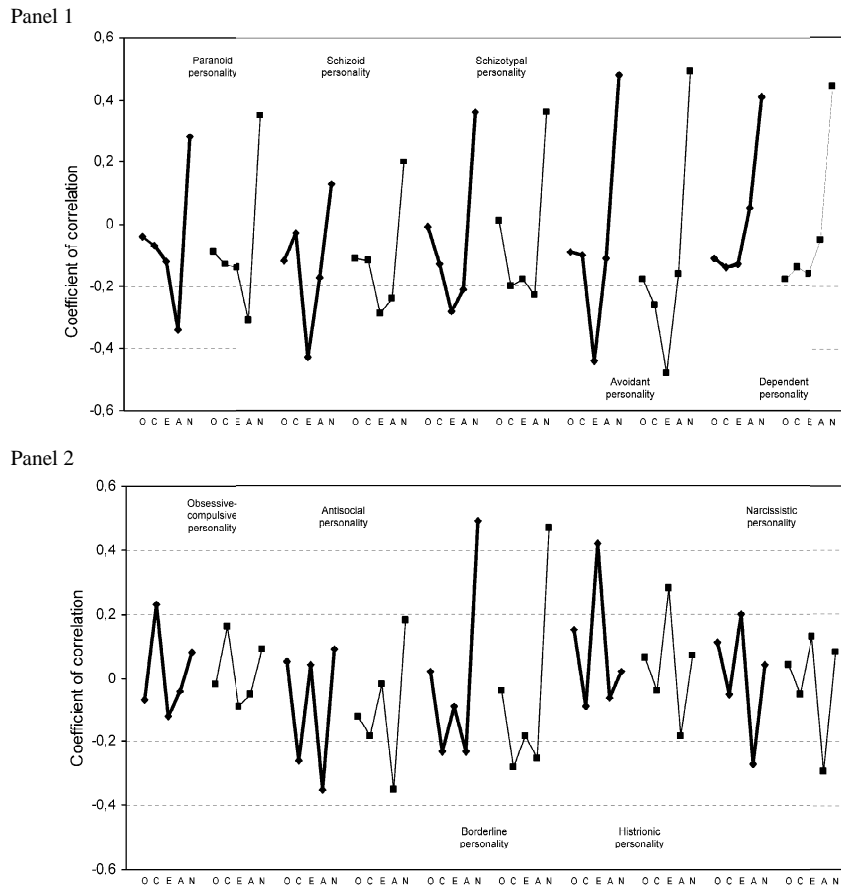
Panel 1

Panel 2

Figure 2. Correlations of the traits of the five-factor model of personality with personality disorders – data from the meta-analysis by Saulsman and Page (2004; the authors' compilation, thick line) and from the present study (thin line); Panel 1: Cluster-A and Cluster-C disorders, and Panel 2: Cluster-B and Cluster-C disorders).

The data reveal a high similarity of the obtained profiles of correlations, with only slight differences (e.g., for antisocial personality disorder). In further analyses, I determined the correlations between profiles of FFM traits for data from the meta-analysis and obtained for the tested sample (after transformation into Fisher's z units). The correlations with data from the meta-analysis were the lowest for schizoid (.88), antisocial (.86), and histrionic (.90) personality disorders. For the remaining disorders, the correlations were .97 or higher. I also obtained results suggesting a relatively low variability of validity between the instruments administered: for PBQ ($Me = .85$), SCID-II ($Me = .96$), TALEIA-400A ($Me = .93$) and high validity for aggregated data ($Me = .97$): the highest for paranoid personality disorder ($Me = .98$) as well as for borderline, avoidant, and dependent personality disorders ($Me = .99$).
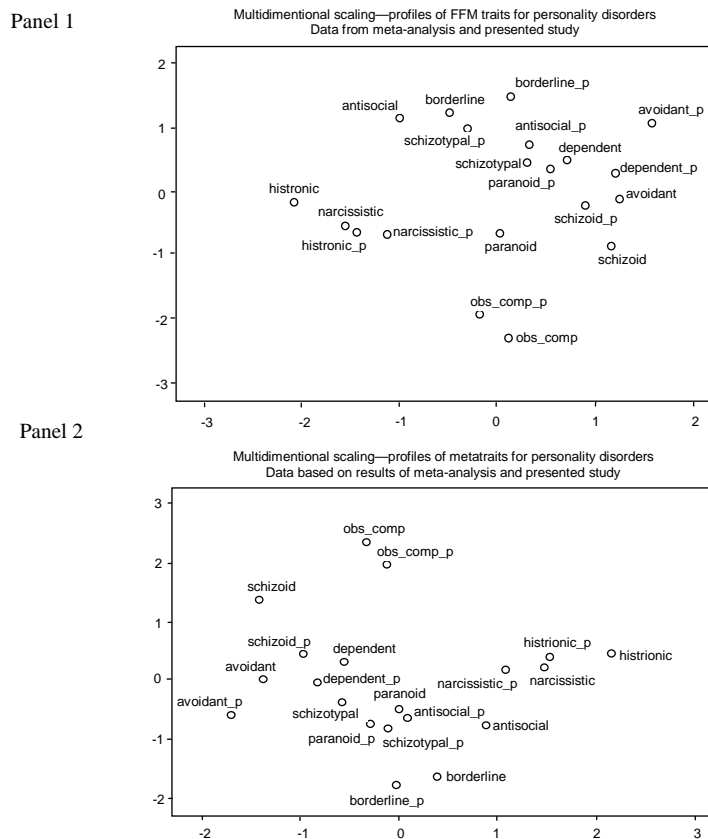
Panel 1

Panel 2

Figure 3. Classification of disorders (multidimensional scaling) based on profiles of correlations with the traits of the five-factor model of personality (Panel 1) and with personality metatraits (Panel 2) for data from the meta-analysis by Saulsman and Page (2004, English names) and from the present study (names of disorders marked by letter "p").

To obtain a generalized pattern of associations and similarities between the two analyses, I also performed a classification of personality disorders on the basis of FFM traits, by means of multidimensional scaling. The obtained results are illustrated in Figure 3 (Panel 1).

The analyses revealed a relatively high convergence of the profiles of FFM traits obtained in the present study with the data from the meta-analysis by Saulsman and Page (2004), which made it legitimate to expect that also the meta-traits-generated on the basis of FFM traits would consistently characterize particular personality disorders. The obtained results essentially confirmed this expectation (Figure 3, Panel 2). For the tested sample, the basis of analysis was the computed correlations between metatraits and personality disorders, aggregated for the three instruments after transformation into Fisher's z units. For data from the meta-analysis, I determined the correlations of the four metatraits, taking into account the values of *beta* weights from the present study for FFM traits and their correlations with disorders, based on the following formula: sum of products of *beta* weight of the FFM scale for a given dimension and the correlation of the FFM scale with the corresponding personality disorder scale. After transformation into Fisher's z units – just like previously for FFM traits – I performed a classification of personality disorders based on CPM metatraits by means of multidimensional scaling. The results showed that the data obtained in the present study are largely consistent with the results of the meta-analysis by Saulsman and Page (2004), which supported performing an analysis of the location of personality disorders on the four dimensions of the CPM.

Personality disorders characterized by CPM metatraits

In this analysis, I used correlations between CPM dimensions and personality disorders. In order to obtain a picture of the associations and consistency of the data from the present study with the meta-analysis data, I classified personality disorders in terms of CPM metatraits by means of multidimensional scaling. Compared to the previous analysis, I also took into account the opposite types. They were distinguished by the median division of the results for each metatrait and by computing the *eta* correlation with a given type (and its transformation into Fisher's z units). In this manner, I obtained the profiles of opposing types for the four metatraits. In the analysis, I performed a CPM-based classification of personality disorders again, using multidimensional scaling, together with position types, which – in order to illustrate the quantitative dimensions and to facilitate the location of disorders in particular sectors – are connected with straight

lines (Figure 4). Panel 1 illustrates the data for the meta-analysis discussed, and Panel 2 – for the present study.
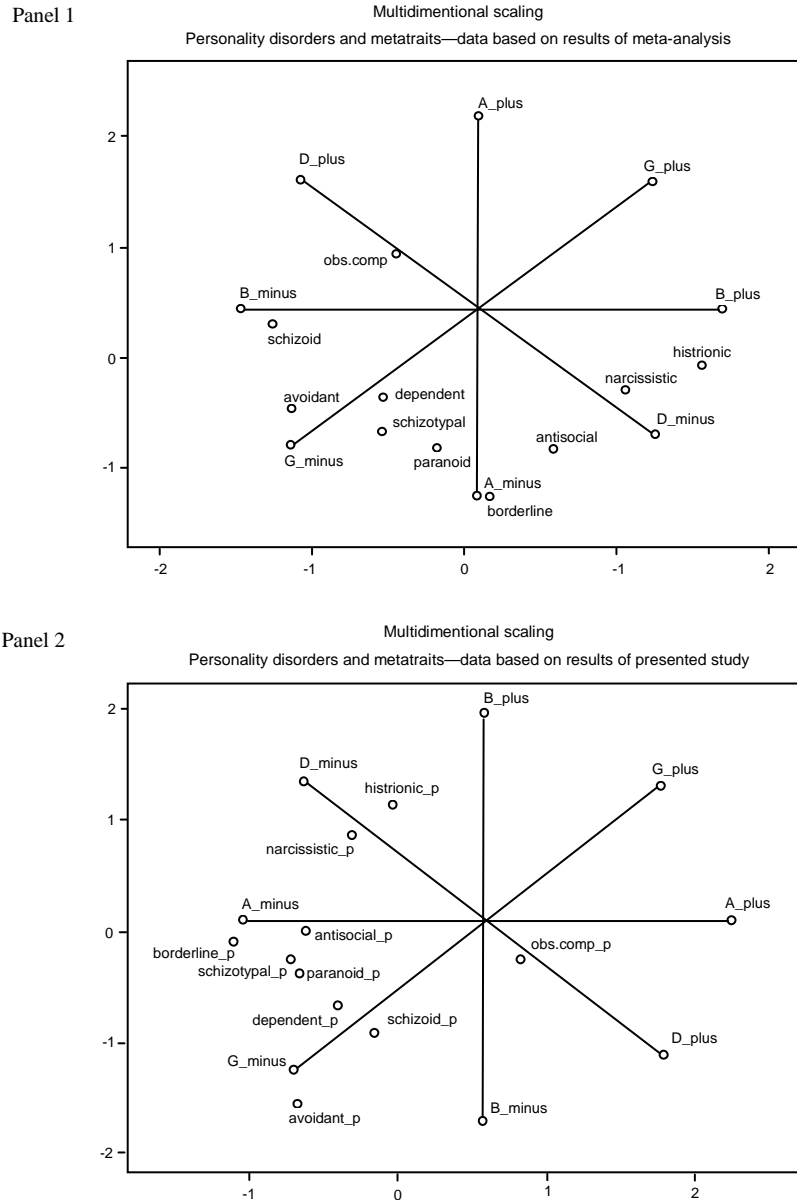
Panel 1

Panel 2

Figure 4. Classification of disorders (multidimensional scaling) based on correlations with personality metatraits for estimated data from the meta-analysis by Saulsman and Page (2004, Panel 1) and from the present study (Panel 2), together with polar personality types.

The obtained results were relatively consistent between the two analyses and mostly in accordance with the theoretical expectations. First of all, personality disorders characterized by metatraits are mainly located in the sector delimited by poles Delta- and Gamma-. As regards specific disorders: very consistently, in both analyses, obsessive-compulsive personality disorder is associated with pole Delta+ (which is outside the sector predicted for personality pathologies in the CPM). A similar divergence was observed for histrionic personality disorder, which is located between poles Beta+ and Delta-, but narcissistic personality disorder is closer to pole Delta- which is consistent with CPM predictions. The greatest divergence between the two sources of data was found in the case of antisocial personality disorder. For data from the meta-analysis, it is located in accordance with CPM predictions: in the sector between poles Alpha- and Delta-, while in the present study its location was found to be close to pole Alpha- (in the sector of Alpha- and Gamma-). For dependent and avoidant personality disorders the data are consistent and point to the location of both disorders close to pole Gamma-. For schizotypal personality disorder, data indicate a location in the sector of Gamma- and Beta-: closer to pole Beta- for data from the meta-analysis and closer to Gamma- for data from the present study Gamma-. Generally, however, the results for internalizing disorders were consistent with CPM predictions. The locations for intermediate disorders were as follows: borderline personality disorder – close to pole Alpha- (consistent between the two sources of data); paranoid and schizotypal personality disorders – between poles Alpha- and Gamma- (closer to Gamma- in the case of meta-analysis data, closer to Alpha- for data from the present study, but generally in accordance with the CPM predictions).

The existing results of profile analyses suggested two clusters of FFM trait profiles, with obsessive-compulsive personality disorder on the border between the two clusters (Zawadzki, 2009), just like for temperamental traits (Zawadzki et al., 2012). Previous analyses for two metatraits – *Gamma* and *Delta* – suggested the existence of three clusters of disorders (Zawadzki, 2016): associated with pole Delta- (histrionic, narcissistic, and schizotypal, associated with pole Gamma- (paranoid, dependent, avoidant, borderline, and antisocial), and the third cluster comprising schizoid and obsessive-compulsive personality disorders (poles Gamma- and Delta+). In the case of the data presented in this study, it is also possible to infer the existence of three clusters, but their composition is somewhat different for each of the two analyses. The first cluster is associated with pole Delta- and comprises histrionic, narcissistic, and antisocial personality disorders (the last of these – only for the meta-analysis data; for data from the

present study, it is associated with pole Alpha-). The second one is associated with pole Gamma- and comprises dependent, avoidant, and schizoid personality disorders (the last of these – only in the present study; based on the meta-analysis, it is associated with pole Beta-) or schizotypal personality disorder (for the meta-analysis; Alpha- in the present study). The third cluster is associated with pole Alpha- and comprises borderline, paranoid, schizotypal, and antisocial personality disorders (the last two of these only in the present study). Obsessive-compulsive personality disorder is located separately from the remaining disorders and associated with pole Delta+. Further analyses carried out for the instruments administered seem to share a common bias in characterizing the personality disorders for which the highest divergences were found compared to the meta-analysis. For all of the instruments, antisocial personality disorder is located in the sector of Alpha- and Gamma- (the most markedly so in the case of the PBQ), schizoid personality disorder in the sector of Gamma- and Beta- (the closest to pole Beta- in the case of the PBQ), and schizotypal personality in the sector of Alpha- and Gamma- (close to Alpha- for SCID-II and PBQ and close to Gamma- for TALEIA-400A).

The assessment of the degree to which particular disorders are associated with CPM metatraits is the aim of the last analysis in the present study.

Prediction of personality disorders on the basis of FFM traits and CPM metatraits

In this analysis, my aim was to determine to what extent personality disorders are characterized by CPM metatraits.The point of reference was FFM traits, but the formal analysis of incremental validity was not possible, since the general dimensions were distinguished on the basis of PMO scales, which means they would generate high collinearity indices. The procedure was therefore limited to comparative linear regression analysis, performed with the stepwise regression method, separately for FFM traits and for CPM metatraits. The results are presented in Table 3.

Firstly, the obtained results showed considerably diverse associations with FFM traits and CPM metatraits for particular instruments: the associations were the highest in the case of the TALEIA-400A, somewhat lower for the PBQ, and the lowest for the SCID-II. This result may suggest a bias of aggregate data, resulting in a flattening of the profile, which would explain the divergences found between the meta-analysis and the results of the present study. On the other hand, these divergences were not pronounced enough to decide that, to increase valid-

ity, aggregated results should be computed with the SCID-II inventory excluded. A diagnostic specificity was found for the PBQ as well, consisting in a different way of characterizing particular disorders (Zawadzki, 2016). Secondly, the highest values of characterization were obtained for borderline, avoidant, and dependent personality disorders, while the lowest values were obtained for obsessive-compulsive personality disorder (consistent for FFM traits and CPM metatraits). This differentiation had already been found in previous studies, and the problem essentially stems from the different validity levels of FFM in characterizing disorders. Thirdly, significant possibilities of characterizing disorders were found both for FFM traits and for CPM metatraits. However, the corresponding values of R^2 were higher for traits than for metatraits and equal to .20 and .14, respectively (with very similar correlations for disorders between the values of R^2 for traits and metatraits, Kendall's *Tau* = .76, *p* < .05).

Table 3
Prediction of Personality Disorders (Values of R^2) Based on the Traits of the Five-Factor Model of Personality (FFM) and Personality Metatraits According to the Circumplex of Personality Metatraits (CPM)

Traits and metatraits	FFM traits				CPM metatraits			
Instrument measuring personality disorders	PBQ	SCID-II	TA-LEIA-400A	*M* for FFM	PBQ	SCID-II	TA-LEIA-400A	*M* for CPM
Paranoid personality disorder	.19*	.15*	.23*	**.19**	.13*	.10*	.17*	**.13**
Schizoid personality disorder	.12*	.11*	.22*	**.15**	.04*	.06*	.20*	**.10**
Schizotypal personality disorder	.11*	.15*	.30*	**.19**	.11*	.09*	.25*	**.15**
Borderline personality disorder	.44*	.21*	.20*	**.28**	.38*	.18*	.16*	**.24**
Antisocial personality disorder	.20*	.04*	.28*	**.17**	.08*	.02*	.28*	**.13**
Histrionic personality disorder	.14*	.17*	.22*	**.18**	.10*	.15*	.11*	**.12**
Narcissistic personality disorder	.09*	.20*	.18*	**.16**	.05*	.17*	.12*	**.11**
Avoidant personality disorder	.33*	.23*	.48*	**.35**	.27*	.15*	.38*	**.27**
Dependent personality disorder	.29*	.13*	.30*	**.24**	.19*	.03*	.14*	**.12**
Obsessive-compulsive personality disorder	.11*	.05*	.19*	**.12**	.01*	.04*	.08*	**.04**
Mean for the instrument diagnosing the disorder	**.20**	**.14**	**.26**	**.20**	**.14**	**.10**	**.19**	**.14**

Note. The asterisk indicates the significance (*p* < .05) of the amount of explained variance in linear regression.

These differences appear to stem from the loss of information about profile specificity, characteristic for aggregate data and occurring when determining CPM dimensions. Moreover, these results are only slightly lower than data from other non-Polish studies (cf. Zawadzki, 2009), but generally consistent with the results obtained in Polish samples for instruments diagnosing personality and

temperament disorders (Zawadzki et al., 2012). Again, however, these differences may have resulted in the un-derestimation of associations of personality disorders with traits and metatraits, resulting in a flattening of profiles and their divergence from the results of the meta-analysis. On the other hand, the profiles of disorders based on FFM traits established in Polish studies as well as their location against the backdrop of CPM metatraits seem to converge with the meta-analysis data, thus attesting to their significant interpretive value.

DISCUSSION

As expected, the results of the presented analysis show that, based on the CPM, personality disorders are mainly located between the Gamma- and Delta-poles of the respective dimensions, and that they differentially center around the Delta-, Alpha-, and Gamma- poles. Yet, the analysis also revealed relations diverging from CPM predictions. They concern histrionic personality disorder, which was the first to be located between Delta- and Beta+, and obsessive--compulsive personality disorder (pole Delta+). These results suggest the possibility of a considerable extension of the area of pathology in the CPM, even as far as the sector stretching from pole Delta+ to Beta+. However, based on the alternative model of disorders proposed in DSM-5 (APA, 2013), histrionic personality may be treated as a personality dysfunction rather than a disorder. Obsessive-compulsive personality disorder is too vaguely described by FFM traits and, consequently, also by CPM metatraits, generated on the basis of FFM dimensions, and in this sense the identification of this disorder within the framework of the five-factor model constitutes a more general problem. On this basis, it can be concluded that the CPM does not require a general modification of expectations regarding personality pathologies and that it is reasonable to link them with the sector delimited by poles Gamma- and Delta-. The reference of the CPM to metatraits may offer a possibility of identifying more general mechanisms of personality disorders, which go beyond describing them only in terms of behavioral tendencies corresponding to FFM traits. The ultimate assessment of the usefulness of the CPM, however, requires a replication based on the analysis of content-specific metratraits, not only FFM traits.

Moreover, the obtained results indicating the location of personality disorders close to poles Delta-, Alpha-, and Gamma- suggest the possibility of differential diagnosis of internalizing and externalizing disorders. Internalizing disorders seem to be associated with pole Gamma-, and externalizing ones – with

Delta-. The disorder that may be regarded as prototypical of the former group is avoidant personality disorder, located close to pole Gamma- and fairly precisely characterized by FFM traits and CPM metatraits. The one that may be regarded as prototypical of the latter group is narcissistic personality disorder, located close to pole Delta- and equally precisely characterized by FFM traits and CPM metatraits. Pole Alpha-, whose prototypical disorder is borderline personality, corresponds to disorders intermediate between internalizing and externalizing. In this context, the question arises whether this dimension is merely "intermediate" or whether it actually constitutes the pivotal dimension of personality disorders, the way borderline personality is treated as prototypical among all personality disorders (see First et al., 2010). The testing of this hypothesis also requires further studies within the CPM framework, but it is worth noting that this model provides clear premises for diagnosing personality pathologies, which includes differentiating – not so much specific disorders, since not even the FFM makes this possible (see Zawadzki, 2009), as the main types of personality disorders.

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